Appendix 1 Cover Sheet

Document Title

1A. Site Plans (NorthPoint Consulting Group, August 2024, Updated September 2024)
- Sheet C0: Plot Plan, Vicinity Map, & Project Notes
- Sheet C1: Existing Site Plan – Proposed Project Area
- Sheet C2: Proposed Site Plan – Proposed Project Area
- Sheet C3: Stream Buffer Typical Detail

1B. Preliminary Site Grading and Drainage Plan (NorthPoint Consulting Group, August 2024, Updated September 2024)
- Sheet G0: Plot Plan, Vicinity Map, & Project Notes
- Sheet G1: Proposed Grading Plan
- Sheet G2-G3: Section Views
- Sheet G4: Project Details
- Sheet G5: Erosion Control Notes

1C. Cultivation and Operation Manual (NorthPoint Consulting Group, August 2024, Updated September 2024)

Appendix 1A
Site Plans

HUMSUN 3, LLC
CONDITIONAL USE PERMIT
PRIMARY APN: 217-253-001



VICINITY MAP
NOT TO SCALE

DIRECTIONS TO SITE:

FROM EUREKA, CA

- HEAD SOUTH ON US-101 S (APPROX. 19.9 MILES)
- TAKE EXIT 685 FOR CA-36 E (APPROX. 0.3 MILES)
- TURN LEFT ONTO CA-36 E (APPROX. 23.9 MILES)
- TURN RIGHT ONTO ALDERPOINT RD. (APPROX. 16.4 MILES)
- DESTINATION ON THE RIGHT

PROJECT DESCRIPTION:

HUMSUN 3, LLC IS APPLYING FOR A CONDITIONAL USE PERMIT ON KEY APN: 217-253-001 THROUGH THE COUNTY OF HUMBOLDT'S COMMERCIAL MEDICAL MARIJUANA LAND USE ORDINANCE (CMMLUO). THE APPLICANT SEEKS TO PERMIT 3.1 ACRES (134,850 SQ. FT.) OF MIXED LIGHT CULTIVATION AREA IN GREENHOUSES. CULTIVATION IS PROPOSED IN APPROXIMATELY 38 GREENHOUSES, 30 FEET IN WIDTH, RANGING FROM 70 FEET TO 145 FEET IN LENGTH.

THE PROJECT PROPOSAL INCLUDES THE DEVELOPMENT OF ANCILLARY STRUCTURES FOR CULTIVATION ACTIVITIES, INCLUDING A 60' X 100' BUILDING FOR DUAL USE OF ANCILLARY NURSERY,DRYING, STORAGE, ANDCURING, A 32' X 40' PROCESSING BUILDING FOR ONSITE TRIMMING, WATER INFRASTRUCTURE, AND STORAGE FOR THE EXISTING WELLS AND A PROPOSED NON-DIVERSIONARY WELL.

ENERGY WILL BE SOURCED THROUGH THE EXISTING PG&E SERVICE AND A PROPOSED SOLAR SYSTEM. THE MIXED LIGHT GREENHOUSES WILL REQUIRE AN UPGRADE TO THE EXISTING PG&E SERVICE. WHILE WAITING FOR THE PG&E UPGRADE, HUMSUN 3, LLC PROPOSES TO CULTIVATE THE 3.1 ACRES USING A COMBINATION OF LIGHT DEPRIVATION GREENHOUSES OR OUTDOOR CULTIVATION WITH THE EXISTING PG&E SERVICE AND PROPOSED SOLAR SYSTEM.

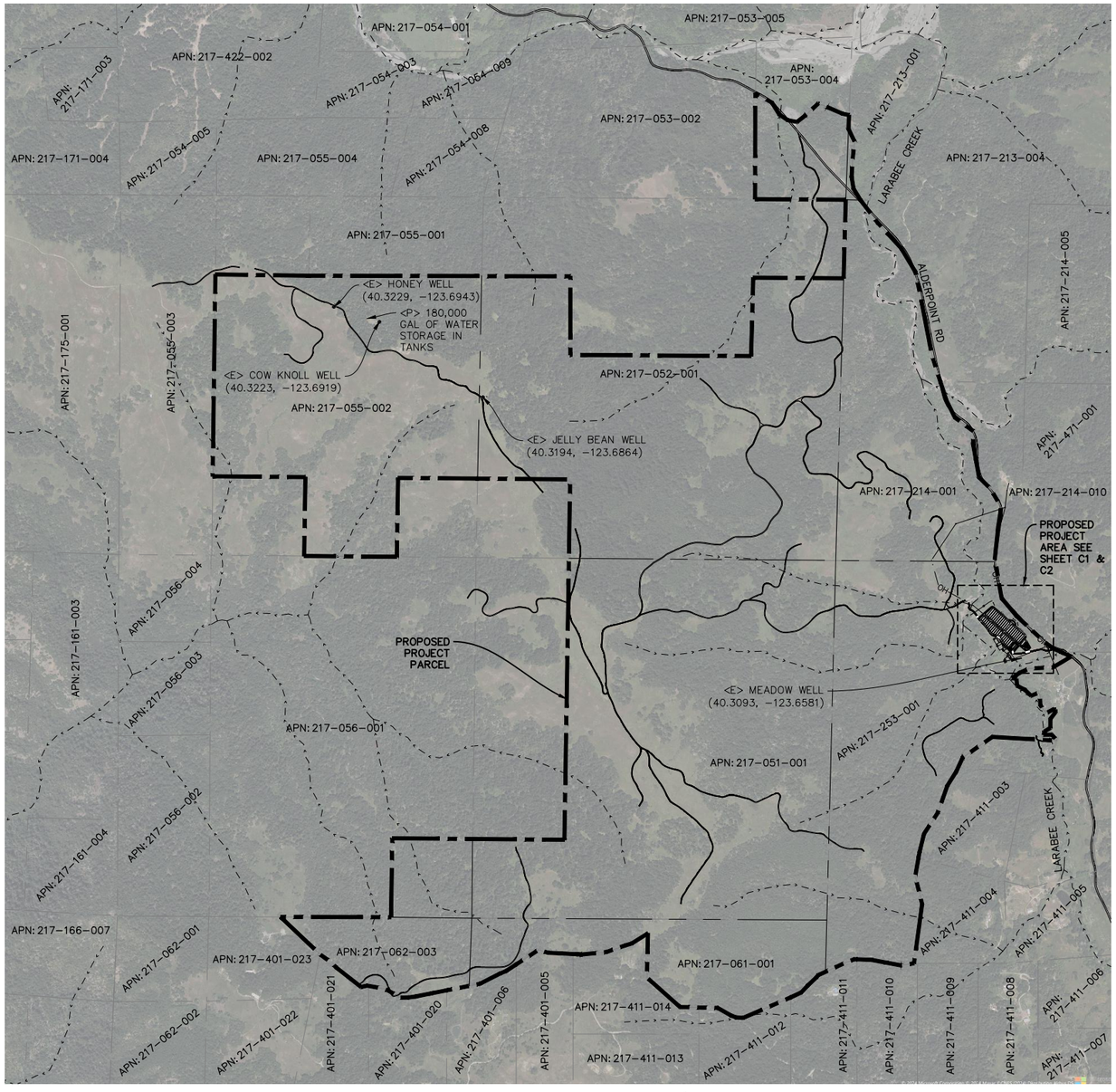
WATER FOR THE PROJECT WILL BE SOURCED FROM EXISTING ONSITE GROUNDWATER WELLS, OR, A GROUNDWATER WELL DRILLED IN THE FUTURE, IF DEEMED TO BE NON-DIVERSIONARY. WATER WILL NOT COME FROM SURFACE WATER DIVERSION.

GENERAL NOTES:

1. DRAWING SCALE AS NOTED. WRITTEN DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALED DIMENSIONS.
2. THIS IS NOT A BOUNDARY SURVEY. BOUNDARY INFORMATION DEPICTED HAS BEEN OBTAINED FROM HUMBOLDT COUNTY 2015 GIS DATA. NORTHPOINT CONSULTING GROUP, INC. HAS NOT VERIFIED THIS PROPERTY BOUNDARY. BOUNDARY OBTAINED FROM PARCEL MERGER PLN-2018-010363.
3. THERE ARE NO NEARBY SCHOOLS, SCHOOL BUS STOPS, PLACES OF WORSHIP, PUBLIC PARKS OR TRIBAL RESOURCES WITHIN 600 FEET OF THE PROPOSED CULTIVATION AREA.
4. THERE ARE NO RESIDENCES ON ADJOINING PARCELS WITHIN 300 FEET OF THE PROPOSED CULTIVATION AREAS.
5. ANY EXISTING DEVELOPMENT CONSTRUCTED WITHOUT THE BENEFIT OF COUNTY REVIEW WILL BE SUBJECT TO THE HUMBOLDT COUNTY BUILDING DEPARTMENT UPON APPROVAL OF THE CONDITIONAL USE PERMIT.

LEGEND

- LEGAL PARCEL BOUNDARY
- ADJACENT LOT LINE
- INTERNAL ASSESSORS PARCEL BOUNDARIES
- CLASS I, II, III WATERCOURSE BUFFER
- ROADS



PLOT PLAN

22x34 SHEET: 1"=1,000'
11x17 SHEET: 1"=2,000'

0 500 1,000 2,000

PROJECT INFORMATION:

APPLICANT:
HUMSUN 3, LLC
30855 ALDERPOINT RD.
BLOCKSBURG, CA 95514

PROPERTY OWNER:
HUMSUN RANCH, LLC
181 SANCHEZ ST.
SAN FRANCISCO, CA 94114

APPLICANTS AGENT:
NORTHPOINT CONSULTING GROUP, INC
1117 SAMOA BLVD.
ARCATA, CA 95521
(707) 798-6438

SITE ADDRESS:
APN: 217-253-001
30855 ALDERPOINT RD.
BLOCKSBURG, CA 95514

TREES TO BE REMOVED = NONE

PRIME AGRICULTURAL AREA = 58.4 ACRES
20% OF PRIME AGRICULTURAL AREA = 11.68 ACRES

PROPOSED MIXED LIGHT CULTIVATION AREA = 134,850 SQ.FT.

WATER = PRIVATE
SEWER = PRIVATE

PRIMARY ASSESSOR PARCEL SIZE = ±264 ACRES
LEGAL DEED = ±1,887 ACRES

PARCEL #7 PER HUMBOLDT COUNTY PLANNING DEPARTMENT NOM 18-022 DS 17.011

ZONING = AE-B-5(160); TPZ
GENERAL PLAN DESIGNATION = AG, RA20

BUILDING SETBACKS:

	SRA
FRONT	30'
SIDE	30'
REAR	30'

SRA AREA: = YES
IN COASTAL ZONE: = NO
IN 100 YR FLOOD ZONE: = YES

SHEET INDEX:

C0 - PLOT PLAN, VICINITY MAP, & PROJECT NOTES
C1 - CONSTRAINTS MAP
C2 - PROPOSED SITE PLAN
C3 - STREAM BUFFER TYPICAL DETAIL

DRAWN BY | REVISIONS | DATE

NORTHPOINT
CONSULTING GROUP, INC.
1117 Samoa Blvd., Arcata, CA 95521

HUMSUN 3, LLC - CUP
APN:217-253-001
PLOT PLAN, VICINITY MAP, & PROJECT NOTES

PROJ. MGR.: POW
DRAWN BY: LJM
DATE: 09/25/2024
SCALE: AS SHOWN

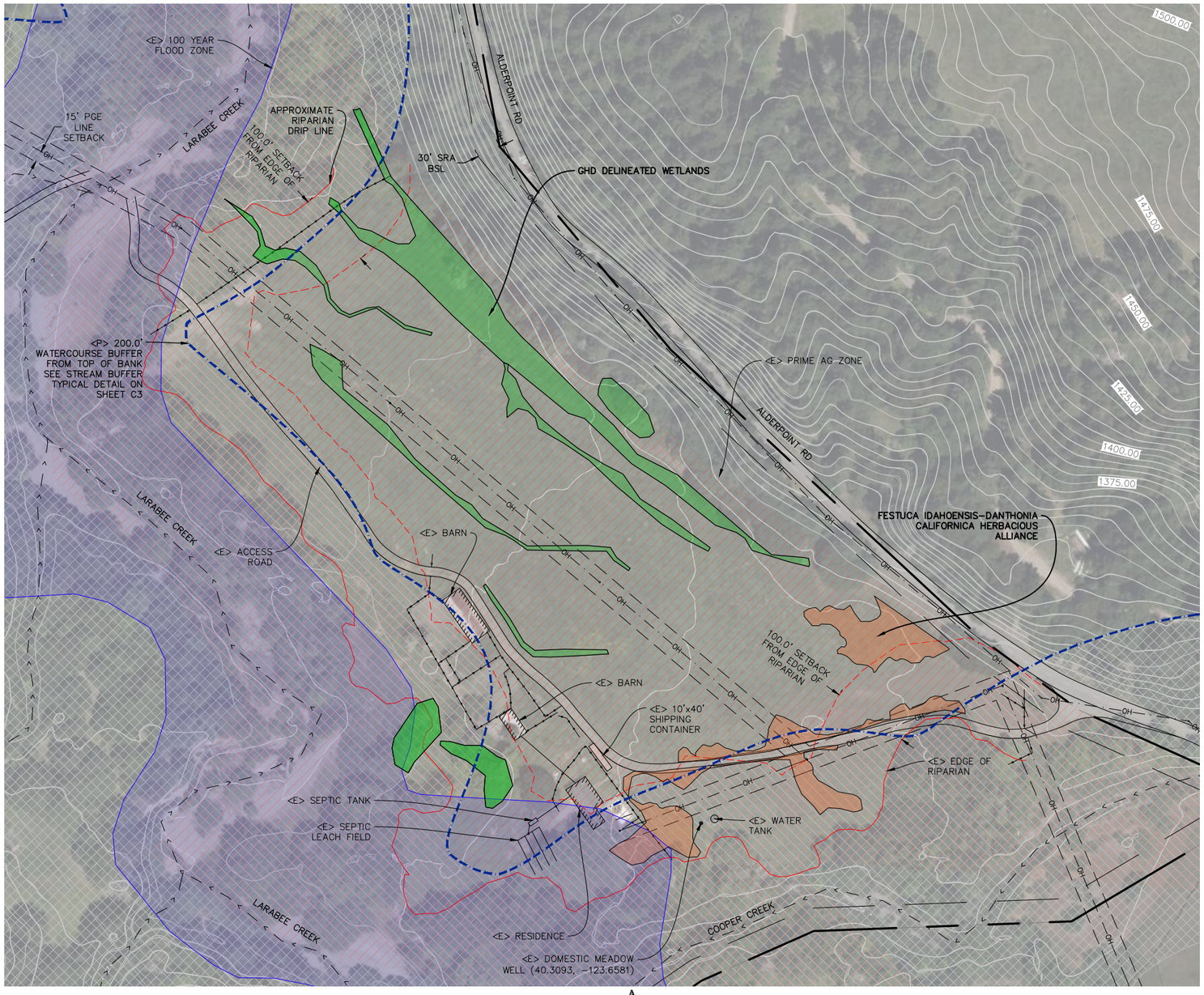
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HUMSUN 3, LLC

EXISTING SITE PLAN - PROPOSED PROJECT AREA

APN: 217-253-001



LEGEND

- PARCEL BOUNDARY
- LOT LINE
- BUILDING SETBACK
- WATERCOURSE BUFFER
- STREAM
- PGE 15' SETBACK
- PGE OVERHEAD LINES
- FENCE
- EDGE OF RIPARIAN
- 100' SETBACK FROM EDGE OF RIPARIAN
- 200' SETBACK FROM WATERCOURSE
- GHD DELINEATED WETLAND
- DANTHONIA GRASSES
- 100 YEAR FLOOD ZONE
- PRIME AG

22x34 SHEET: 1"=80'
11x17 SHEET: 1"=160'

0 40 80 160

N

DRAWN BY:
REVISIONS
DATE

NORTHPOINT CONSULTING GROUP, INC.
1117 Samoa Blvd., Arcata, CA 95521

HUMSUN 3, LLC - CUP
APN:217-253-001
EXISTING SITE PLAN - PROPOSED PROJECT AREA

PROJ. MGR.: POW
DRAWN BY: LJM
DATE: 09/25/2024
SCALE: AS SHOWN

SHEET C1

24-001

September 25, 2024 - 10:57 Dwg Name: P:\HumSun Ranch, LLC - HumSun Ranch - 24-001\CADD\Production Drawings\HumSun - CUP.dwg Updated By: LiamMclaughlinEIT

HUMSUN 3, LLC

PROPOSED SITE PLAN - PROPOSED PROJECT AREA

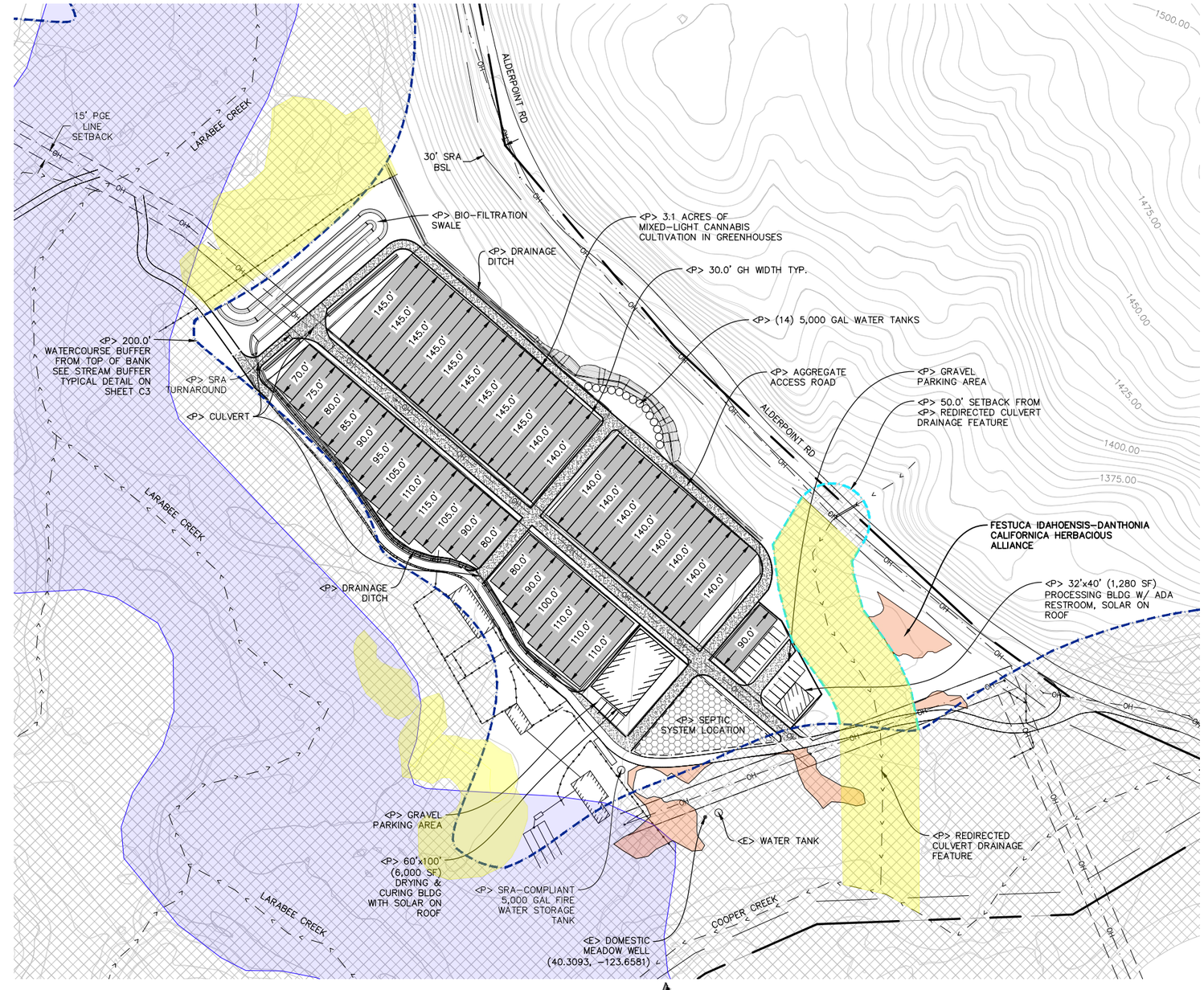
APN: 217-253-001

IMPACTS TABLE:

IMPACTS TO WETLANDS: 0.8 ACRES
IMPACTS TO DANTHONIA: 0.2 ACRES

GREENHOUSES TABLE:

(1)	30.0' X 70.0'	GH	=	2,100	SQ.FT.
(1)	30.0' X 75.0'	GH	=	2,250	SQ.FT.
(3)	30.0' X 80.0'	GH	=	2,400	SQ.FT.
(1)	30.0' X 85.0'	GH	=	2,550	SQ.FT.
(4)	30.0' X 90.0'	GH	=	2,700	SQ.FT.
(1)	30.0' X 95.0'	GH	=	2,850	SQ.FT.
(1)	30.0' X 100.0'	GH	=	3,000	SQ.FT.
(2)	30.0' X 105.0'	GH	=	3,150	SQ.FT.
(4)	30.0' X 110.0'	GH	=	3,300	SQ.FT.
(1)	30.0' X 115.0'	GH	=	3,450	SQ.FT.
(10)	30.0' X 140.0'	GH	=	4,200	SQ.FT.
(9)	30.0' X 145.0'	GH	=	4,350	SQ.FT.
	TOTAL		=	134,850	SQ.FT.
			=	3.1	ACRES



LEGEND

- – PARCEL BOUNDARY
- – LOT LINE
- – BUILDING SETBACK
- – WATERCOURSE BUFFER
- – STREAM
- – PGE 15' SETBACK
- – PGE OVERHEAD LINES
- – FENCE
- – 200' SETBACK FROM WATERCOURSE
- – DANTHONIA GRASSES
- – 100 YEAR FLOOD ZONE
- – POTENTIAL CULTIVATION AREA
- – <P> 2.63 ACRES OF WETLAND AND RIPARIAN CREATION AND ENHANCEMENT. REFER TO WETLAND MITIGATION REPORT (J. REGAN CONSULTING, 2024)

22x34 SHEET: 1"=80'
11x17 SHEET: 1"=160'
0 40 80 160

N

DRAWN BY | REVISIONS | DATE

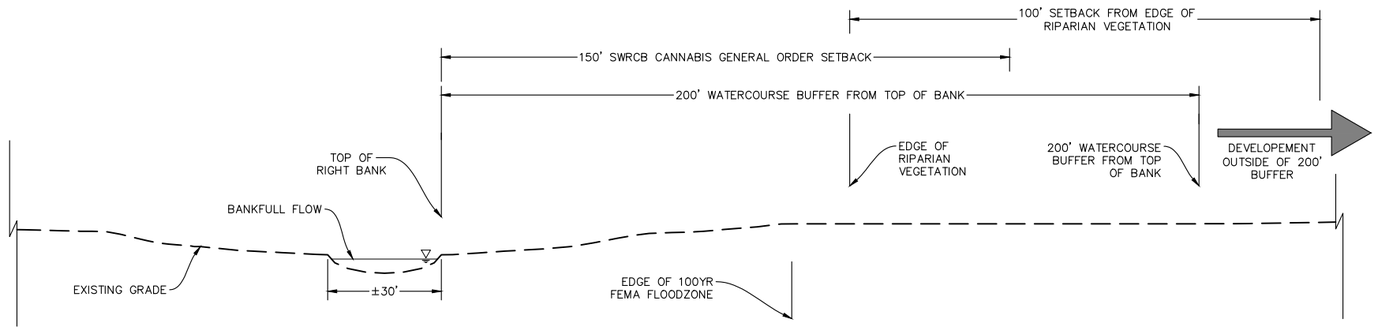
NORTHPOINT CONSULTING GROUP, INC.
1117 Samoa Blvd., Arcata, CA 95521

HUMSUN 3, LLC - CUP
APN:217-253-001
PROPOSED SITE PLAN - PROPOSED PROJECT AREA

PROJ. MGR.: POW
DRAWN BY: LJM
DATE: 09/25/2024
SCALE: AS SHOWN

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STREAM BUFFER TYPICAL DETAIL

NTS

August 29, 2024 - 15:17 Dwg Name: P:\HumSun Ranch, LLC - HumSun Ranch - 24-001\Cad\Production Drawings\HumSun - River Channel Sections.dwg Updated By: LiamMclaughlinET

DRAWN BY | REVISIONS | DATE

NORTHPOINT CONSULTING GROUP, INC.
1117 Samoa Blvd., Arcata, CA 95521

HUMSUN 3, LLC - CUP

APN:217-253-001

STREAM BUFFER TYPICAL DETAIL

PROJ. MGR.: POW
DRAWN BY: LJM
DATE: 09/25/2024
SCALE: AS SHOWN

SHEET
C3

24-001

Appendix 1B

Preliminary Site Grading and Drainage Plan

HUMSUN 3, LLC

PRELIMINARY SITE GRADING AND DRAINAGE PLAN

APN: 217-253-001



VICINITY MAP

NOT TO SCALE

DIRECTIONS TO SITE:

FROM EUREKA, CA

- HEAD SOUTH ON US-101 S (APPROX. 19.9 MILES)
- TAKE EXIT 685 FOR CA-36 E (APPROX. 0.3 MILES)
- TURN LEFT ONTO CA-36 E (APPROX. 23.9 MILES)
- TURN RIGHT ONTO ALDERPOINT RD. (APPROX. 16.4 MILES)
- DESTINATION ON THE RIGHT

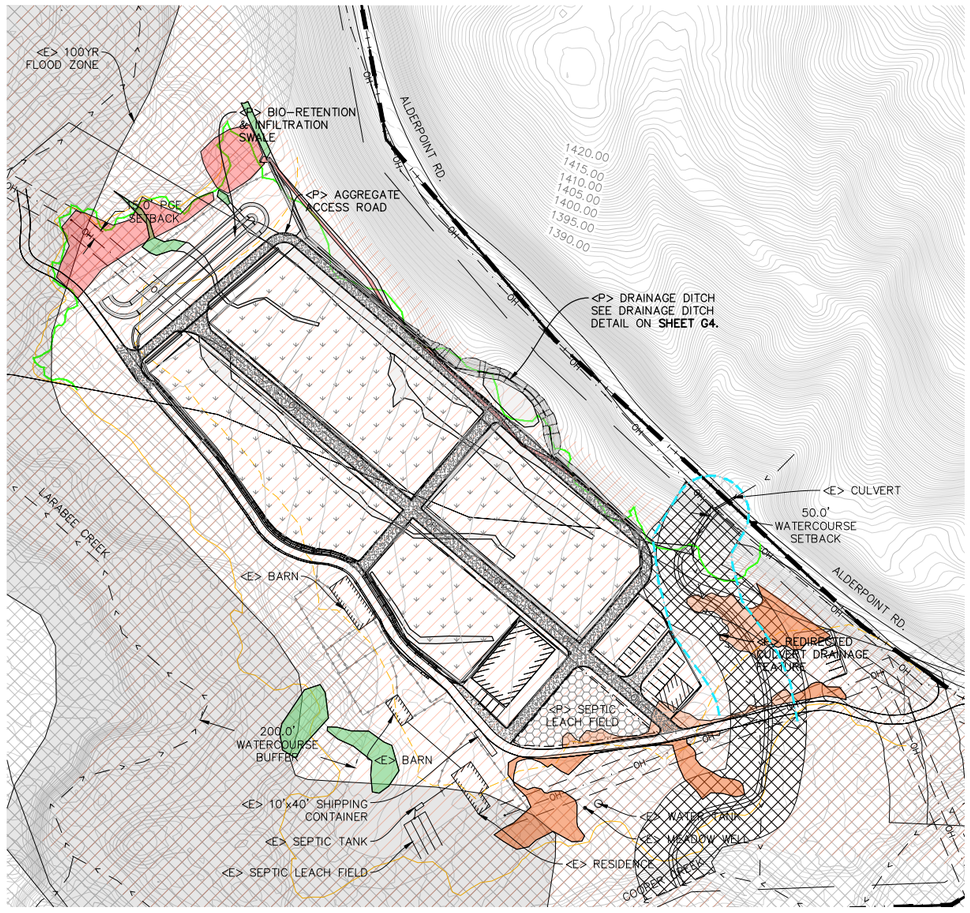
UNAUTHORIZED CHANGES & USES:

THE ENGINEER PREPARING THESE PLANS WILL NOT BE RESPONSIBLE FOR, OR LIABLE FOR, UNAUTHORIZED CHANGES TO OR USES OF THESE PLANS. ALL CHANGES MUST BE IN WRITING AND MUST BE APPROVED BY THE PREPARER OF THESE PLANS.

CONSTRUCTION CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, CONSTRUCTION CONTRACTOR WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS; AND CONSTRUCTION CONTRACTOR FURTHER AGREES TO DEFEND, INDEMNIFY AND HOLD DESIGN PROFESSIONAL AND THE COUNTY OF HUMBOLDT HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF DESIGN PROFESSIONALS.

GENERAL CONSTRUCTION NOTES:

1. ALL NOTES ON THESE PLANS SHALL APPLY TO NEW CONSTRUCTION.
2. DRAWING SCALE AS NOTED. WRITTEN DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALED DIMENSIONS.
3. FOLLOW MANUFACTURERS INSTALLATION REQUIREMENTS FOR ALL SPECIFIED HARDWARE, FIXTURES, AND MANUFACTURED ITEMS.
4. DURING CONSTRUCTION, MEANS OF EGRESS SHALL BE MAINTAINED PER 2022 CALIFORNIA FIRE CODE.
5. ALL MATERIALS AND WORKMANSHIP SHALL BE ACCORDING TO PROVISIONS OF THE STANDARD SPECIFICATIONS AND STANDARD PLANS, CALIFORNIA DEPARTMENT OF TRANSPORTATION, 2016 OR CURRENT VERSION. EROSION & SEDIMENT CONTROL SHALL BE PERFORMED IN ACCORDANCE WITH THE HUMBOLDT COUNTY LAND USE AND DEVELOPMENT ORDINANCE, SECTION 331-14 LAND USE AND DEVELOPMENT.
6. ALL WORK SHALL BE PERFORMED BY A STATE OF CALIFORNIA LICENSED CONTRACTOR.
7. THE CONTRACTOR SHALL SECURE ALL NECESSARY PERMITS FROM HUMBOLDT COUNTY AND OTHER APPLICABLE AGENCIES.
8. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND GRADES AT JOB SITE BEFORE PRECEDING, AND SHALL CONTACT THE ENGINEER IMMEDIATELY WITH ANY DISCREPANCIES.
9. UNDERGROUND SERVICE ALERT (USA) – CALL TOLL FREE 1-800-642-2444 AT LEAST 48 HOURS PRIOR TO EXCAVATION.
10. PRIOR TO PERMIT CLOSE OUT HCBD REQUIRES A CERTIFICATION LETTER FROM ENGINEER. THE CERTIFICATION LETTER WILL STATE ACCEPTANCE OF EROSION CONTROL MEASURES, CERTIFICATION OF PLACEMENT AND COMPACTION OF FILL MATERIAL, AND COMPLETION OF WORK.
11. ENGINEER MAY MODIFY LOCATION, QUANTITY, AND TYPE OF EROSION CONTROL MEASURES AT TIME OF GRADING DEPENDING ON SITE CONDITIONS AS THE PROJECT PROCEEDS.
12. CONTRACTOR SHALL HOLD ON-SITE PRE-CONSTRUCTION MEETING WITH ENGINEER PRIOR TO ANY WORK. THROUGHOUT CONSTRUCTION, ENGINEER SHALL REVIEW AND APPROVE PROPOSED CONSTRUCTION REVISIONS AS REQUESTED BY CONTRACTOR AND AS REQUIRED BY THE HUMBOLDT COUNTY BUILDING DEPARTMENT.
13. THE CONTRACTOR SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF PROJECT CONSTRUCTION, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY, AND THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND SHALL NOT BE LIMITED TO NORMAL WORKING HOURS.
14. HOURS OF CONSTRUCTION FOR ON AND OFF-SITE IMPROVEMENTS SHALL BE RESTRICTED TO MONDAY THRU FRIDAY FROM 7AM TO 6PM, SATURDAY FROM 9AM TO 5PM, WITH NO CONSTRUCTION ACTIVITY ON SUNDAY OR AS ALLOWED PER CURRENT HUMBOLDT COUNTY CODE. ALL PROPOSED USES MUST COMPLY WITH THE NOISE STANDARDS IDENTIFIED IN FIGURE 3-2 OF THE GENERAL PLAN.
15. NO GRADING SHALL OCCUR BETWEEN OCTOBER 15TH AND APRIL 15TH WITHOUT PRIOR APPROVAL OF THE COUNTY OF HUMBOLDT.
16. AN ENCROACHMENT PERMIT IS REQUIRED BY THE DEPARTMENT OF PUBLIC WORKS FOR ALL IMPROVEMENT WORK WITHIN THE HUMBOLDT COUNTY RIGHT OF WAY.
17. TRAFFIC CONTROL SHALL BE IMPLEMENTED PER THE CURRENT VERSION OF THE MUTCD.
18. TOPOGRAPHIC SURVEY PROVIDED BY DYLAN KOLSTAD, DATED 02/26/2013.
19. THE INFORMATION AND ELEVATIONS PERTAINING TO EXISTING OVERHEAD AND UNDERGROUND FACILITIES AS SHOWN HEREIN, ARE FROM RECORD INFORMATION ONLY AND ARE PRESENTED HERE FOR INFORMATION PURPOSES ONLY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING ALL AGENCIES INVOLVED AND SHALL LOCATE ALL EXISTING FACILITIES PRIOR TO EXCAVATION AND CONSTRUCTION IN ANY AREA. THE CONTRACTOR SHALL NOTIFY THE ENGINEER AND DEVELOPER OF ANY APPARENT DISCREPANCIES IN THE RECORD INFORMATION SHOWN HEREIN.
20. THE FOLLOWING WORK REQUIRES AN INSPECTION BEFORE PROCEEDING:
    - -SEWER, WATER AND SUBDRAIN LINES PRIOR TO BACKFILL.
    - -SUBGRADE, PRIOR TO LAYING BASE OR FILL MATERIAL.
    - -FOUNDATION EXCAVATION.
    - -BASE, PRIOR TO LAYING ASPHALT.
    - -ANY OTHER REQUIRED BY BUILDING PERMIT.
21. THE CONTRACTOR SHALL REMOVE FROM THE SITE AND LAWFULLY DISPOSE OF ALL DELETERIOUS MATERIAL (BROKEN CONCRETE, ASPHALT PAVEMENT, BASE MATERIAL, ROCKS, STUMPS, ROOTS, LIMBS, ETC.) TO AN APPROVED DISPOSAL SITE.
22. UNLESS SPECIFICALLY AGREED TO OTHERWISE BETWEEN THE CONTRACTOR AND THE OWNER, THE OWNER IS RESPONSIBLE FOR PAYING FOR ALL SOIL COMPACTION TESTS AND OR OTHER TESTS THAT ARE REQUIRED BY THESE PLANS.
23. SANITARY FACILITIES SHALL BE MAINTAINED ON THE SITE DURING CONSTRUCTION.



PLOT PLAN

22x34 SHEET: 1"=100'
11x17 SHEET: 1"=200'

0 50 100 200

Avoid cutting underground utility lines. It's costly.
Call before you Dig
811 OR 800-642-2444
UNDERGROUND SERVICE (USA)

SITE GRADING NOTES:

1. CUT AND FILL SLOPES SHALL BE 2:1 (H:V) MAXIMUM, UNLESS OTHERWISE SHOWN ON THE PLANS.
2. FINISHED GRADING SHALL BE AS INDICATED ON THE PLANS.
3. TOPSOIL AND ALL UNSUITABLE MATERIAL SHALL BE REMOVED FROM ALL AREAS TO RECEIVE CONCRETE, ASPHALT, OR FILL, UNSUITABLE MATERIAL INCLUDES SOILS WITH HIGH ORGANIC MATERIAL, DARKER TOPSOILS AND OVER SATURATED SOILS.
4. ALL FILL SHALL BE COMPACTED TO A MINIMUM OF 90%, EXCEPT WHERE 95% RELATIVE COMPACTION REQUIRED WITHIN 24" OF FINISH GRADE AS SPECIFIED IN SECTION 19-5.03 OF CALTRANS STANDARD SPECIFICATIONS OR SPECIFIED IN THE SOILS REPORT.
5. ALL GROUND BARED BY CONSTRUCTION ACTIVITIES SHALL RECEIVE EROSION CONTROL TREATMENT AS SPECIFIED IN THE SOIL LOSS & POLLUTION PREVENTION PLAN (SHEET G5).
6. ALL EXPORT MATERIAL SHALL BE TAKEN TO A PROPER DISPOSAL SITE.

PROJECT DESCRIPTION:

HUMSUN 3, LLC IS PROPOSING APPROXIMATELY 4,930 CU. YD. OF EARTHWORK FOR THE PROPOSED SITE GRADING AND DRAINAGE IMPROVEMENTS ASSOCIATED WITH PLN-12856-CUP.

PROJECT INFORMATION:

APPLICANT:
HUMSUN 3, LLC.
30855 ALDERPOINT RD.
BLOCKSBURG, CA 95514

PROPERTY OWNER:
HUMSUN RANCH, LLC
181 SANCHEZ ST.
SAN FRANCISCO, CA 94114

APPLICANTS AGENT:
NORTHPOINT CONSULTING GROUP, INC
1117 SAMOA BLVD.
ARCATA, CA 95521
(707) 798-6438

SITE ADDRESS:
APN: 217-253-001
30855 ALDERPOINT RD.
BLOCKSBURG, CA 95514

TREES TO BE REMOVED = NONE

EARTHWORK QUANTITIES:
TOTAL = 4,930 CU.YD.

WATER = PRIVATE
SEWER = PRIVATE

PRELIMINARY PARCEL SIZE = ±264 ACRES
LEGAL DEED = ±1,887 ACRES

ZONING = AE-B-5(160); TPZ
GENERAL PLAN DESIGNATION = AG, RA20
BUILDING SETBACKS:

	SRA
FRONT	30'
SIDE	30'
REAR	30'

SRA AREA: = YES
IN COASTAL ZONE: = NO
IN 100 YR FLOOD ZONE: = NO

GENERAL NOTES:

1. DRAWING SCALE AS NOTED. WRITTEN DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALED DIMENSIONS.
2. THIS IS NOT A BOUNDARY SURVEY. BOUNDARY INFORMATION DEPICTED HAS BEEN OBTAINED FROM HUMBOLDT COUNTY 2015 GIS DATA. NORTHPOINT CONSULTING GROUP, INC. HAS NOT VERIFIED THIS PROPERTY BOUNDARY.
3. CLASSIFICATION OF WATERCOURSES AS IDENTIFIED IN TIMBERLAND RESOURCE CONSULTANTS WATER RESOURCES PROTECTION PLAN.
4. PRIOR TO THE START OF CONSTRUCTION A PRE-SITE MEETING BETWEEN OWNER, ENGINEER, AND CONTRACTOR SHALL OCCUR.

SHEET INDEX:

G0 – PLOT PLAN, VICINITY MAP, & PROJECT NOTES
G1 – PROPOSED GRADING PLAN
G2 – SECTION VIEWS A-A – C-C
G3 – SECTION VIEWS D-D – G-G
G4 – PROJECT DETAILS
G5 – EROSION CONTROL NOTES

DRAWN BY	REVISIONS	DATE

NORTHPOINT CONSULTING GROUP, INC.
1117 Samoa Blvd., Arcata, CA 95521

HUMSUN 3, LLC
APN:217-253-001
PLOT PLAN, VICINITY MAP, & PROJECT NOTES

PROJ. MGR.: ----
DRAWN BY: LJM
DATE: 9/25/2024
SCALE: AS SHOWN

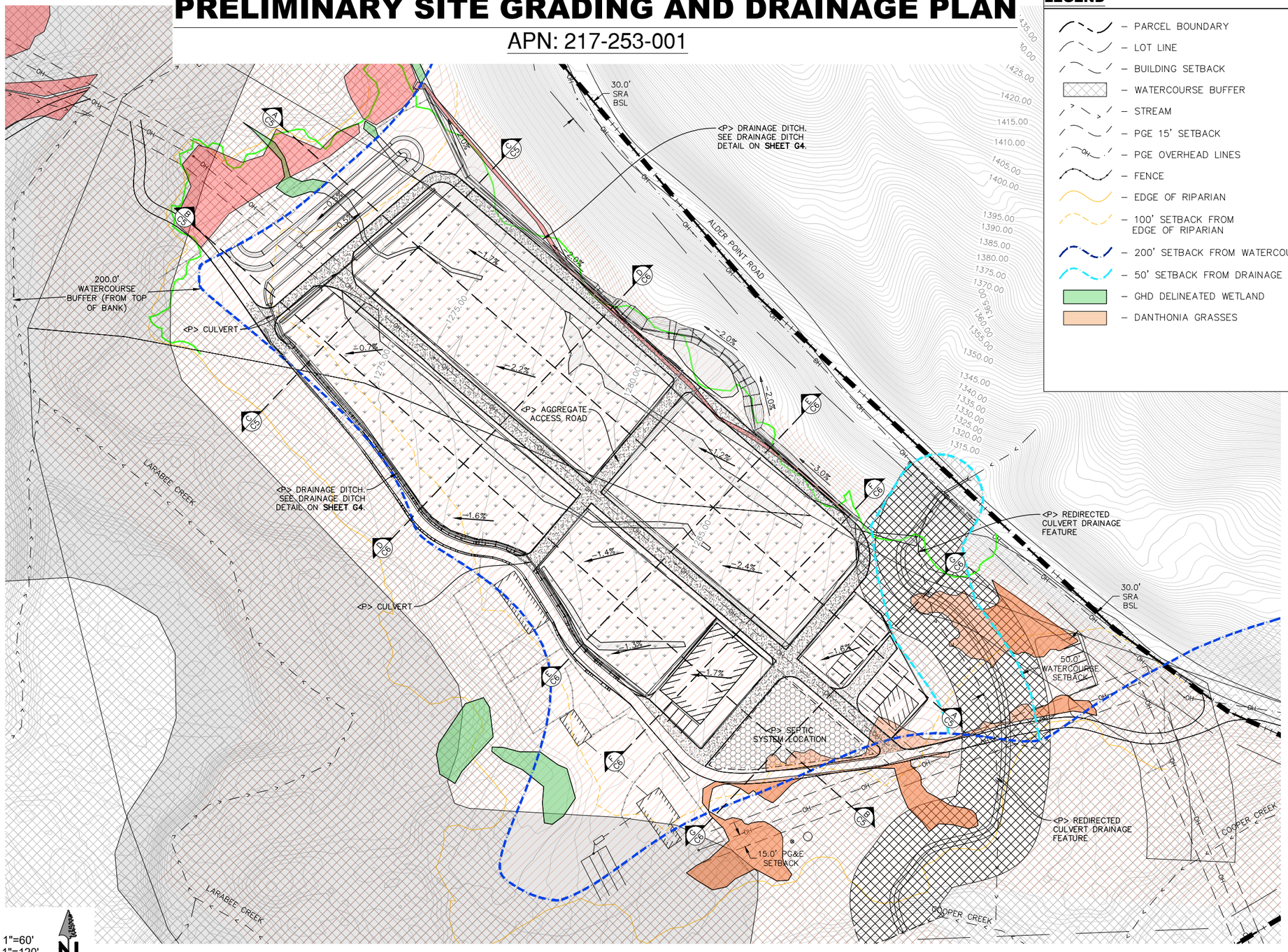
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September 25, 2024 - 11:00 Dwg Name: P:\HumSun Ranch, LLC - HumSun Ranch - 24-001\CAD\Production Drawings\HumSun - Preliminary Grading Design.dwg Updated By: tomMacmillanIET

HUMSUN 3, LLC

PRELIMINARY SITE GRADING AND DRAINAGE PLAN

APN: 217-253-001



LEGEND

- PARCEL BOUNDARY
- LOT LINE
- BUILDING SETBACK
- WATERCOURSE BUFFER
- STREAM
- PGE 15' SETBACK
- PGE OVERHEAD LINES
- FENCE
- EDGE OF RIPARIAN
- 100' SETBACK FROM EDGE OF RIPARIAN
- 200' SETBACK FROM WATERCOURSE
- 50' SETBACK FROM DRAINAGE
- GHD DELINEATED WETLAND
- DANTHONIA GRASSES

22x34 SHEET: 1"=60'
11x17 SHEET: 1"=120'

0 30 60 120

N

REVISIONS	DATE	DRAWN BY

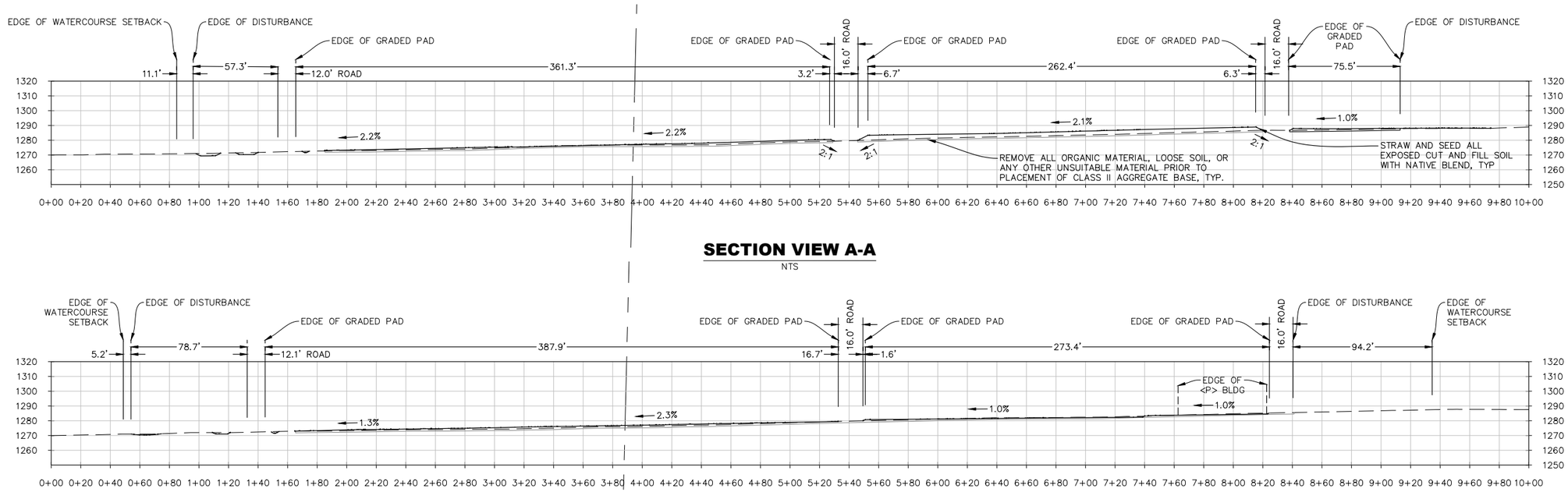
NORTHPOINT CONSULTING GROUP, INC.
1117 Samoa Blvd., Arcata, CA 95521

HUMSUN 3, LLC
APN:217-253-001
PROPOSED GRADING PLAN

PROJ. MGR.: ----
DRAWN BY: LJM
DATE: 9/25/2024
SCALE: AS SHOWN

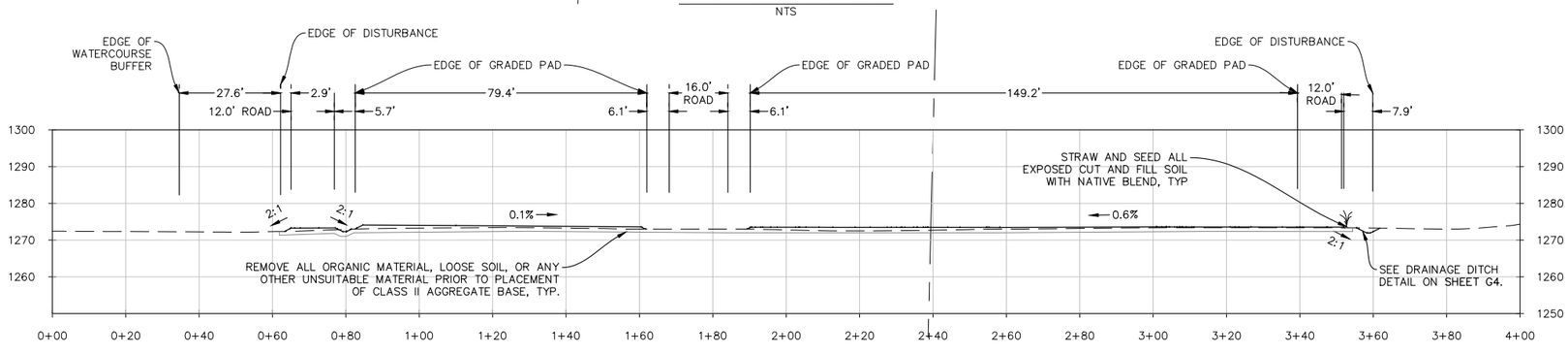
SHEET
G1
24-001

September 25, 2024 - 11:00 Dwg Name: P:\HumSun Ranch, LLC - HumSun Ranch - 24-001\CAD\Production Drawings\HumSun - Preliminary Grading Design.dwg Updated By: LJim\Midnight.ctT



SECTION VIEW A-A
NTS

SECTION VIEW B-B
NTS



SECTION VIEW C-C
NTS

NORTHPOINT
CONSULTING GROUP, INC.
1117 Samoa Blvd., Arcata, CA 95521

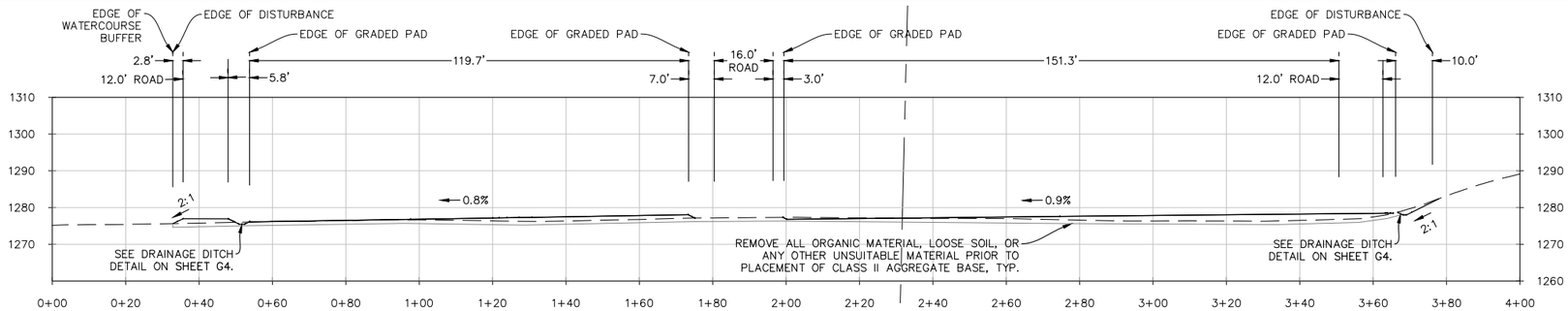
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HUMSUN 3, LLC
APN:217-253-001
SECTION VIEWS A-A - C-C

PROJ. MGR.: ----
DRAWN BY: LJM
DATE: 9/25/2024
SCALE: AS SHOWN

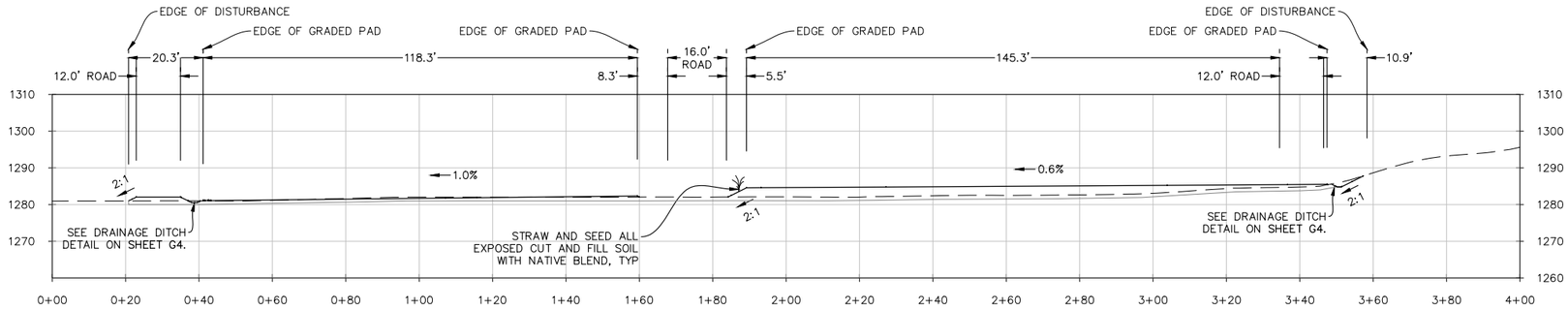
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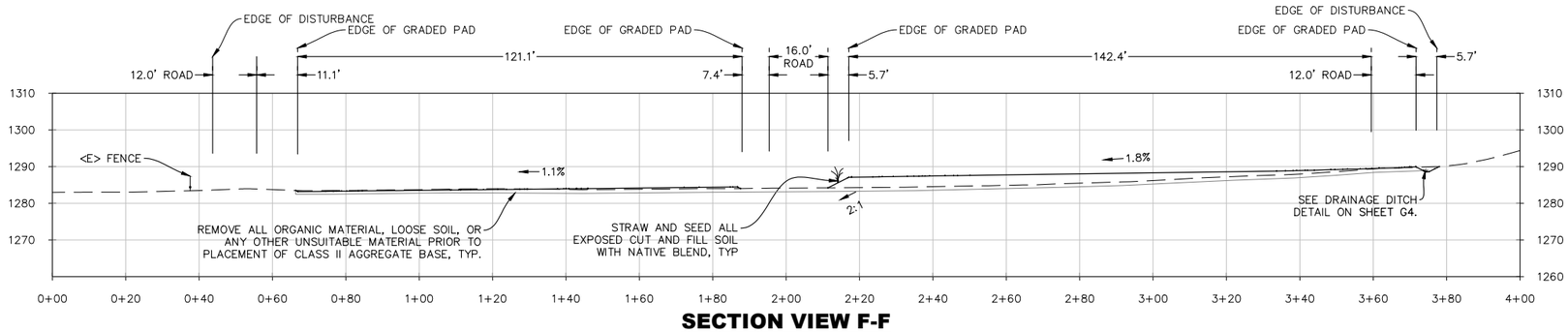
SECTION VIEW D-D

NTS



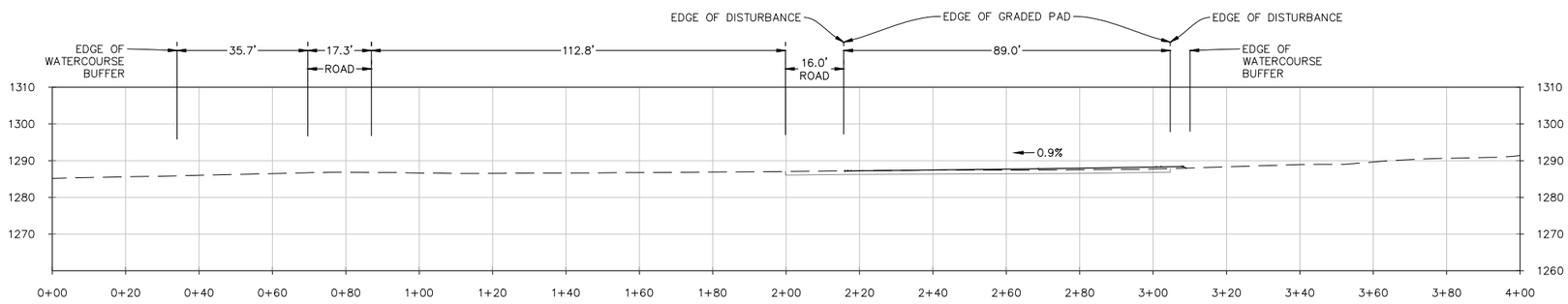
SECTION VIEW E-E

NTS



SECTION VIEW F-F

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SECTION VIEW G-G

NTS

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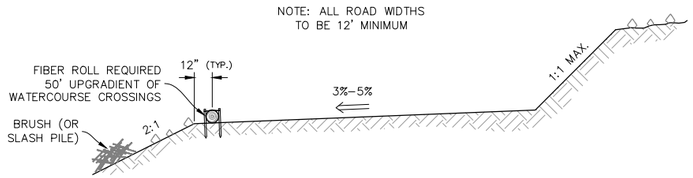
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HUMSUN 3, LLC
APN:217-253-001
SECTION VIEWS D-D - G-G

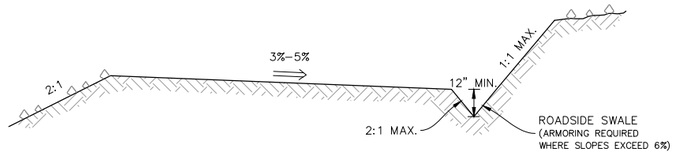
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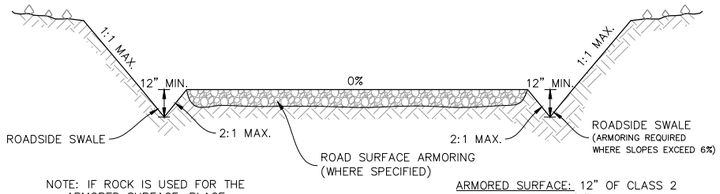
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OUTSLOPE SECTION



INSLOPE SECTION



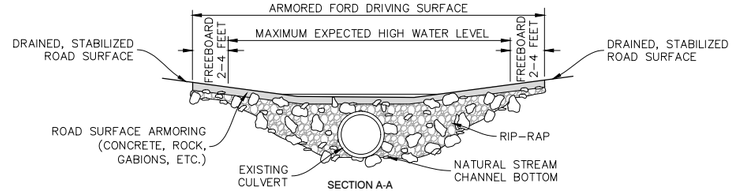
NOTE: IF ROCK IS USED FOR THE ARMORED SURFACE, PLACE GEOTEXTILE FABRIC AMOCO 2002, OR EQUAL PRIOR TO ROCK INSTALLATION.

ARMORED SURFACE: 12" OF CLASS 2 AGGREGATE BASE (3" MINUS, WELL GRADED AND LESS THAN 5% CLAYS)

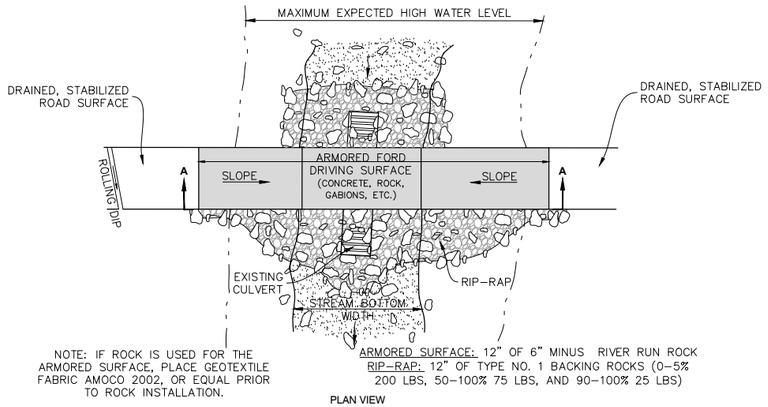
THRU CUT SECTION
(WITH OPTIONAL ROADSIDE SWALES)

TYPICAL ROAD SECTIONS

N.T.S.



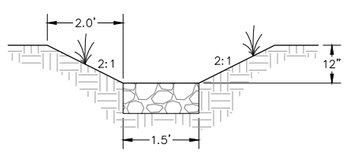
SECTION A-A



PLAN VIEW

MODIFIED LOW-WATER FORD / STREAM CROSSING

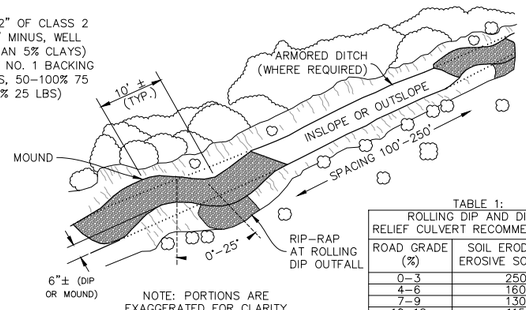
N.T.S.



DRAINAGE DITCH DETAIL

N.T.S.

ARMORED SURFACE: 12" OF CLASS 2 AGGREGATE BASE (3" MINUS, WELL GRADED AND LESS THAN 5% CLAYS)
RIP–RAP: 12" OF TYPE NO. 1 BACKING ROCKS (0–5% 200 LBS, 50–100% 75 LBS, AND 90–100% 25 LBS)



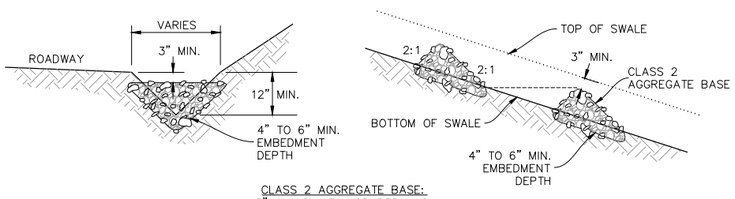
NOTE: PORTIONS ARE EXAGGERATED FOR CLARITY

TABLE 1:
ROLLING DIP AND DITCH RELIEF CULVERT RECOMMENDATIONS

ROAD GRADE (%)	SOIL ERODIBILITY EROSIVE SOILS (FT)
0–3	250
4–6	160
7–9	130
10–12	115
12+	100

ROLLING DIP DETAIL

N.T.S.



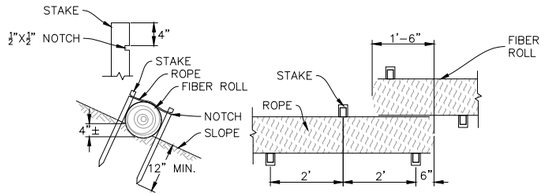
ELEVATION VIEW

CLASS 2 AGGREGATE BASE:
3" MINUS, WELL GRADED AND LESS THAN 5% CLAYS

CHECK DAM SPACING

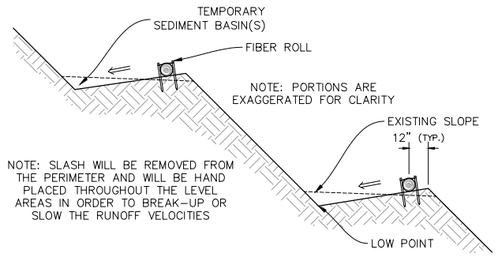
CHECK DAM DETAIL

N.T.S.



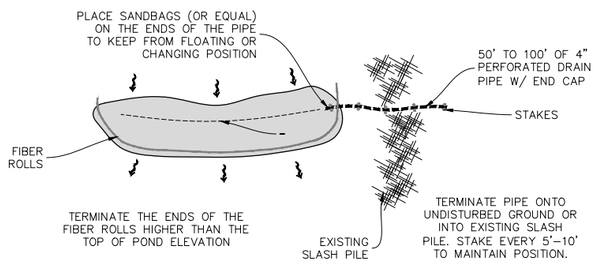
FIBER ROLL DETAIL

N.T.S.



NOTE: SLASH WILL BE REMOVED FROM THE PERIMETER AND WILL BE HAND PLACED THROUGHOUT THE LEVEL AREAS IN ORDER TO BREAK–UP OR SLOW THE RUNOFF VELOCITIES

ELEVATION VIEW



PLAN VIEW

TEMPORARY SEDIMENT BASIN DETAIL

N.T.S.

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REVISIONS
DATE

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CONSULTING GROUP, INC.
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HUMSUN 3, LLC
APN:217-253-001
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HUMSUN, LLC.

CONCEPTUAL GRADING PLAN

APN: 217-253-001

CONSTRUCTION SITE STORM WATER SOIL LOSS & POLLUTION PREVENTION PLAN (SLPPP)

ENGINEER'S DECLARATION

THIS SLPPP WAS PREPARED BY ME OR UNDER MY DIRECTION AND IS BASED UPON CURRENT KNOWLEDGE OF AVAILABLE CONSTRUCTION SITE BEST MANAGEMENT PRACTICES (BMPS) FOR EROSION CONTROL, SEDIMENT CONTROL, AND POLLUTION PREVENTION.

PRAJ O. WHITE, PE #C65025

DATED:

GENERAL INFORMATION AND REQUIREMENTS

1. EROSION CONTROL, SEDIMENT CONTROL, AND POLLUTION PREVENTION MEASURES SHALL BE INSTALLED ACCORDING TO THE REQUIREMENTS OF THE CONSTRUCTION SITE EROSION CONTROL ORDINANCE.
2. FOR PURPOSES OF THIS SLPPP, THE SITE CONTRACTOR IS ASSUMED TO BE THE LANDOWNER'S REPRESENTATIVE AND THE ENTITY RESPONSIBLE FOR IMPLEMENTATION OF ALL BMPS.
3. THE SITE CONTRACTOR OWNER SHALL INSPECT ALL EROSION AND SEDIMENT CONTROL BMPS FOLLOWING EACH SIGNIFICANT RAINFALL EVENT (AT A MINIMUM) TO VERIFY THAT ALL MEASURES ARE IN PROPER WORKING ORDER.
4. IN THE EVENT THAT ANY EROSION OR SEDIMENT CONTROL BMP FAILS, THE SITE CONTRACTOR IS RESPONSIBLE FOR IMMEDIATELY REPORTING SUCH A FAILURE TO THE ENGINEER. THE ENGINEER SHALL ADVISE THE SITE CONTRACTOR OF NECESSARY REMEDIAL ACTIONS, AND THE SITE CONTRACTOR SHALL CORRECT THE SITUATION.

EROSION CONTROL BMPS

PROJECT SCHEDULING:

1. SITE GRADING WORK AND OTHER LAND DISTURBING ACTIVITIES SHOULD BE SCHEDULED SO AS TO MINIMIZE THE AMOUNT OF SOIL EXPOSURE AND THE DURATION OF SOIL EXPOSURE TO WIND, RAIN AND VEHICLE TRACKING.
2. SITE CLEARING, GRADING, EXCAVATION, FOUNDATION WORK AND UTILITY INSTALLATION SHOULD BE SEQUENCED SUCH THAT THE AMOUNT OF SOIL EXPOSED TO WIND, RAIN AND VEHICLE TRACKING IS MINIMIZED AT ALL TIMES.
3. ALL GRADING WORK SHALL OCCUR BETWEEN APRIL 15TH AND OCTOBER 15TH. ALL OTHER LAND DISTURBING ACTIVITIES SHOULD BE MINIMIZED OUTSIDE OF THESE DATES.
4. UNLESS OTHERWISE NOTED, ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IN PLACE PRIOR TO OCTOBER 15TH AND/OR PRIOR TO ANY RAIN EVENT WITH A 72-HOUR FORECAST OF 40% CHANCE OR GREATER. THE SITE CONTRACTOR SHALL BE RESPONSIBLE FOR MONITORING DAILY FORECASTS FOR RAINFALL AS NECESSARY TO COMPLY WITH THIS PROVISION.
5. ALL SOIL STABILIZATION MEASURES INVOLVING THE INSTALLATION OF PHYSICAL DEVICES OR THE PLANTING OF VEGETATION SHALL BE INSTALLED IN ADVANCE OF PREDICTED OR PROBABLE RAINFALL EVENTS AS NECESSARY FOR THOSE MEASURES TO BE EFFECTIVE.

HYDRO-MULCHING / HYDRO-SEEDING:

1. HYDRO-MULCHING AND/OR HYDRO-SEEDING SHOULD BE USED ON DISTURBED AREAS TO PROMOTE SOIL PROTECTION AND RAPID PLANT GROWTH.
2. ALL EXPOSED AREAS SHALL BE HYDRO-MULCHED, HYDRO-SEEDED OR OTHERWISE LANDSCAPED PRIOR TO OCTOBER 15TH.
3. MULCH AND SEED MIXTURES INCLUDE, BUT ARE NOT LIMITED TO WET SLURRIES OF SEED, MULCH FIBER, FERTILIZER AND WATER. ACCEPTABLE MULCH FIBERS INCLUDE: VEGETABLE FIBERS, WOOD BARK CHIPS, HYDRAULIC MULCHES FROM RECYCLED PAPER, HYDRAULIC MULCHES FROM WOOD FIBER AND HYDRAULIC BONDED FIBER MATRICES.
4. ALL MULCH OR SEED MIXTURES SHALL BE APPLIED SUCH THAT COVERAGE IS CONSISTENT, DEEP ENOUGH TO HOLD SEEDS IN PLACE AND TO RETAIN MOISTURE, AND AS OTHERWISE SPECIFIED BY THE MANUFACTURER.
5. ON STEEP SLOPES AND SLOPES SUSCEPTIBLE TO WIND, MULCH AND SEED MIXTURES SHOULD BE HYDRAULICALLY APPLIED OR OTHERWISE APPROPRIATELY ANCHORED.
6. TO PREVENT DISPLACEMENT BY WIND, HYDRAULIC FIBER MULCHES AND/OR TACKIFYING AGENTS MAY BE USED.
7. MULCH AND SEED MIXTURES SHALL BE APPLIED TO ALL EXPOSED AREAS AT LEAST 24-48 HOURS BEFORE EROSION PROTECTION IS NEEDED, OR AS OTHERWISE SPECIFIED BY THE MANUFACTURER.

PRESERVATION OF EXISTING VEGETATION:

1. EXISTING VEGETATION SHOULD BE PRESERVED FOR EROSION AND SEDIMENT CONTROL WHENEVER AND WHEREVER POSSIBLE.
2. AREAS NOT TO BE DISTURBED SHALL BE CLEARLY MARKED AND/OR FENCED PRIOR TO THE COMMENCEMENT OF SOIL-DISTURBING ACTIVITIES, AND ALL CONTRACTORS ON-SITE SHALL BE NOTIFIED OF THESE AREAS.

SEDIMENT CONTROL BMPS

FIBER ROLLS:

1. FIBER ROLLS SHALL BE INSTALLED AT ALL LOCATIONS INDICATED ON THE SLPPP, AND AT ANY OTHER LOCATION DEEMED NECESSARY BY THE SITE CONTRACTOR.
2. FIBER ROLLS SHOULD BE USED ALONG THE FACE OF EXPOSED SLOPES TO SHORTEN SLOPE LENGTH AND DECREASE FLOW VELOCITY; AT GRADE BREAKS WHERE SLOPES TRANSITION TO STEEPER SLOPES; ALONG STREAM BANKS TO ASSIST STABILIZATION; AND IN DRAINAGE SWALES TO SLOW FLOWS. ON 1:1 SLOPES PLACE FIBER ROLLS SPACED AT 10' INTERVALS PARALLEL TO SLOPE, ON 1.5:1 SLOPES PLACE FIBER ROLLS SPACED AT 15' INTERVALS PARALLEL TO SLOPE, AND ON 2:1 SLOPES PLACE FIBER ROLLS SPACED AT 20' INTERVALS PARALLEL TO SLOPE.
3. FIBER ROLLS SHALL CONSIST OF BIODEGRADABLE FIBERS STUFFED INTO A PHOTO-DEGRADABLE OPEN WEAVE NETTING. THEY SHALL BE DESIGNED TO ALLOW WATER TO PASS THROUGH THE FIBERS; TO TRAP SUSPENDED SEDIMENT; INCREASE FILTRATION RATES; AND TO SLOW RUNOFF.
4. FIBER ROLLS SHALL BE PLACED SUCH THAT THEY OVERLAP AND FOLLOW THE CONTOUR LINES OF THE SLOPE ON WHICH THEY ARE PLACED.
5. FIBER ROLLS SHALL BE INSPECTED PERIODICALLY THROUGHOUT THE COURSE OF CONSTRUCTION, ONCE AFTER EACH RAINFALL EVENT, AND ONCE EVERY 24 HOURS DURING EXTENDED RAINFALL EVENTS. ANY SPLIT, TORN, UNRAVELED OR SLUMPING FIBER ROLLS SHALL BE REPAIRED OR REPLACED IMMEDIATELY.

SILT FENCES: (IF NECESSARY)

1. SILT FENCES SHALL BE INSTALLED AT ANY LOCATION DEEMED NECESSARY BY THE SITE CONTRACTOR.
2. SILT FENCES SHOULD BE USED ALONG THE PERIMETER OF THE PROJECT SITE, ALONG STREAMS AND WATERCOURSES, AT THE BOTTOM OF EXPOSED SLOPES, AND AROUND TEMPORARY SOIL STOCKPILES TO ACT AS A FILTER AND TO SLOW THE FLOW OF SEDIMENT-LADEN RUNOFF. SILT FENCES SHALL NOT BE USED IN STREAMS, CHANNELS OR ON SLOPES.
3. SILT FENCES SHALL BE INSTALLED ALONG LEVEL CONTOURS, WITH THE BOTTOM EDGE OF THE FENCE BELOW GRADE, BACKFILLED, AND POINTING UPSLOPE.
4. THE LENGTH OF SLOPE DRAINING INTO A STRETCH OF SILT FENCING SHOULD BE NO GREATER THAN 100 FEET.
5. ANY SINGLE STRETCH OF SILT FENCING SHOULD BE LIMITED TO 500 FEET IN LENGTH. INDIVIDUAL SILT FENCE SEGMENTS SHOULD NOT BE CONNECTED.
6. THE LAST 6 FEET ON EITHER SIDE OF A SILT FENCE SHOULD BE ORIENTED UPSLOPE IN A "J" OR "L" SHAPE TO ALLOW FOR PONDING.
7. WHEN SEDIMENT BUILD-UP BEHIND A SILT FENCE REACHES ONE-THIRD OF FENCE HEIGHT, THE SEDIMENT SHALL BE REMOVED AND PLACED IN A LOCATION WHERE IT WILL NOT BE CONVEYED TO A WATERCOURSE OR STORMDRAIN SYSTEM.
8. SILT FENCES SHALL BE INSPECTED PERIODICALLY THROUGHOUT THE COURSE OF CONSTRUCTION, ONCE AFTER EACH RAINFALL EVENT, AND ONCE EVERY 24 HOURS DURING EXTENDED RAINFALL EVENTS. ANY UNDERCUT, SPLIT, TORN, OR SLUMPING FENCE SEGMENTS SHALL BE REPAIRED OR REPLACED IMMEDIATELY.

GRAVEL / SAND BAG BARRIERS: (IF NECESSARY)

1. GRAVEL AND/OR SAND BAG BARRIERS SHALL BE INSTALLED AT ANY LOCATION DEEMED NECESSARY BY THE SITE CONTRACTOR.
2. GRAVEL OR SAND BAGS SHOULD BE USED ALONG THE PERIMETER OF A CONSTRUCTION SITE OR PARALLEL TO ROADWAYS TO INTERCEPT AND SLOW THE FLOW OF SEDIMENT-LADEN WATER, AND TO KEEP SEDIMENT OFF OF PAVED AREAS. THEY MAY ALSO BE USED TO DIVERT RUNOFF FLOW, OR TO CREATE CHECK DAMS OR TEMPORARY SEDIMENT BASINS.
3. GRAVEL BAGS – NOT SAND BAGS – SHOULD BE USED NEAR STORM DRAIN INLETS TO FILTER WATER WITHOUT PREVENTING IT FROM ENTERING THE STORM DRAIN.
4. GRAVEL OR SAND BAGS SHOULD NOT BE USED TO DETAIN RUNOFF FLOWS WITH HIGH SEDIMENT CONCENTRATIONS.
5. GRAVEL OR SAND BAGS PLACED IN THE FLOW-LINE OF A CURB AND GUTTER SHOULD BE PLACED SUCH THAT THEY CREATE AN L OR J SHAPE FROM THE CURB POINTING UPSLOPE TO CAUSE A PONDING EFFECT.
6. GRAVEL AND SAND BAGS SHOULD NEVER BE PLACED ABOVE THE LEVEL OF A CURB.
7. WHEN SEDIMENT BUILD-UP BEHIND A GRAVEL OR SAND BAG BARRIER REACHES ONE-THIRD OF BARRIER HEIGHT, THE SEDIMENT SHALL BE REMOVED AND PLACED IN A LOCATION WHERE IT WILL NOT BE CONVEYED TO A WATERCOURSE OR STORMDRAIN SYSTEM.
8. GRAVEL AND SAND BAGS SHALL BE INSPECTED PERIODICALLY THROUGHOUT THE COURSE OF CONSTRUCTION, ONCE AFTER EACH RAINFALL EVENT, AND ONCE EVERY 24 HOURS DURING EXTENDED RAINFALL EVENTS. ANY SPLIT, TORN, WASHED OUT OR OTHERWISE DAMAGED BAGS SHOULD BE REPAIRED OR REPLACED IMMEDIATELY.

STORM DRAIN INLET PROTECTION:

1. STORM DRAIN INLET PROTECTION SHALL BE INSTALLED AT ALL LOCATIONS INDICATED ON THE SLPPP, AND AT ANY OTHER LOCATION DEEMED NECESSARY BY THE SITE CONTRACTOR.
2. ALL STORM DRAIN INLETS RECEIVING RUNOFF FROM THE PROJECT SITE SHOULD BE PROTECTED TO PREVENT SEDIMENT-LADEN SURFACE RUNOFF FROM ENTERING THE STORMDRAIN SYSTEM WITHOUT FIRST BEING FILTERED.
3. INLET PROTECTION MAY BE ACHIEVED BY MEANS OF FIBER ROLLS, SILT FENCES, AND/OR GRAVEL BAGS, BASED ON THE STRENGTH OF EXPECTED STORMFLOWS, AND ON EXPECTED AMOUNT OF FILTERING OR SETTLING REQUIRED TO PREVENT SEDIMENT TRANSPORT. DRAIN INLETS SHALL NOT BE COMPLETELY SURROUNDED WITH GRAVEL OR SAND BAGS.
4. ALL BARE GROUND AROUND EACH INLET SHALL BE STABILIZED, SMOOTH, COMPACT AND BROUGHT UP TO THE GRADE OF THE INLET.
5. ANY AMOUNT OF BUILT-UP SEDIMENT BEHIND AN INLET PROTECTION DEVICE SHALL BE REMOVED UPON DISCOVERY AND PLACED IN A LOCATION WHERE IT WILL NOT BE CONVEYED TO A WATERCOURSE OR STORMDRAIN SYSTEM.
6. ALL STORM DRAIN INLETS RECEIVING RUNOFF FROM THE PROJECT SITE SHALL BE INSPECTED PERIODICALLY THROUGHOUT THE COURSE OF CONSTRUCTION, ONCE AFTER EACH RAINFALL EVENT, AND ONCE EVERY 24 HOURS DURING EXTENDED RAINFALL EVENTS. ANY FAILED INLET PROTECTION MEASURES SHOULD BE REPAIRED, REPLACED, OR UPGRADED IMMEDIATELY.

DUST CONTROL:

1. DUST CONTROL MEASURES SHALL BE IMPLEMENTED AS NECESSARY TO PREVENT SOILS AND DUSTS FROM BEING TRANSPORTED BY WIND. DUST CONTROL MAY BE ACHIEVED BY CHEMICAL AND/OR STRUCTURAL MEANS.
2. CHEMICAL DUST CONTROL MEASURES INCLUDE APPLYING WATER, SALTS OR ORGANIC SPRAY-ON ADHESIVES TO EXPOSED AREAS. EXCESSIVE OR IMPROPER USE OF CHEMICAL DUST CONTROL MEASURERS MAY CAUSE UNWANTED NON-STORM WATER DISCHARGES, AND MUST THEREFORE BE AVOIDED.
3. STRUCTURAL DUST CONTROL MEASURES INCLUDE COVERING EXPOSED AREAS WITH BLANKETS, GEOTEXTILES OR TARPS. SUCH COVERINGS MUST BE PROPERLY ANCHORED TO RESIST HIGH WINDS.
4. DUST CONTROL MEASURES SHALL BE APPLIED TO ALL EXPOSED AREAS AND MATERIAL STOCKPILES DURING ALL PHASES OF CONSTRUCTION BETWEEN INITIAL GROUND DISTURBANCE AND THE COMPLETION OF PAVING, LANDSCAPING, AND SITE CLEANUP.
5. ALL AREAS AND MATERIAL STOCKPILES EXPOSED TO EXCESSIVE WINDS OR VEHICLE TRAFFIC SHOULD BE INSPECTED DAILY FOR ADEQUATE DUST CONTROL. ANY MEASURES DEEMED NECESSARY TO PROTECT SUCH AREAS FROM AIRBORNE DUST AND SOIL LOSS SHOULD BE IMPLEMENTED IMMEDIATELY.

CONSTRUCTION SITE ENTRANCE / EXIT:

1. A STABILIZED CONSTRUCTION SITE ENTRANCE / EXIT SHALL BE INSTALLED AT THE LOCATION INDICATED ON THE SLPPP, AND AT ANY OTHER LOCATION WHERE MUD OR DIRT CAN BE TRACKED ONTO PUBLIC ROADS, OR AS DEEMED NECESSARY BY THE SITE CONTRACTOR TO REDUCE OR ELIMINATE SEDIMENT BEING TRACKED ONTO PUBLIC ROADWAYS BY CONSTRUCTION VEHICLES.
2. ACCESS TO THE CONSTRUCTION SITE SHALL BE LIMITED TO THE DESIGNATED ENTRANCE / EXIT, SHALL BE CLEARLY MARKED AT ALL TIMES, AND ALL CONTRACTORS ON-SITE SHALL BE NOTIFIED OF SUCH DESIGNATED ACCESS.
3. IF A STABILIZED CONSTRUCTION SITE ENTRANCE / EXIT FAILS TO SUFFICIENTLY REDUCE OR ELIMINATE SEDIMENT BEING TRACKED ONTO PUBLIC ROADWAYS BY CONSTRUCTION VEHICLES, ADDITIONAL MEASURES, INCLUDING, BUT NOT LIMITED TO A TIRE WASH MAY BE NECESSARY.
4. ALL STABILIZED CONSTRUCTION ENTRANCES / EXITS SHALL BE INSPECTED PERIODICALLY THROUGHOUT THE COURSE OF CONSTRUCTION, ONCE AFTER EACH RAINFALL EVENT, AND ONCE EVERY 24 HOURS DURING EXTENDED RAINFALL EVENTS. ANY NECESSARY REPAIRS, UPGRADES, OR ADDITIONAL TOPPING MATERIALS SHALL BE APPLIED IMMEDIATELY.

LANDSCAPE MANAGEMENT:

1. LANDSCAPE MANAGEMENT MEASURES SHALL BE IMPLEMENTED AS NECESSARY TO REDUCE EROSION, DECREASE SEDIMENT RUNOFF, AND TO PREVENT THE DISCHARGE OF SEDIMENT INTO STORMDRAINS AND WATERCOURSES.
2. ALL LANDSCAPE-RELATED GRADING AND EXCAVATION SHALL BE SCHEDULED FOR DRY WEATHER.
3. ALL EXPOSED AREAS SHALL BE HYDRO-MULCHED, HYDRO-SEEDED OR OTHERWISE LANDSCAPED PRIOR TO OCTOBER 15TH.
4. NATIVE, NON-INVASIVE, DROUGHT-TOLERANT AND PEST-TOLERANT VEGETATION SHOULD BE USED WHENEVER POSSIBLE.
5. NON-TOXIC CHEMICALS SHOULD BE USED WHENEVER POSSIBLE. CHEMICAL USE SHOULD BE LIMITED TO THE MINIMUM AMOUNT NECESSARY.
6. ALL LANDSCAPING AND OTHER STOCKPILED MATERIALS SHALL BE STORED UNDER PROPERLY-ANCHORED TARPS OR OTHER COVERINGS AT ALL TIMES TO PROTECT THEM FROM EXPOSURE TO WIND AND RAIN.
7. ALL RE-VEGETATED AREAS SHALL BE INSPECTED PERIODICALLY THROUGHOUT THE COURSE OF CONSTRUCTION, AND ONCE AFTER EACH RAINFALL EVENT. ANY UNDER-ESTABLISHED AREAS SHOULD BE REPLANTED AS NECESSARY.

POLLUTION PREVENTION BMPS

SPILL PREVENTION AND CONTROL:

1. SPILL PREVENTION AND CONTROL MEASURES SHALL BE IMPLEMENTED AS NECESSARY TO PREVENT THE DISCHARGE OF HAZARDOUS AND NON-HAZARDOUS MATERIALS INTO SITE SOILS, STORM DRAINS, WATERCOURSES. HAZARDOUS AND NON-HAZARDOUS MATERIALS INCLUDE, BUT ARE NOT LIMITED TO FUELS, LUBRICANTS, PAINTS, SOLVENTS, CEMENT, MORTAR, HERBICIDES AND FERTILIZERS.
2. DESIGNATED STORAGE AREAS FOR ALL HAZARDOUS AND NON-HAZARDOUS MATERIALS SHALL BE PROVIDED ON-SITE AS INDICATED ON THE SLPP, AND ALL CONTRACTORS ON-SITE SHALL BE NOTIFIED OF SUCH AREAS.
3. ALL ON-SITE FLUID CONTAINERS SHALL BE LEAK-PROOF.
4. ANY FUELING AREAS (IF PRESENT) SHALL BE DESIGNATED BY THE SITE CONTRACTOR, SHALL BE LOCATED AWAY FROM STORMDRAINS AND WATERCOURSES, SHALL BE PROPERLY CONTAINED WITH BERMS, SANDBAGS OR OTHER APPROPRIATE BARRIERS, AND ALL CONTRACTORS ON-SITE SHALL BE NOTIFIED OF SUCH AREAS.
5. ANY CONTAINMENT FACILITIES FOR HAZARDOUS MATERIAL STORAGE (IF PRESENT) SHALL BE DESIGNATED BY THE SITE CONTRACTOR, SHALL BE LOCATED AWAY FROM STORMDRAINS AND WATERCOURSES, SHALL BE PROPERLY CONTAINED WITH BERMS, SANDBAGS OR OTHER APPROPRIATE BARRIERS, AND ALL CONTRACTORS ON-SITE SHALL BE NOTIFIED OF SUCH FACILITIES.
6. APPROPRIATE SPILL CONTROL PLANS AND CLEANUP MATERIALS FOR EACH FUEL AND CHEMICAL ON-SITE SHALL BE LOCATED NEAR MATERIAL STORAGE, USE AREAS AND FUELING AREAS. CONTROL PLANS AND CLEANUP MATERIALS SHALL BE UPDATED REGULARLY, BASED ON WHICH FUELS AND CHEMICALS ARE PRESENT AND IN USE ON-SITE.
7. WHEN A HAZARDOUS SPILL OCCURS, IMMEDIATELY NOTIFY THE STATE OFFICE OF EMERGENCY SERVICE (OES) AT 1.800.852.7550.

VEHICLE AND EQUIPMENT MAINTENANCE:

1. ALL MAJOR MAINTENANCE, FUELING AND WASHING OF CONSTRUCTION VEHICLES AND EQUIPMENT SHALL BE CONDUCTED OFF-SITE WHENEVER FEASIBLE.
2. ALL CONSTRUCTION VEHICLES AND EQUIPMENT SHALL BE REGULARLY MAINTAINED AND INSPECTED FOR DAMAGED HOSES, LEAKY GASKETS AND OTHER SERVICE PROBLEMS. ANY NECESSARY REPAIRS SHALL BE MADE IMMEDIATELY.
3. VEHICLE AND EQUIPMENT SERVICE AND STORAGE AREAS (IF PRESENT) SHALL BE DESIGNATED BY THE SITE CONTRACTOR, SHALL BE LOCATED AWAY FROM STORMDRAINS AND WATERCOURSES, SHALL BE PROPERLY CONTAINED WITH BERMS, SANDBAGS OR OTHER APPROPRIATE BARRIERS, AND ALL CONTRACTORS ON-SITE SHALL BE NOTIFIED OF SUCH AREAS.
4. ANY DRAINING OR REPLACING OF FLUIDS ON-SITE FOR CONSTRUCTION VEHICLES AND EQUIPMENT SHALL EMPLOY DRIP PANS, DRIP CLOTHS, AND OTHER APPROPRIATE EQUIPMENT AS NECESSARY TO COMPLETELY CONTAIN AND TO PROPERLY DISPOSE OF ALL SUCH FLUIDS.
5. VEHICLE AND EQUIPMENT SERVICE AND STORAGE AREAS (IF PRESENT) SHALL BE INSPECTED AT LEAST TWICE WEEKLY. ANY NECESSARY REPAIRS OR UPGRADES TO THESE AREAS OR THEIR ASSOCIATED CONTAINMENT BARRIERS SHALL BE MADE IMMEDIATELY.
6. CONSTRUCTION VEHICLES AND EQUIPMENT SHALL BE WASHED AT COMMERCIAL WASHING FACILITIES WHENEVER POSSIBLE. ANY NECESSARY ON-SITE VEHICLE AND EQUIPMENT WASHING SHALL BE CONDUCTED AT THE DESIGNATED CONCRETE WASHOUT FACILITY, OR OTHER APPROPRIATELY DESIGNATED AND CONTAINED FACILITIES. SOAPS AND CHEMICALS SHALL NOT BE USED FOR SUCH PURPOSES, AND ALL ASSOCIATED RUNOFF SHALL BE DIRECTED TO AREAS WHERE IT WILL BE CONTAINED AND PROPERLY DISPOSED OF, OR WHERE IT WILL SAFELY INFILTRATE INTO THE GROUND.

CONCRETE AND CEMENT DISPOSAL:

1. CONCRETE AND CEMENT DISPOSAL MEASURES SHALL BE IMPLEMENTED AS NECESSARY TO PREVENT THE DISCHARGE OF CEMENTOUS MATERIALS INTO STORM DRAINS AND WATERCOURSES.
2. A DESIGNATED CONCRETE WASHOUT FACILITY PER CALTRANS 2006 STANDARD PLAN T59 SHALL BE PROVIDED AS INDICATED ON THE SLPPP, SHALL BE CLEARLY MARKED AT ALL TIMES, AND ALL CONTRACTORS ON-SITE SHALL BE NOTIFIED OF SUCH A FACILITY.
3. THE DESIGNATED CONCRETE WASHOUT FACILITY SHALL BE SIZED APPROPRIATELY TO CONTAIN THE MAXIMUM AMOUNT OF EXCESS CONCRETE AND WASH-WATER TO BE GENERATED.
4. EQUIPMENT EXPOSED TO CONCRETE AND OTHER CEMENTOUS MATERIALS ON-SITE SHALL ONLY BE WASHED IN THE DESIGNATED CONCRETE WASHOUT FACILITY.
5. CONCRETE WASHOUT FACILITIES SHALL BE SHALL BE INSPECTED AT LEAST TWICE WEEKLY OR MORE FREQUENTLY AS USE OF THE FACILITIES DICTATES. ANY NECESSARY REPAIRS OR UPGRADES TO SUCH FACILITIES SHALL BE MADE IMMEDIATELY.
6. AT THE END OF CONSTRUCTION ACTIVITIES, OR AS OTHERWISE APPROPRIATE DUE TO PREDICTED RAINFALL, CONCRETE WASHOUT FACILITIES SHALL BE DISMANTLED AND ANY RELATED FLUID OR SOLID WASTES SHALL BE PROPERLY DISPOSED OF.

WATER / RUNOFF CONSERVATION MEASURES:

1. ALL WATER EQUIPMENT SHALL BE KEPT IN GOOD WORKING CONDITION, AND SHALL BE INSPECTED AT LEAST TWICE WEEKLY. ANY LEAKY EQUIPMENT SHALL BE REPAIRED IMMEDIATELY.
2. IRRIGATION CONTROLLERS, IF ANY, SHALL BE SET ACCORDING TO SEASONAL NEEDS.
3. THE SITE CONTRACTOR SHALL AVOID CLEANING CONSTRUCTION AREAS WITH WATER, WHENEVER PRACTICAL, AND SHALL NOT USE SOAPS OR CHEMICALS FOR SUCH PURPOSES. ANY CONSTRUCTION WASH-WATER RUNOFF SHOULD BE DIRECTED TO AREAS WHERE IT WILL BE CONTAINED AND PROPERLY DISPOSED OF, OR WHERE IT WILL SAFELY INFILTRATE INTO THE GROUND.

DRAWN BY | REVISIONS | DATE

NORTHPOINT CONSULTING GROUP, INC.
1117 Samoa Blvd., Arcata, CA 95521

HUMSUN 3, LLC
APN:217-253-001
EROSION CONTROL NOTES

PROJ. MGR.:
DRAWN BY:
DATE: 9/25/2024
SCALE: AS SHOWN

SHEET
G5
24-001

September 25, 2024 - 11:00 Dwg Name: P:\HumSun Ranch, LLC - HumSun Ranch - 24-001\CAD\Production Detailing\HumSun - Preliminary Grading Detailing.dwg Updated By: tomMcdaughlinET

Appendix 1C

Cultivation and Operation Manual

HUMSUN 3, LLC
APN: 217-253-001
APPLICATION PLN-12856-CUP

CULTIVATION AND OPERATIONS MANUAL
HUMBOLDT COUNTY, CA

COMMERCIAL CANNABIS
CULTIVATION FACILITIES

PREPARED FOR:

UPDATED September 2024

Commercial Cannabis Cultivation Facilities
APN: 217-253-001

Lead Agency:

Humboldt County Planning Department
3015 H Street
Eureka, CA 95501

Prepared By:

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HumSun 3, LLC
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Updated September 2024

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1. PROJECT SUMMARY

1.1. PROJECT OBJECTIVE

HumSun 3, LLC ("Applicant") is applying for a Conditional Use Permit on one legal parcel comprised of Assessor Parcel Numbers (APN) 217-051-001, 217-052-001, 217-053-002, 217-055-002, 217-056-001, 217-061-001, 217-062-003, 217-213-003, 217-214-001, and 217-253-001 (Notice of Merger Record No. PLN-2018-010363) through the County of Humboldt's Commercial Medical Marijuana Land Use Ordinance (CMMLUO) also known as "Ordinance 1.0" in Blocksburg, unincorporated Humboldt County, California.

The Applicant is proposing to permit 3.1 acres (134,850 square feet [sq ft]) of mixed light cultivation area in approximately 38 greenhouses that would be approximately 30 ft. in width and a range of 70 ft. to 145 ft. in length. The project proposal includes the development of ancillary structures for cultivation activities, including a 60' x 100' dry barn for drying and curing from the summer to fall season and could be shared by the nursery from late winter to early spring, and a 32' x 40' commercial building for processing product grown onsite. The 32' x 40' commercial processing building would include an ADA-compliant restroom to be used by employees.

Energy use would require a proposed electrical upgrade from PG&E and roof-mounted solar on the proposed buildings. While waiting for the PG&E upgrade and prior to build-out of the full mixed-light greenhouses, the Applicant proposes to cultivate the 3.1 acres using light deprivation or outdoor cultivation techniques, which would not require artificial lighting for cultivation.

Water for the project will be sourced from three (3) permitted and non-diversionary onsite groundwater wells and another groundwater well drilled in the future, if deemed to be non-diversionary. The three existing wells, Cow Knoll, Jelly Bean, and Honey well would be pumped using existing solar on the well and gravity fed to proposed water storage tanks for a total of 250,000 gallons. There would be a maximum number of 18 employees during peak operations, with 8 employees during all other times. An associated new onsite wastewater treatment system would provide sufficient treatment for employees.

The Applicant aims to become fully compliant with State and Local cultivation regulations.

1.2. SITE DESCRIPTION

The project site is located on one legal parcel that includes APN 217-051-001, 217-052-001, 217-053-002, 217-055-002, 217-056-001, 217-061-001, 217-062-003, 217-213-003, 217-214-001, and 217-253-001 in the Blocksburg area, on the west side of Alderpoint Rd, on the property known as 30855 Alderpoint Road in unincorporated Humboldt County. The notice of merger was completed through the Humboldt County Planning Department to merge the property into the current legal parcel shape (Record No. PLN-2018-010363). All proposed development would occur within the one legal parcel.

The 1,887-acre parcel has undulating topography, with slopes between 0% and upwards of 30%. All development is slated for slopes of less than 15%. The parcel contains grassland, oak woodlands, early mature and mid mature Douglas fir, and riparian habitats. The project site's historic uses include agricultural, cattle grazing, recreation, residential and timber harvesting operations. Current uses include grazing, residential, and timber harvesting operations. The project parcel is an actively managed timber operation under Cemetery Road Timber Harvest Plan (Record 1-23-00157-HUM) and was logged in 2024. The parcel is under a Williamson Act Contract as an agriculture preserve in which proposed cultivation operations would be considered compatible use. The cultivation area and approximately 500 acres of the parcel are in the Upper Larabee Creek HUC-12 subwatershed within

the greater Lower Eel planning watershed, and the remaining 500 acres of the parcel is in the Basin Creek-Eel River HUC-12 subwatershed within the greater Middle Main Eel planning watershed.

The subject property has an existing residence, a permitted septic and leach field system, four (4) permitted wells, a 5000-gallon hard-sided water tank, and two barns to support the current cattle operations. Cow Knoll, Jelly Bean, and Honey Well would be used for proposed cultivation and employee use whereas the Meadow Well would not be used for cannabis cultivation purposes. An additional well is proposed for cultivation if the well is deemed non-diversionary.

There are at least 58.4 acres of prime agricultural soil located on the legal parcel, including on the field proposed for cultivation development (Appendix A – Site Plans). The proposed 3.1 acres of cultivation area will account for approximately 5% of the mapped prime agricultural soils.

1.3. Land Use

The property is zoned Agriculture Exclusive (AE-B-5(160)) and Timber Production Zone (TPZ) and has a General Plan Use Designation of Agricultural Grazing (AG) and Residential Agriculture (RA20). Proposed cultivation would occur in the AE zone and not in the TPZ. Surrounding properties are zoned Special Building Site Combining District of Forest Recreation (FR-B-5(40)), Agriculture Exclusive (AE-B-5(160)), and Timber Production Zone (TPZ). Surrounding land use designations adjacent to the property are Agricultural Grazing, and Residential Agriculture (RA40, RA20).

1.4. State and Local Compliance

1.4.1. Department of Cannabis Control – CalCannabis

HumSun 3, LLC will obtain a Commercial Cannabis Activity license from the Department of Cannabis Control once local authorization has been obtained.

1.4.2. State Water Resources Control Board – Water Rights

No diversionary water source is proposed for this project. Water is proposed to be sourced from a combination of three (3) existing permitted wells: Jully Bean (WCR2017-001709), Cow Knoll (WCR2017-001697), and Honey (WCR2017-001712). An additional well is proposed as will be used for the cultivation if the well is deemed non-diversionary.

1.4.3. State Water Resources Control Board and North Coast Regional Water Quality Control Board – Water Quality

The applicant will enroll for coverage as a Tier 2, Low Risk under the SWRCB General Order WQ 2019-0001-DWQ *General Waste Discharge Requirements and Waiver of Waste Discharge Requirements for Dischargers of Waste Associated with Cannabis Cultivation Activities* Order. The purpose of the SWRCB Order is to implement the requirements for waste discharges associated with cannabis cultivation as described in SWRCB's *Cannabis Cultivation Policy – Principles and Guidelines for Cannabis Cultivation*. Prior to the commencement of cultivation operations, a Site Management Plan will be developed for the property to describe how the discharger is complying with the applicable Best Practicable Treatment or Control (BPTC) Measures listed in Attachment A of the Order/Policy.

The Tier 2, Low Risk discharger status reflects the proposed operations will disturb more than one acre. The applicant's proposal will keep all cultivation activities out of riparian and wetland setbacks to obtain Low Risk status with SWRCB.

1.4.4. Humboldt County Building Department

Upon project approval, all necessary building permits will be obtained from the Humboldt County Building Department for all existing/proposed structures and supporting infrastructure.

1.4.5. CAL FIRE AND FIRE PROTECTION

The subject property is located within a State Responsibility Area and Alderpoint Volunteer Fire Company for fire protection. Proposed improvements include management of trees and vegetation around existing structures to maintain the required 100-foot defensible space. All structures on the property meet the 30-foot SRA setback requirement from property lines. The project proposes a designated emergency turnaround and one (1) 5,000-gallon water tank dedicated to SRA emergency response (Appendix A – Site Plans). If needed, risers to SRA specifications will be installed for firefighting purposes.

1.4.6. CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE

A Lake and Streambed Alteration Agreement (LSAA) was issued for the original 12-acre project under 1600-2020-0389-R1. The LSAA Notification was prepared by Mother Earth Engineering (February 13, 2020) and included jurisdictional items across the entire subject parcel. In total there are 23 jurisdictional items in the LSAA, all of which include the maintenance, replacement, or installation of stream-crossing culverts on the existing ranch roads. Some of the stream crossings are located to access the existing wells, and proposed water tanks, located on the ridge. These crossings would be upgraded and maintained per the existing LSAA; they would not be impacted by the proposed project.

1.4.7. CULTURAL RESOURCES

If buried archaeological or historical resources are encountered during construction or cultivation activities, the applicant or contractor shall call all work in the immediate area to halt temporarily, and a qualified archaeologist is to be contacted to evaluate the materials. Prehistoric materials may include obsidian or chert flakes, tools, locally darkened midden soils, groundstone artifacts, dietary bone, and human burials. If human burial is found during construction, state law requires that the County Coroner be contacted immediately. If the remains are found to be those of a Native American, the California Native American Heritage Commission will then be contacted by the coroner to determine appropriate treatment of the remains. The applicant is ultimately responsible for ensuring compliance with this condition.

2. CULTIVATION AND PROCESSING

2.1. PROPAGATION AND INITIAL TRANSPLANT

The applicants propose to propagate juvenile plants on-site from seeds and mother plants or retain clones from an offsite-licensed facility. On-site ancillary nursery propagation would not exceed 10% of the permitted cultivation acreage. In the spring months, when the proposed 60’ x 100’ dry barn is not in use for the drying and curing operations, nursery operations are proposed to occur. The mother plants will remain in the vegetative stage solely for propagation. Cuttings will be sampled from the mother plants and rooted into a growing medium (e.g. oasis cubes) to produce clones. When the clones reach a juvenile state, they will then be transferred to the 3.1-acre cultivation area. The juvenile plants will be irrigated using hand watering methods, and after 1-3 weeks they will continue their vegetative cycle. After 2-4 weeks juvenile plants will be dispersed throughout the cultivation area and planted into the raised beds in the flowering greenhouses.

For the artificial lighting used to assist with the enhancement of plant growth, the lights will be set on timers that activate ½ hour before sunset daily. Prior to sunset each day, blackout tarps are automatically or manually pulled over the mixed light greenhouses and nursery to prevent all light from escaping. The blackout tarps are constructed out of 2 ply-10-millimeter plastic with internal

threading for shear strength. All lighting for the proposed project would be designed and located so that light would be confined to the property and there would be no spillover to adjacent properties.

2.2. Mixed Light Cultivation Plan

The proposed cultivation total is 3.1 acres and water use is approximately 1,720,250 gallons per year based on irrigation and employee water use estimates. Mixed light cultivation is proposed to occur in 38 greenhouses, measured 30' in width and ranging from 70' to 150' in length. The greenhouses would consist of heavy gage steel tubing covered with a woven poly translucent opaque tarp or corrugated plastic. Greenhouses are proposed to be ventilated by intake and exhaust fans. Cultivation would occur within raised beds, in soil bags, or directly in the ground. The monthly Cultivation Schedule in Appendix B details the cultivation activities associated with the mixed light cultivation operation for a typical year and is expected to include two to three harvests per year.

Greenhouses would be fitted with automated blackout covers to ensure that mixed-light cultivation would not disturb wildlife or neighboring properties. Blackout covers would be deployed 30 minutes before sunset and 30 minutes after sunrise.

2.3. Irrigation Plan and Schedule

An estimated 1,575,000 gallons of water is expected to irrigate the 3.1 acres of cultivation area (12 gal/sq ft). The monthly Cultivation Schedule in *Table 1* (Section 3.1) details the irrigation activities associated with all cultivation.

2.4. Processing (Harvesting, Drying and Trimming)

Drying and curing will occur in the summer and fall months in the proposed 60'x100' dry barn building. This building would be shared by the nursery in the late winter/early spring. All processing (trimming and packaging) will occur off-site until the 32'x40' commercial processing building is constructed.

Plants that are ready for harvest will have their flowering branches removed and placed in plastic containers and transported to the 60'x100' building where they will be suspended and left to dry for approximately one week. The dried flowers will be bucked into manageable buds and transported to an off-site processing facility until the 32'x40' processing building is constructed.

2.5. Employee Plan

The applicant is an "agricultural employer" as defined in the Alatorre-Zenovich-Dunlap-Berman Agricultural Labor Relations Act of 1975 (Part 3.5 of Division 2 of the Labor Code), and complies with all applicable federal, state and local laws and regulations governing California Agricultural Employers.

During construction, it is estimated that approximately 10 - 15 personnel would be needed.

2.5.1. Job Descriptions And Employee Summary

- *Agent in Charge*: Responsible for business oversight and management. Responsibilities include, but are not limited to: inventory and tracking, personnel management, record keeping, budget, and liaison with State and County inspectors as needed. This is a part-time to full-time, seasonal position.
- *Lead Cultivator*: Oversight and management of the day-to-day cultivation of commercial cannabis. Responsibilities include but are not limited to: plant propagation and transplant, soil management, irrigation, fertilization, pesticide management, and harvest activities. This is a full-time, year-round position.
- *Assistant Cultivator / Processing Manager*: Provides support to the *Lead Cultivator* in their day-to-day duties and takes the lead role during times when the *Lead Cultivator* may be

off site. Once processing activities commence, the *Assistant Cultivator* duties switch to oversight and management of processing the dried commercial cannabis. This is a full-time, seasonal position.

- *Seasonal Laborer*: Provides cultivation support, harvesting, drying support and processing of cannabis. This is a part-time to full-time, seasonal position.

2.5.2. Staffing Requirements

In addition to the *Agent in Charge*, *Lead Cultivator, and Assistant Cultivator*, up to five (5) full-time staff would be required for a total of eight (8) full-time staff. The project would require up to ten (10) seasonal labor positions for peak seasonal events (e.g., planting and harvesting) at regular intervals, typically between May through December to occur approximately four (4) months out of the year. The number of seasonal laborers varies based on the needs of the farm during the cultivation and harvest. During peak operational periods, the operation may require up to eighteen (18) employees.

2.5.3. Employee Training and Safety

On-site cultivation, harvesting and drying will be performed by employees trained on each aspect of the procedure including cultivation/harvesting techniques, use of pruning tools, and proper application/storage of pesticides and fertilizers. All cultivation staff will be provided with proper hand, eye, body and respiratory Personal Protective Equipment (PPE). Access to the on-site cultivation and drying facilities will be limited to authorized and trained staff. All employees will be trained in proper safety procedures including fire safety, use of PPE, proper hand washing guidelines, and emergency protocol. Contact information for the local fire department, Cal Fire, Humboldt County Sheriff and Poison Control as well as the Agent in Charge will be posted at the employee restroom. Each employee is provided with a written copy of emergency procedures and contact information. The material safety data sheets are kept on site and accessible to employees.

No manufacturing (volatile or non-volatile) is proposed in this application.

2.5.4. Employee Hydration and Sanitation

Drinking water will be sourced from the three existing wells on the property and available from the sink in the employee break room, restroom, and external taps/spigots. Using the standard 35 gallons per person per shift (Humboldt County Local Agency Management Program, 2017), the estimated total employee water use would be 145,250 gallons per year. This is a conservative estimate that considers all days of the year whereas work days would follow all applicable federal, state, and local laws and regulations governing California Agricultural Employers.

Employee drinking water and water use would be an estimated 67,760 gallons for eight (8) full-time employees during eight (8) months out of the year and 77,490 gallons for the maximum eighteen (18) employees on site during the peak season four (4) months out of the year.

Temporary portable toilets and handwashing stations will be used on site for the cultivation employees until the processing building is constructed. Cultivation employees will have access to anti-bacterial Liquid Soap and paper hand towels. Construction of a 32’ x 40’ commercial building for processing would include the construction of an ADA compliant restroom and a new Onsite Wastewater Treatment System used by employees. Restroom and handwashing units will be serviced at regular intervals by a licensed contractor. Work will occur at a distance no greater than 1,250 ft from the restroom facility.

2.5.5. On-Site Housing

The residential structure on the subject parcel is not part of this proposal and all employees will commute to the site. No additional housing is proposed.

2.5.6. Parking Plan

Parking is proposed to be located near the proposed dry barn and commercial processing building. A total of eighteen (18) parking spaces would be available, including a minimum of one (1) required ADA-parking spaces, or as required by the California Building Code (Appendix A).

2.6. Security Plan and Hours of Operation

2.6.1. Facility Security

The property is accessed through an entry gate that always remains locked. Cultivation facilities (greenhouses, storage sheds, drying facility) will only be accessible through the locked gate. Access to the area is limited to employees and approved personnel including agency staff, consultants, and distributors.

2.6.2. Hours of Operation

Activities associated with cultivation in the greenhouses (watering, transplanting, and harvesting) generally occur during daylight hours. All other activities such as harvesting and drying typically occur no earlier than 7 AM and extend no later than 8 PM.

3. ENVIRONMENT

3.1. Water Source, Storage, and Projected Use

Water use is estimated to be 1,720,250 gallons per year based on the irrigation demand (1,575,000 gallons per year) and annual employee water use (145,250 gallons per year). Irrigation and employee water use would be sourced from the three (3) non-diversionary permitted wells and one (1) proposed well if proven to be non-diversionary. The three existing wells, Cow Knoll, Jelly Bean, and Honey are located on the ridge at approximately 2,170 to 2,250 feet elevation within the legal parcel.

The proposed water storage is comprised of a total of 250,000-gallons in 5,000-gallon hard sided tanks. The well would be used in the winter and spring months to fill the 250,000 gallons of storage. The proposed water storage would supplement the use of the well for the cultivation season. The proposed storage is estimated to be 15% of the project demand. Refer to Section 2.3 for a summary of irrigation practices.

The table below outlines the estimated irrigation water usage for cultivation during a typical year. Variables such as weather conditions and specific cannabis strains will have a slight effect on water use.

The annual irrigation water demand is estimated to be approximately 1,575,000 gallons (12 gallons/sq ft). Table 1 outlines the estimated irrigation water usage for cultivation during a typical year. Variables such as weather conditions and specific cannabis strains will have a slight effect on water use.

Table 1: Estimated Annual Irrigation Water Usage (gallons)

Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
10,000	15,000	15,000	60,000	140,000	275,000	325,000	330,000	310,000	60,000	25,000	10,000	**1,575,000**

Drinking water will be sourced from the three existing wells on the property. Using the standard 35 gallons per person per shift (Humboldt County Local Agency Management Program, 2017), employee annual total water use is approximately 145,250 gallons per year: 67,760 gallons for eight (8) full-time employees during eight (8) months out of the year and 77,490 gallons for the maximum eighteen (18) employees on site during the peak season four (4) months out of the year.

3.1.1. Site Drainage, Runoff, and Erosion Control

The applicant will enroll with the State Water Resources Control Board (SWRCB) for coverage under the General Order. A Site Management Plan (SMP) for existing and proposed site conditions will be developed; the SMP will be updated to the proposed expansion and detail erosion control and sediment capture measures, as well as road maintenance and runoff activities.

3.1.2. Stormwater Management Plan

The proposed cultivation activities will take place in the existing flats on slopes less than 5%. Stormwater will be collected from new impervious surfaces, and conveyed to a designated bio-filtration swale. A Site Grading and Drainage Plan will address all proposed onsite grading and stormwater runoff for the development of the site (Appendix A).

Stormwater management for the remainder of the property will be addressed in the SMP, which will also include recommendations for road network maintenance. Existing and proposed structures are located over 50 feet from any watercourses, providing a sufficient buffer to prevent potential sediment or nutrient delivery.

3.1.3. Erosion Control

The SMP and forthcoming Site Grading and Drainage Plan will include erosion and sediment BPTCs designed to prevent, contain, and reduce sources of sediment. Additionally, the SMP will include site-specific corrective actions to ensure property maintenance and erosion control.

3.2. Watershed and Habitat Protection

All light from the nursery or from the cultivation areas shall be attenuated so that it does not create a new source of light or glare that could adversely impact local wildlife. Proposed activities would not exceed fifty (50) decibels from the nearest edge of habitat. In addition, adherence to the Site Management Plan will ensure that erosion control and sediment capture BPTC measures are in place to prohibit water quality degradation of the nearby river. Biological Resource Reports have been prepared for the site and have been included in the application.

3.3. Invasive Vegetative Species Control Plan

Once proposed cultivation activities commence, the cultivation area will be monitored for invasive species. If invasive species are located, hand tools (shovels, weed wrenches, trowels, or hand saws) may be used to remove them. The exact rate and method of invasive species removal will be determined based on the species identified. The areas of disturbance shall be surveyed and maintained twice each year, at a minimum, as part of the invasive species control plan.

The following is a partial list of websites to be used for proper identification and treatment:

1. https://calflora.org//
2. https://plants.usda.gov/java/
3. https://www.cal-ipc.org/
4. https://www.cal-ipc.org/solutions/
5. http://www.rareplants.cnps.org/

6. https://www.wildlife.ca.gov/Conservation/Plants#22064102-california-native-plant-information
7. http://ucjeps.berkeley.edu/
8. http://wetland-plants.usace.army.mil/nwpl_static/v33/home/home.html
9. https://www.fws.gov/invasives/partnerships.html

3.4. Materials Management Plan

3.4.1. Pest Management

The pest management practices to be used are as follows: clones and seeds are started with healthy pest free stock to help with clean pest free starts. Diatomaceous earth will be used in the early season and throughout the growing season. Predator nematodes will be applied periodically to the soil starting in the preseason to kill any larva and adult pests that live in the soil. Predator mites (Amblyseius fallacis, Amblyseius californicus, Amblyseius swirskii) will be used for mite control. Steinernema feltiae (beneficial nematodes) will be used on mothers and in the nurseries.

The applicant is intending to use the following pesticides (or similar): sulfur products, neem oil, other plant oils (e.g., cottonseed, clove), Green Clean, Dr. Zymes, Plant Therapy, Venerate, Regalia, and Grandevo.

3.4.2. Fertilizers, Nutrients & Soil Amendments

Fertilizers, nutrients, and soil amendments anticipated to be used include Earth Juice Rainbow Mix Pro Grow/Bloom, General Hydroponics Grow, gypsum, lime, dolomite, azomite, worm castings, alfalfa pellets, worm castings, compost, blood meal, bone meal, kelp, fish hydrolysate, feather meal, crab meal, and oyster shell. Pesticides anticipated to be used include biological controls, diatomaceous earth, sulfur products, neem oil, plant oils (e.g., cottonseed, clove), Green Cleaner, Dr. Zymes, Plant Therapy, Venerate, Regalia, and Grandevo, as needed. Other legal pesticides, herbicides, fertilizers, nutrients, and soil amendments similar to the above could also be used during operations. Pesticides and fertilizers would be applied directly to plants and would be applied over 675 ft from the nearest residence. The fertilizers and pesticides used by the project would primarily be stored in five-gallon containers and kept within a facility for containment.

3.4.3. Petroleum products & Solvents

Petroleum products, including lubricants, gasoline and diesel, are currently stored onsite to maintain existing residential and agricultural operations (e.g. to power tools, equipment, etc.). Petroleum products associated with the project would include gasoline and diesel stored in small-quantity sealed containers (e.g. 5-gallon gas cans). All petroleum products would be stored within secondary containment. The fertilizers and pesticides used by the project would primarily be in five-gallon containers and stored within the proposed facility for containment. Refueling of small equipment (e.g. weed whacker, tools, generator, etc.) would be conducted onsite over secondary containment and greater than 150 ft from any watercourses. Refueling of larger equipment (e.g., tractor or backhoe) would be conducted offsite at a properly licensed facility. Legal cleaning solvents (e.g., bleach) would also be stored and used onsite in the proposed buildings for general site husbandry.

3.4.4. Protocols for Proper Storage and Use of Fertilizers, Pesticides, and Other Regulated Products

Cultivation, harvesting, and drying shall be performed by employees trained on each aspect of the procedure, including cultivation, and harvesting techniques, the use of pruning tools, and proper application/storage of pesticides/ and fertilizers. All cultivation and processing staff are provided with proper hand, eye, body and respiratory Personal Protective Equipment (PPE). Access to the onsite

cultivation, drying and processing facilities are limited to authorized and trained staff. Mixing of fertilizers in small storage tanks is solely conducted in a designated area (to be determined) where the mix will not enter surface waters. For young plants, the mix is applied via watering wand and mature plants are fertigated at agronomic rates by drip emitters or hand watering methods. Spent soil is amended and reused as needed. The application of any agricultural chemical products will be conducted according to the manufacturer's recommendation.

Employees are trained in usage and handling procedures of associated equipment and cleaning procedures. Chemicals and hazardous materials are only used with equipment as recommended by manufacturers. Cleaning will occur regularly with instructions based on the manufacturer's recommendations. All cleaning materials will be put away and stored properly within secondary containment when not in use and hazardous containers will be properly disposed of. Additionally, if there are any spills on site, there will be a spill kit with sorbent pads that will be accessible.

On-site inventory is kept for all chemicals. Chemicals are used and stored based on manufacturer's recommendations and requirements. Any materials required for the use of chemicals will be provided to employees. The material safety data sheets (MSDS) are kept on site and accessible to employees.

All hazardous waste will be stored within secondary containment. Additionally, a log will be kept in order to keep the volume of hazardous waste accounted for. Fertilizers and pesticides are being stored in a separate location from petroleum products. The aforementioned products will be located within secondary containment in a storage shed. No rodenticides will be used on site. At the end of the season, any unused liquid products are stored in secondary containment and will be applied the following year. Before unused products are stored at the end of the season, an employee will take inventory on the volumes and products. Additionally, all waste will be properly disposed of off-site and the correct facility. All trash, empty product containers, and recycling are hauled off-site bi-weekly to nearest licensed waste management facility.

Appropriate BPTC measures are being utilized when storing, handling, mixing, applying, and disposing of all fertilizers, pesticides, herbicides, rodenticides, or any other hazardous materials. Each year an inventory is conducted prior to the beginning of the grow season and necessary products are delivered to the site as needed.

3.5. Soils Management Plan

The applicant is proposing to plant all cultivation in raised beds, soil bags, or directly in the ground within the greenhouse structures. The applicants will account for and keep records of annual and seasonal volumes of soil imported and exported on and off site. Any purchased soils will be reamended for use the following year. During the wet season, any soil piles will be located in a flat area outside of riparian setbacks and winterized, likely with a tarp underneath the pile and straw wattles located around the pile to prevent leachate from entering surface waters. Potential spent soil will be properly disposed of off-site at an appropriate facility.

3.6. Hazardous Waste Statement

There are no hazardous materials mapped onsite. A search of the EnviroSTOR database shows no GeoTracker Cleanup Programs on-site.

3.7. Energy Plan

Existing electrical services would initially power the facilities. The project would obtain an electrical service upgrade from Pacific Gas & Electric (PG&E) and roof-mounted solar power would be installed on the proposed buildings. Existing electrical service includes a 200-amp residential service, and a 1600-amp 3-phase PG&E upgrade is proposed for the mixed-light cultivation (exact load calculations

to be designed by an electrical engineer). Prior to build-out of the full mixed-light greenhouses, light deprivation or outdoor cultivation techniques would be used, which would not require lighting for cultivation. Use of an on-site generator would be limited to backup and outage events and would follow all guidelines set by Humboldt County and the State of California. An on-site generator would be kept for backup purposes only; use of any on-site generators would be limited to power outage events and would follow all guidelines set by Humboldt County and the State of California.

3.8. Waste Management

3.8.1. Cultivation

Drip irrigation methods minimize potential for overwatering plants and subsequent runoff. Waste generated from employee activities would be stored in wildlife-proof garbage cans. Organic cultivation-related waste, including root balls, branches, and leaves will be hauled off site to a green waste management facility as needed. Trash and recycling from cannabis operations, including empty soil or fertilizer bags, liquid fertilizer bottles, cultivation supplies, etc., will be taken to the nearest waste management facility as needed, likely one every two weeks. The nearest waste management facility is the Redway Transfer Station.

3.8.2. Sewage Disposal Plan

A temporary portable toilet and handwashing station will be provided onsite and serviced by the provider until the proposed processing facility is constructed and the associated onsite wastewater treatment is installed. Cultivation employees will have access to anti-bacterial liquid soap and paper hand towels. A private onsite wastewater treatment system would be constructed for a proposed 18 employees. Work will occur at a distance no greater than 1,250 ft from the restroom facility.

A private onsite wastewater treatment system would be constructed for a proposed 18 employees. The proposed processing facility will be required to adhere to California Building Code standards that include access and restroom facilities that meet ADA standards. A Septic Suitability Memorandum has been prepared by NorthPoint Consulting Group, Inc (August 2024). Sufficient treatment would be provided for up to 20 employees, which would support more than the maximum 18 employees at any one time.

4. PRODUCT MANAGEMENT

4.1. Product Testing and Labeling

Samples will be selected from individual harvested cannabis strains and tested by a licensed third-party lab in accordance with State and local standards. The finished product is labeled and will include tracking IDs provided by the California Cannabis Track-and-Trace (CCTT) METRC system.

4.2. Product Inventory and Tracking

The applicants will follow all regulations and requirements set by the CCTT-METRC system. After approval of state licenses related to the proposed cultivation, the applicants will request credentials and order unique identifiers (UIDs) which will be assigned to each immature lot, flowering plant, and distinct cannabis product.

4.3. Transportation and Distribution

Transportation will be handled by a licensed transporter/distributor in accordance with State and Local regulations. All merchantable products will be distributed through licensed commercial cannabis dispensaries. The CCTT-METRC system will be used for all transactions with distributors or transporters.

APPENDIX A: SITE PLANS

HUMSUN 3, LLC
CONDITIONAL USE PERMIT
PRIMARY APN: 217-253-001



VICINITY MAP
NOT TO SCALE

DIRECTIONS TO SITE:

FROM EUREKA, CA

- HEAD SOUTH ON US-101 S (APPROX. 19.9 MILES)
- TAKE EXIT 685 FOR CA-36 E (APPROX. 0.3 MILES)
- TURN LEFT ONTO CA-36 E (APPROX. 23.9 MILES)
- TURN RIGHT ONTO ALDERPOINT RD. (APPROX. 16.4 MILES)
- DESTINATION ON THE RIGHT

PROJECT DESCRIPTION:

HUMSUN 3, LLC IS APPLYING FOR A CONDITIONAL USE PERMIT ON KEY APN: 217-253-001 THROUGH THE COUNTY OF HUMBOLDT'S COMMERCIAL MEDICAL MARIJUANA LAND USE ORDINANCE (CMMLUO). THE APPLICANT SEEKS TO PERMIT 3.1 ACRES (134,850 SQ. FT.) OF MIXED LIGHT CULTIVATION AREA IN GREENHOUSES. CULTIVATION IS PROPOSED IN APPROXIMATELY 38 GREENHOUSES, 30 FEET IN WIDTH, RANGING FROM 70 FEET TO 145 FEET IN LENGTH.

THE PROJECT PROPOSAL INCLUDES THE DEVELOPMENT OF ANCILLARY STRUCTURES FOR CULTIVATION ACTIVITIES, INCLUDING A 60' X 100' BUILDING FOR DUAL USE OF ANCILLARY NURSERY,DRYING, STORAGE, ANDCURING, A 32' X 40' PROCESSING BUILDING FOR ONSITE TRIMMING, WATER INFRASTRUCTURE, AND STORAGE FOR THE EXISTING WELLS AND A PROPOSED NON-DIVERSIONARY WELL.

ENERGY WILL BE SOURCED THROUGH THE EXISTING PG&E SERVICE AND A PROPOSED SOLAR SYSTEM. THE MIXED LIGHT GREENHOUSES WILL REQUIRE AN UPGRADE TO THE EXISTING PG&E SERVICE. WHILE WAITING FOR THE PG&E UPGRADE, HUMSUN 3, LLC PROPOSES TO CULTIVATE THE 3.1 ACRES USING A COMBINATION OF LIGHT DEPRIVATION GREENHOUSES OR OUTDOOR CULTIVATION WITH THE EXISTING PG&E SERVICE AND PROPOSED SOLAR SYSTEM.

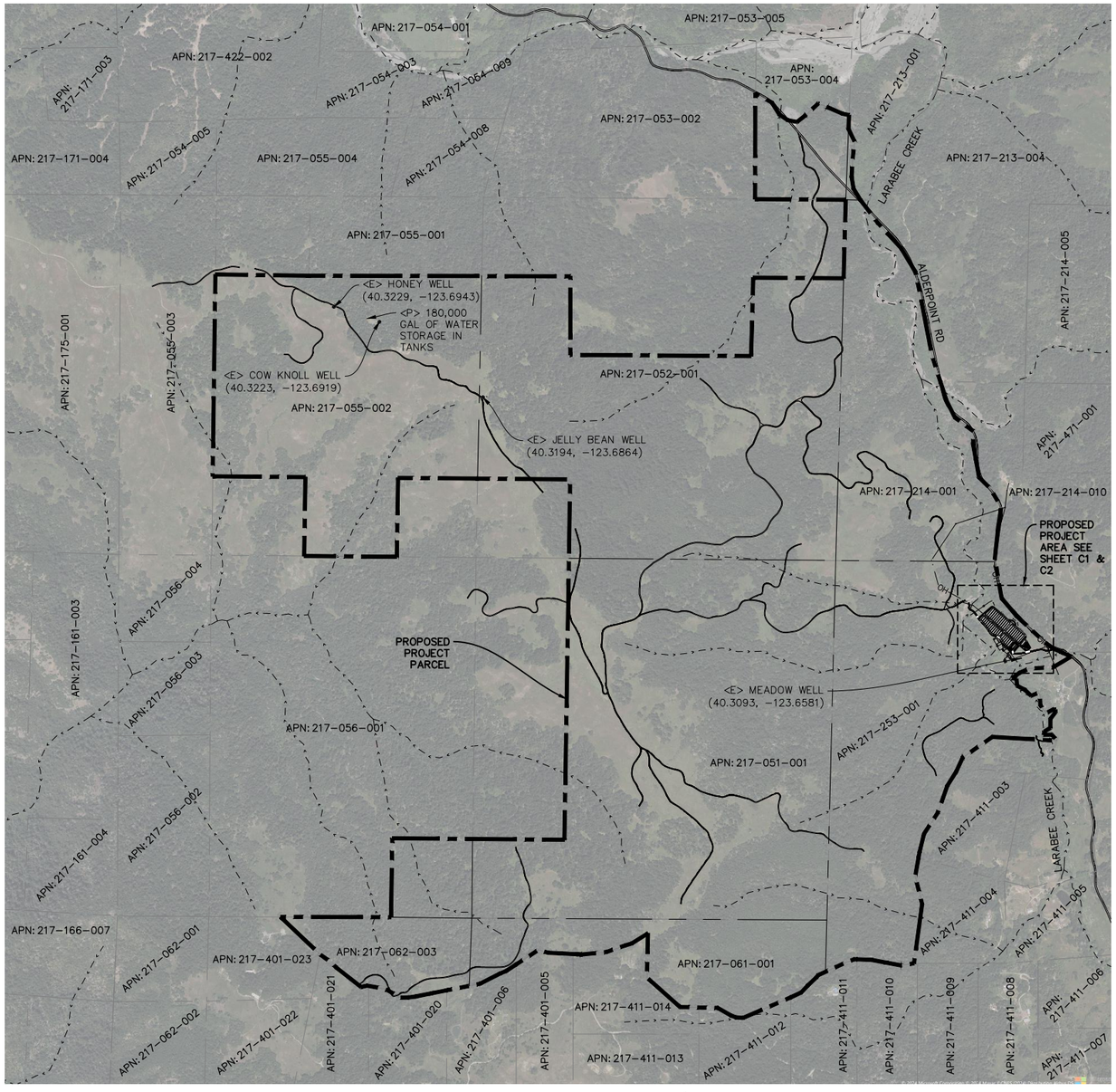
WATER FOR THE PROJECT WILL BE SOURCED FROM EXISTING ONSITE GROUNDWATER WELLS, OR, A GROUNDWATER WELL DRILLED IN THE FUTURE, IF DEEMED TO BE NON-DIVERSIONARY. WATER WILL NOT COME FROM SURFACE WATER DIVERSION.

GENERAL NOTES:

1. DRAWING SCALE AS NOTED. WRITTEN DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALED DIMENSIONS.
2. THIS IS NOT A BOUNDARY SURVEY. BOUNDARY INFORMATION DEPICTED HAS BEEN OBTAINED FROM HUMBOLDT COUNTY 2015 GIS DATA. NORTHPOINT CONSULTING GROUP, INC. HAS NOT VERIFIED THIS PROPERTY BOUNDARY. BOUNDARY OBTAINED FROM PARCEL MERGER PLN-2018-010363.
3. THERE ARE NO NEARBY SCHOOLS, SCHOOL BUS STOPS, PLACES OF WORSHIP, PUBLIC PARKS OR TRIBAL RESOURCES WITHIN 600 FEET OF THE PROPOSED CULTIVATION AREA.
4. THERE ARE NO RESIDENCES ON ADJOINING PARCELS WITHIN 300 FEET OF THE PROPOSED CULTIVATION AREAS.
5. ANY EXISTING DEVELOPMENT CONSTRUCTED WITHOUT THE BENEFIT OF COUNTY REVIEW WILL BE SUBJECT TO THE HUMBOLDT COUNTY BUILDING DEPARTMENT UPON APPROVAL OF THE CONDITIONAL USE PERMIT.

LEGEND

- LEGAL PARCEL BOUNDARY
- ADJACENT LOT LINE
- INTERNAL ASSESSORS PARCEL BOUNDARIES
- CLASS I, II, III WATERCOURSE BUFFER
- ROADS



PLOT PLAN

22x34 SHEET: 1"=1,000'
11x17 SHEET: 1"=2,000'

0 500 1,000 2,000

PROJECT INFORMATION:

APPLICANT:
HUMSUN 3, LLC
30855 ALDERPOINT RD.
BLOCKSBURG, CA 95514

PROPERTY OWNER:
HUMSUN RANCH, LLC
181 SANCHEZ ST.
SAN FRANCISCO, CA 94114

APPLICANTS AGENT:
NORTHPOINT CONSULTING GROUP, INC
1117 SAMOA BLVD.
ARCATA, CA 95521
(707) 798-6438

SITE ADDRESS:
APN: 217-253-001
30855 ALDERPOINT RD.
BLOCKSBURG, CA 95514

TREES TO BE REMOVED = NONE

PRIME AGRICULTURAL AREA = 58.4 ACRES
20% OF PRIME AGRICULTURAL AREA = 11.68 ACRES

PROPOSED MIXED LIGHT CULTIVATION AREA = 134,850 SQ.FT.

WATER = PRIVATE
SEWER = PRIVATE

PRIMARY ASSESSOR PARCEL SIZE = ±264 ACRES
LEGAL DEED = ±1,887 ACRES

PARCEL #7 PER HUMBOLDT COUNTY PLANNING DEPARTMENT NOM 18-022 DS 17.011

ZONING = AE-B-5(160); TPZ
GENERAL PLAN DESIGNATION = AG, RA20

BUILDING SETBACKS:

	SRA
FRONT	30'
SIDE	30'
REAR	30'

SRA AREA: = YES
IN COASTAL ZONE: = NO
IN 100 YR FLOOD ZONE: = YES

SHEET INDEX:

C0 - PLOT PLAN, VICINITY MAP, & PROJECT NOTES
C1 - CONSTRAINTS MAP
C2 - PROPOSED SITE PLAN
C3 - STREAM BUFFER TYPICAL DETAIL

DRAWN BY | REVISIONS | DATE

NORTHPOINT
CONSULTING GROUP, INC.
1117 Samoa Blvd., Arcata, CA 95521

HUMSUN 3, LLC - CUP
APN:217-253-001
PLOT PLAN, VICINITY MAP, & PROJECT NOTES

PROJ. MGR.: POW
DRAWN BY: LJM
DATE: 09/25/2024
SCALE: AS SHOWN

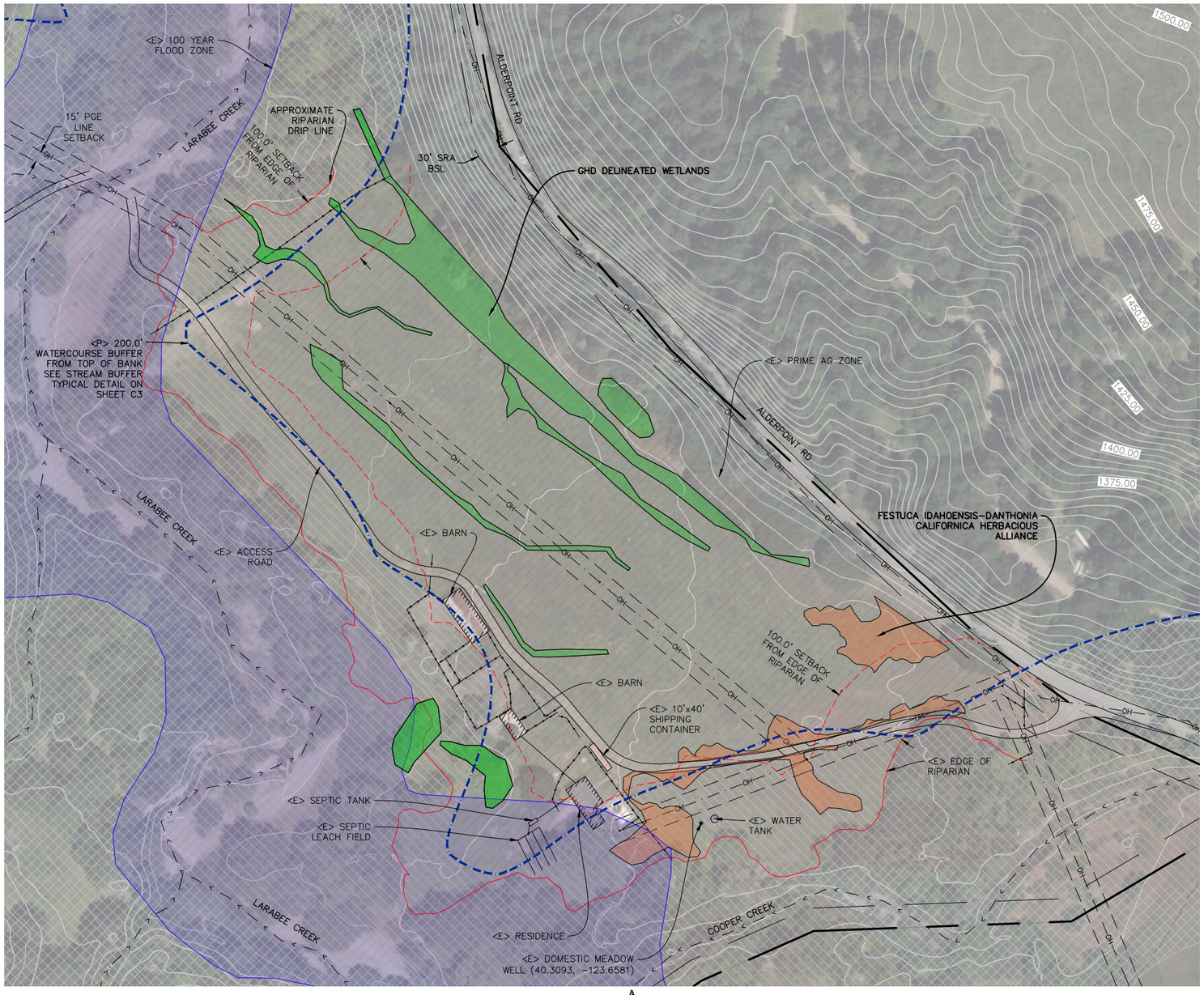
SHEET
C0
24-001

September 25, 2024 - 10:57 Dwg Name: P:\HumSun Ranch, LLC - HumSun Ranch - 24-001\CAD\Production Drawings\HumSun - CUP.dwg Updated By: LisaMcLaughlinEIT

HUMSUN 3, LLC

EXISTING SITE PLAN - PROPOSED PROJECT AREA

APN: 217-253-001



LEGEND

- PARCEL BOUNDARY
- LOT LINE
- BUILDING SETBACK
- WATERCOURSE BUFFER
- STREAM
- PGE 15' SETBACK
- PGE OVERHEAD LINES
- FENCE
- EDGE OF RIPARIAN
- 100' SETBACK FROM EDGE OF RIPARIAN
- 200' SETBACK FROM WATERCOURSE
- GHD DELINEATED WETLAND
- DANTHONIA GRASSES
- 100 YEAR FLOOD ZONE
- PRIME AG

22x34 SHEET: 1"=80'
11x17 SHEET: 1"=160'

0 40 80 160

N

DRAWN BY:
REVISIONS
DATE

NORTHPOINT CONSULTING GROUP, INC.
1117 Samoa Blvd., Arcata, CA 95521

HUMSUN 3, LLC - CUP
APN:217-253-001
EXISTING SITE PLAN - PROPOSED PROJECT AREA

PROJ. MGR.: POW
DRAWN BY: LJM
DATE: 09/25/2024
SCALE: AS SHOWN

SHEET C1

24-001

September 25, 2024 - 10:57 Dwg Name: P:\HumSun Ranch, LLC - HumSun Ranch - 24-001\CADD\Production Drawings\HumSun - CUP.dwg Updated By: LiamMclaughlinEIT

HUMSUN 3, LLC

PROPOSED SITE PLAN - PROPOSED PROJECT AREA

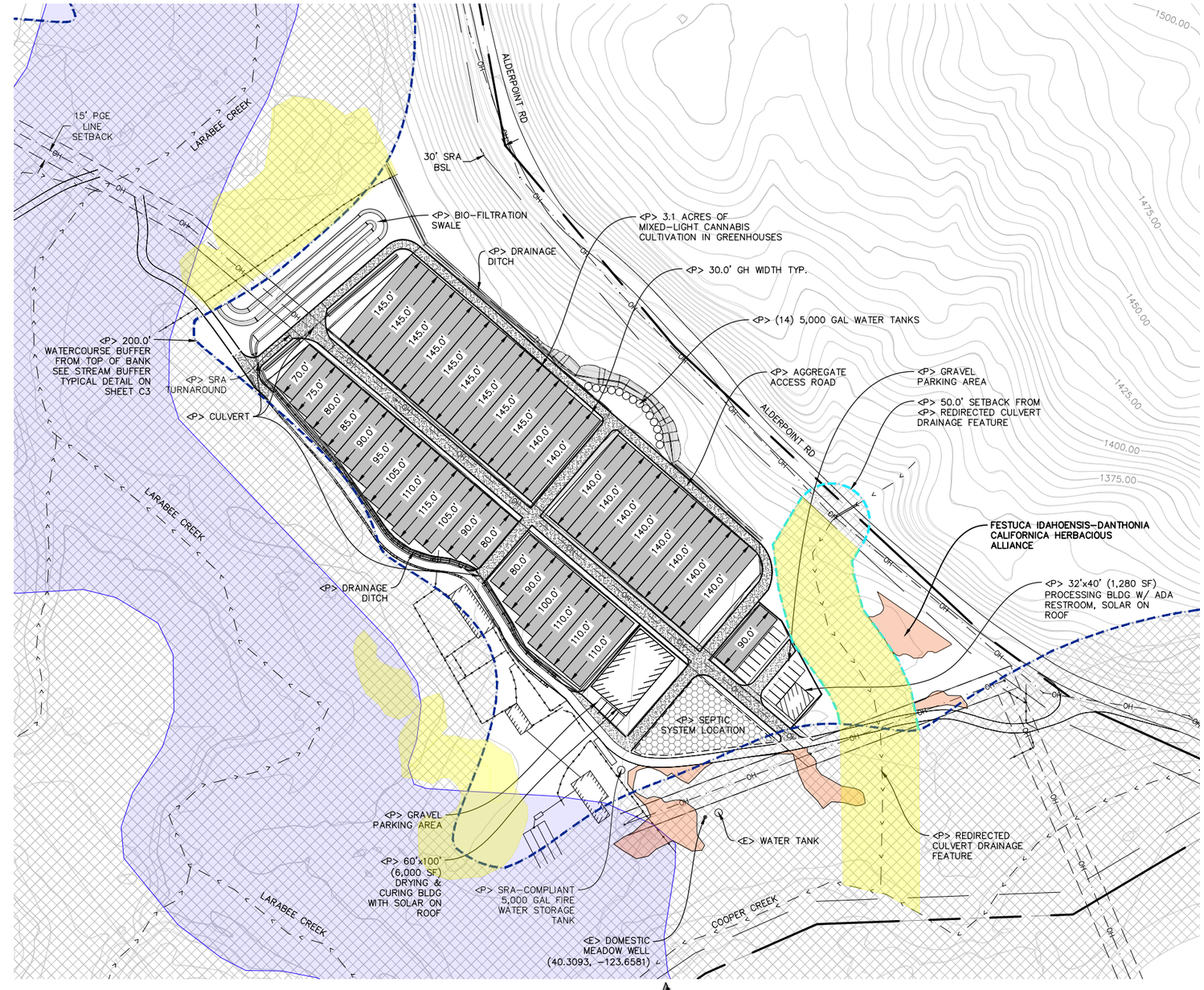
APN: 217-253-001

IMPACTS TABLE:

IMPACTS TO WETLANDS: 0.8 ACRES
IMPACTS TO DANTHONIA: 0.2 ACRES

GREENHOUSES TABLE:

(1)	30.0' X 70.0'	GH	=	2,100	SQ.FT.
(1)	30.0' X 75.0'	GH	=	2,250	SQ.FT.
(3)	30.0' X 80.0'	GH	=	2,400	SQ.FT.
(1)	30.0' X 85.0'	GH	=	2,550	SQ.FT.
(4)	30.0' X 90.0'	GH	=	2,700	SQ.FT.
(1)	30.0' X 95.0'	GH	=	2,850	SQ.FT.
(1)	30.0' X 100.0'	GH	=	3,000	SQ.FT.
(2)	30.0' X 105.0'	GH	=	3,150	SQ.FT.
(4)	30.0' X 110.0'	GH	=	3,300	SQ.FT.
(1)	30.0' X 115.0'	GH	=	3,450	SQ.FT.
(10)	30.0' X 140.0'	GH	=	4,200	SQ.FT.
(9)	30.0' X 145.0'	GH	=	4,350	SQ.FT.
	TOTAL		=	134,850	SQ.FT.
			=	3.1	ACRES



LEGEND

- – PARCEL BOUNDARY
- – LOT LINE
- – BUILDING SETBACK
- – WATERCOURSE BUFFER
- – STREAM
- – PGE 15' SETBACK
- – PGE OVERHEAD LINES
- – FENCE
- – 200' SETBACK FROM WATERCOURSE
- – DANTHONIA GRASSES
- – 100 YEAR FLOOD ZONE
- – POTENTIAL CULTIVATION AREA
- – <P> 2.63 ACRES OF WETLAND AND RIPARIAN CREATION AND ENHANCEMENT. REFER TO WETLAND MITIGATION REPORT (J. REGAN CONSULTING, 2024)

22x34 SHEET: 1"=80'
11x17 SHEET: 1"=160'
0 40 80 160

N

DRAWN BY | REVISIONS | DATE

NORTHPOINT CONSULTING GROUP, INC.
1117 Samoa Blvd., Arcata, CA 95521

HUMSUN 3, LLC - CUP
APN:217-253-001
PROPOSED SITE PLAN - PROPOSED PROJECT AREA

PROJ. MGR.: POW
DRAWN BY: LJM
DATE: 09/25/2024
SCALE: AS SHOWN

SHEET
C2
24-001

September 25, 2024 - 10:57 Dwg Name: P:\HumSun Ranch, LLC - HumSun Ranch - 24-001\CAD\Production Drawings\HumSun - CUP.dwg Updated By: LisaMcLaughlinEIT

APPENDIX B: CULTIVATION ACTIVITIES SCHEDULE

Item	Description	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Drainage, Runoff, and Erosion Control	Winterization (storage of pots/greenhouse covers)												
	Temporary Erosion Control BMP's (straw, seeding, fiber rolls, etc.)												
	Road maintenance												
	Culvert and inboard ditch maintenance/inspection												
Mixed Cultivation and Harvest Schedule	Mixed Light Cultivation Cycle												
	Harvest activities												
	Drying Activities												
Staffing Presence	Agent in Charge												
	Lead Cultivator												
	Assistant Cultivator												
	Seasonal Laborers												

APPENDIX C: REFERENCES

Department of Toxic Substances Control. *Site Mitigation & Restoration Program.* https://dtsc.ca.gov/your-envirostor/. Accessed August 2024.

Humboldt County. *Streamside Management Area Ordinance.* Title 3: Land Use and Development; Division 1, Planning Zoning Regulations; Chapter 6 – General Provisions and Exceptions; Section 314-51.1.

Humboldt County Local Agency Management Program (LAMP). 2017. https://humboldtgov.org/685/Land-Use Program

Humboldt County Planning and Building Department. 2016. Ordinance No. 2559 – Medical Marijuana Land Use Ordinance. https://humboldtgov.org/DocumentCenter/View/53372/Ord-No-2559-Adopted-BOS-September-13-2016?bidId=

Humboldt County Planning and Building Department. 2015. *Mitigated Negative Declaration.* Available at: https://humboldtgov.org/DocumentCenter/View/53373/Final-MND---CMMLUO?bidId=. Accessed August 2024.

North Coast Regional Water Quality Control Board. 2016. *Cannabis Cultivation Waste Discharge Regulatory Program*. http://www.waterboards.ca.gov/northcoast/water_issues/programs/cannabis/. Date accessed: July 2024

State Water Resources Control Board. 2019. SWRCB Cannabis General Order No. 2019-0001 – General Waste Discharge Requirements and Waiver of Waste Discharge Requirements for Dischargers of Waste Associated with Cannabis Cultivation Activities. https://www.waterboards.ca.gov/water_issues/programs/cannabis/cannabis_policy.html

Appendix 2 Cover Sheet

File	Document Title
2A.	Notice of Merger and Certificate of Subdivision Compliance (Humboldt County, 2018)
2B.	Prime Soil Location and Distribution at 30740 Alderpoint Road, Blocksburg, CA (Pacific Watershed Associates Inc, 2016).
2C.	Williamson Act Committee Meeting Letter and Supplemental Documents (June 14, 2018)
2D.	Air Quality Analysis – HumSun 3, LLC (NorthPoint Consulting Group, August 2023)
2E.	Botanical Resources Report (GHD, 2020)
2F.	ICF Review of Final 2019 Botanical Resources Survey Report. (ICF, 2021)
2G.	Supplemental Botanical Survey Report (Natural Resources Management Corporation, 2021)
2H.	Impacts Botanical Resources Sensitive Natural Communities: *Festuca idahoensis- Danthonia californica Herbaceous Alliance*, Dense sedge marshes (*Carex densa*) (Natural Resources Management Corporation, 2020, 1st revision 2021, 2nd revision 2022)
2I.	Supplemental Botanical Survey Report: Sensitive Natural Communities (Natural Resources Management Corporation, 2022)
2J.	Update to *Festuca idahoensis- Danthonia californica* Herbaceous Alliance – HumSun 3, LLC Memo (NorthPoint Consulting Group, 2024)
2K.	Wildlife Resources Report (GHD, 2020)
2L.	Golden Eagle Survey Report 1 (Natural Resources Management Corporation, 2021)
2M.	Golden Eagle Survey Report 2 (Natural Resources Management Corporation, 2022)
2N.	2022 Northern Spotted Owl Report (Natural Resources Management Corporation, 2022)
2O.	Aquatic Resources Report (GHD, 2019)
2P.	Supplemental Waters Investigation Report (Natural Resources Management Corporation, 2021)
2Q.	Proposal and Justification for the Development of a Compensatory Mitigation and Monitoring Plan (Natural Resources Management Corporation, 2022)
2R.	California Department of Fish and Wildlife (CDFW) Recommendations for HumSun 3, LLC Cannabis Cultivation APN 217-253-001 (May 29, 2024)
2S.	Wetland Mitigation Summary – HumSun 2024 (J. Regan Consulting, August 2024)
2T.	CONFIDENTIAL - Phase I Cultural Resource Inventory Report for Hum Sun Ranch, LLC - DZC Archaeology & Cultural Resource Management (March, 2020) *for referenced purpose only, document is on file with Humboldt County Planning & Building Department*
2U.	StreamStats Report – Larabee Creek at HumSun (USGS, 2024)
2V.	Hydrologic Isolation from Surface Waters, Well WCR2017-001709 APN: 217-052-001, 30885 Alderpoint Road, Blocksburg, California (Lindberg Geologic Consulting, August 10, 2023)
2W.	Hydrologic Isolation from Surface Waters, Well WCR2017-001697 APN: 217-055-002, Alderpoint Road, Blocksburg, California (Lindberg Geologic Consulting, August 12, 2023)
2X.	Hydrologic Isolation from Surface Waters, Well WCR2017-001712 APN: 217-055-002, Alderpoint Road, Blocksburg, California (Lindberg Geologic Consulting, August 14, 2023)
2Y.	Noise Source Study for HumSun 3 LLC (NorthPoint Consulting Group, 2024)
2Z.	Septic Suitability Survey for HumSun 3, LLC (NorthPoint Consulting Group, August 26, 2024)

Appendix 2A

Notice of Merger and Certificate of Subdivision Compliance

Recording Requested By:
Humboldt County
Planning and Building Department

Return To:
Humboldt County
Planning and Building Department
3015 H Street
Eureka CA 95501-4484

2018-010363

Recorded - Official Records
Humboldt County, California
Kelly E. Sanders, Recorder
Recorded by: HUMBOLDT CNTY
Pages: 7

Recording Fee: $ 42.00
Tax Fee: $0.00
Clerk: sc Total: $42.00
Jun 06, 2018 at 01:01:01

NOTICE OF MERGER AND CERTIFICATE OF SUBDIVISION COMPLIANCE

Property Owner(s) Of Record:
Crazy Bear, LLC
a California Limited Liability Company

Assessor's Reference Number(s):
Por 217-051-001, por 217-052-001, por 217-053-002, por 217-055-002, por 217-056-001, 217-061-001, 217-062-003, 217-213-003, 217-214-001 & 217-253-001

Number of Resulting Parcels Certified: 1
Application No: **13569**

Case No: **NOM 18-022 / DS 17-011** PARCEL 7

NOTICE IS HEREBY GIVEN pursuant to Section 66499.20 3/4 of the Government Code of the State of California that the real properties described in the attached EXHIBIT "A" have been merged into one parcel or unit of land, and that said real properties are not separate properties for purpose of subdivision or development.

NOTICE IS FURTHER GIVEN that said merger has been executed by the owner(s) of record of the real properties, and not by a local agency.

THIS NOTICE IS GIVEN by the person(s) whose name(s) is/are subscribed on page 3 of this instrument as the owner(s) of record of the real properties described in the attached EXHIBIT "A".

NOTICE IS FURTHER GIVEN that portions of the real property described herein are enforceably restricted as Timberland Production Zone (TPZ) lands pursuant to the California Timberland Productivity Act of 1982 (Section 51100 et seq. of the California Government Code), and notwithstanding the separate parcel recognition under the Certificate of Compliance said real property must remain compliant with provision of said Act for as long as the land remains TPZ.

NOTICE IS FURTHER GIVEN that portions of the real property described herein are enforceably restricted by Land Conservation Contract pursuant to the California Land Conservation Act of 1965 also known as the Williamson Act (Section 52100 et seq. of the California Government Code), and notwithstanding the separate parcel recognition under the Certificate of Compliance said real property must remain compliant with provision of said Act, including provisions of the Humboldt County's Williamson Act guidelines for as long as the land remains under Land Conservation Contract.

On this 14 day of MAY, 2018, I HEREBY CERTIFY that the mergers for which this Notice is given have been executed with the approval of the County of Humboldt and that the parcel or unit of land resulting from the merger complies with the provisions of the California Subdivision Map Act and County of Humboldt Ordinances enacted pursuant thereto.

Case No.: NOM 18-022 / DS 17-011
APN Por 217-051-001, por 217-052-001, por 217-053-002, por 217-055-002, por 217-056-001, 217-061-001, 217-062-003, 217-213-003; 217-214-001 & 217-253-001

THIS CERTIFICATE relates only to issues of compliance or noncompliance with the Subdivision Map Act and local ordinances enacted pursuant thereto and no further compliance with the Subdivision Map Act is necessary. However, development of the parcels may require issuance of a permit or permits, or other grant or grants of approval.

THIS CERTIFICATE DOES NOT CERTIFY that the real property for which this notice has been given is suitable for development in accordance with existing or future regulations.

BY _____

John H. Ford, Director
County of Humboldt Planning and Building Department

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 }
COUNTY OF HUMBOLDT }

On this 14th day of May 2018, before me, Suzanne M. Lippre Public Notary, personally appeared **JOHN H. FORD** who proved to me on the basis of satisfactory evidence to be the person whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his authorized capacity, and that by his signature on behalf of which the person acted, executed the instrument.

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

Witness my hand and official seal.

Suzanne M. Lippre (seal)
Signature

SUZANNE M. LIPPRE
Notary Public - California
Humboldt County
Commission # 2172472
My Comm. Expires Nov 18, 2020

Page 3 Notice of Merger

Case No.: NOM 18-022 / DS 17-011
APN Por 217-051-001, por 217-052-001, por 217-053-002, por 217-055-002, por 217-056-001, 217-061-001, 217-062-003, 217-213-003, 217-214-001 & 217-253-001

OWNER'S REPRESENTATION

WE hereby represent that WE are the owner S of record of the real properties described in the attached EXHIBIT "A" and that WE have consented to and executed the property merger for for which WE have given the notice herein.

(for names and signatures)

Sign above. Print name here: **Robert C. McKee***

Sign above. Print name here: **Benjamin Sherrod Levin ***

*** Manager, Crazy Bear, LLC, a California Limited Liability Company**

If additional signatures and notary acknowledgment required, please attach full page acknowledgment form

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 }
COUNTY OF HUMBOLDT }

On this 27th day of APRIL 2018, before me, ROXANNE BENNETT Public Notary, personally appeared ROBERT C. MCKEE & BENJAMIN SHERROD LEVIN 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 is true and correct.

Witness my hand and official seal.

Roxanne Bennett (seal)
Signature

ROXANNE BENNETT
COMM. #2097448
NOTARY PUBLIC • CALIFORNIA
HUMBOLDT COUNTY
My Comm. Expires Feb. 13, 2019

EXHIBIT "A"
PROPERTY DESCRIPTION

All that real property situate in the County of Humboldt, State of California, described as follows:

Parcel One

The Southeast Quarter, the East half of the Southwest Quarter, the Northwest Quarter of the Southwest Quarter, the Southwest Quarter of the Northwest Quarter and the Southeast Quarter of the Northeast Quarter of Section 1.

The South half of the Northeast Quarter, the North half of the Southeast Quarter, the Southwest Quarter of the Southeast Quarter, the Northeast Quarter of the Southwest Quarter and the Southeast Quarter of the Northwest Quarter of Section 2.

The Southeast Quarter of the Southeast Quarter of Section 11.

The East half, the East half of the West half and the Southwest Quarter of the Southwest Quarter of Section 12.

Said Sections 1, 2, 11 and 12 being in Township 2 South of Range 4 East, according to the official plat of said land;

TOGETHER WITH that portion of Section 6 which lies West of the County Road, in Township 2 South of Range 5 East, Humboldt Meridian.

TOGETHER WITH the East half of the Southeast Quarter of Section 36, Township 1 South of Range 4 East, Humboldt Meridian.

EXCEPTING therefrom that portion thereof in Section 36 lying North and East of the Bridgeville-Blocksburg County Road, as the road existed in the year 1952.

Parcel Two

BEGINNING at the Southwest corner of Section 31, Township 1 South, Range 5 East, Humboldt Meridian, according to the official plat of said land, and running

thence East on the section line to the center of the County Road;
thence northerly along the County Road to the West line of said Section 31; and
thence southerly along said section line to the point of beginning.

Parcel Three

BEGINNING in the center of the County Road at a point where said road crosses Cooper Creek, which point is at or near the section line between Sections 7 and 8; and running

thence westerly down Cooper Creek to Larrabee Creek;

thence southerly up Larrabee creek about one-half mile to a point in said creek from which the quarter section corner between Sections 7 and 8 bears North 88 degrees 52 minutes East, 1531.9 feet;

thence leaving Larrabee Creek and running as follows:

North 87 degrees 54 minutes West, 948.1 feet,
South 54 degrees 10 minutes West, 528.8 feet,
South 23 degrees 50 minutes West, 226.3 feet,
South 31 degrees 18 minutes West, 241.4 feet,
South 18 degrees 18 minutes West, 183.3 feet,
South 18 degrees 41 minutes West, 239.7 feet,
South 32 degrees 05 minutes West, 366.8 feet,
South 12 degrees 40 minutes West, 280.0 feet,
South 09 degrees 30 minutes West, 331.6 feet,
South 15 degrees 05 minutes East, 332.6 feet,
South 10 degrees 57 minutes East, 98.0 feet,
South 06 degrees 16 minutes West, 696.6 feet,
South 05 degrees 04 minutes West, 179.3 feet to a fence line; thence along fence line:
South 81 degrees 16 minutes West, 251.9 feet,
North 80 degrees 29 minutes West, 243.2 feet,
North 85 degrees 21 minutes West, 381.5 feet,
South 66 degrees 47 minutes West, 139.5 feet,
South 64 degrees 01 minutes West, 173.7 feet,
South 62 degrees 17 minutes West, 268.3 feet,
South 59 degrees 29 minutes West, 1121.5 feet,
North 88 degrees 35 minutes West, 1572.3 feet,
North 00 degrees 22 minutes East, 1072.7 feet,
South 57 degrees 47 minutes West, 236.0 feet,
South 58 degrees 24 minutes West, 128.0 feet,
South 72 degrees 57 minutes West, 249.1 feet,
South 77 degrees 20 minutes West, 115.1 feet,
South 83 degrees 01 minutes West, 186.0 feet,
South 82 degrees 29 minutes West, 116.5 feet,
North 88 degrees 43 minutes West, 462.0 feet,
North 73 degrees 43 minutes West, 146.2 feet,
South 56 degrees 42 minutes West, 148.5 feet,
South 55 degrees 04 minutes West, 193.2 feet,
South 58 degrees 52 minutes West, 120.0 feet,
South 55 degrees 50 minutes West, 172.0 feet,
South 65 degrees 44 minutes West, 205.0 feet,
South 65 degrees 02 minutes West, 205.9 feet,

South 77 degrees 17 minutes West, 860.0 feet,
South 75 degrees 40 minutes West, 100.0 feet,
South 73 degrees 30 minutes West, 59.5 feet,
North 71 degrees 10 minutes West, 306.0 feet,
North 69 degrees 17 minutes West, 112.0 feet,
North 83 degrees 54 minutes West, 226.3 feet,
South 85 degrees 10 minutes West, 100.2 feet,
North 54 degrees 04 minutes West, 452 feet,
North 39 degrees 28 minutes West, 119.4 feet,
North 54 degrees 44 minutes West, 173.7 feet,
North 47 degrees 12 minutes West, 682.0 feet,
North 49 degrees 27 minutes West, 437.4 feet,
South 87 degrees 16 minutes West, 553.9 feet,
North 87 degrees 26 minutes West, 356.1 feet, to the interior quarter section corner of Section 14, Township 2 South of Range 4 East;

thence West on quarter section line one-fourth mile to Southwest corner of East half of Northwest Quarter of said Section 14;

thence North on subdivision line one-half mile to the North line of same section;

thence East on North line of Sections 14 and 13 to the Northeast corner of Section 13 (which is also the Southwest corner of Section 7 adjoining);

thence North on West line of Section 7 to Northwest corner of that section; and

thence East on the North line of Section 7 to the center of the County Road; and

thence Southerly along the County Road to Cooper Creek, the point of beginning.

EXCEPTING therefrom that portion thereof conveyed to Fred J. Fearrien by Deed recorded December 4, 1962 in Book 714 of Official Records, Page 370, under Recorder's Serial No. 20380, Humboldt County Records.

Parcel Four

Those portions of Sections 7 and 18 of Township 2 South, Range 5 East, and Sections 13 and 14 of Township 2 South, Range 4 East, Humboldt Meridian, according to the official plat of said land, bounded as follows:

BEGINNING in the center of the County Road at the point where said road crosses Cooper Creek at or near the East line of the Northeast Quarter of said Section 7; and running

thence down Cooper Creek to its intersection with Larrabee Creek;

thence up Larrabee Creek to a point in said creek from which the quarter section corner common to Sections 7 and 8 of Township 2 South, Range 5 East, bears North 88 degrees 32 minutes 30 seconds East a distance of 1523.5 feet;

thence from the last described point which is shown on survey made by Thurman B. White filed in the Recorder's Office of Humboldt County in Book 18 of Surveys, Pages 46, 47 and 48, in a general Westerly direction across Sections 7 and 18 of Township 2 South, Range 5 East, and Sections 13 and 14, of Township 2 South, Range 4 East, following the courses and distances shown on Page 48 of said survey by White (being division line between the Fearrien and Vicenus Ranches according to said survey) to Point No. 7 near the North line of said Section 14 as shown on said Page 48 of said survey;

thence from said Point No. 7 North 89 degrees 45 minutes West 1022.9 feet to the Northwest corner of the Northeast Quarter of the Northwest Quarter of said Section 14;

thence East along the North line of said Section 14 and the North line of said Section 13 to the Northeast corner of said Section 13 (which is also the Southwest corner of said Section 7);
thence North along the West line of said Section 7 to the Northwest corner of Section 7;
thence East along the North line of said Section 7 to the center of the County Road;
thence Southerly along said County Road to Cooper Creek and the point of beginning.

EXCEPTING therefrom any portion thereof lying within Parcel Three hereinabove.

[END OF DESCRIPTION]

This real property description has been prepared by me, or under my direction, in conformance with the Professional Land Surveyor's Act, on April 23, 2018.

Kimberly D. Preston, P.L.S. 9153



Appendix 2B

Prime Soil Location and Distribution at 30740 Alderpoint Road, Blocksburg, CA

PACIFIC WATERSHED ASSOCIATES INC.

PO Box 4433 • Arcata, CA 95518-4433
Ph 707-839-5130 • Fax 707-839-8168
www.pacificwatershed.com

December 22, 2016

Humsun Ranch
Attention: Mr. Shane Pacheco
8686 Bell Springs Road
Garberville, CA 95542

Re: Prime soil location and distribution at 30740 Alderpoint Road, Blocksburg, CA

Dear Mr. Pacheco:

This letter report summarizes Pacific Watershed Associates (PWAs) partial delineation of prime agricultural soils on the Humboldt County parcels listed in Table 1, which are located in Blocksburg, CA. The purpose of the agricultural soils delineation is to determine if a portion of this parcel can be used for retirement, remediation, and relocation (RRR) of cannabis cultivation operations in accordance with the Humboldt County Medical Marijuana Land Use Ordinance. This delineation effort was by no means exhaustive. There are likely significant areas of the overall ranch that have prime soils that have not yet been investigated or described.

Table 1: HumSun Ranch Parcels

Parcel Number	Land Use Code	Total Acreage	Prime Ag Soil Acreage
217-055-001	AG/TPZ	66.70	
217-051-001	AG/AE-B-5(160)/TPZ	627.74	
217-052-001	AG/AE-B-5(160)/TPZ	635.38	6.41
217-053-002	AG/AE-B-5(160)/TPZ	226.77	
217-055-002	AG/AE-B-5(160)/TPZ	399.73	4.58
217-056-001	AG/AE-B-5(160)/TPZ	464.92	
217-056-002	AG/TPZ	80.97	
217-061-001	AG/AE-B-5(160)/TPZ	116.44	1.09
217-062-001	AG/TPZ	39.32	
217-062-002	AG/TPZ	42.09	
217-062-003	AG/AE-B-5(160)/TPZ	60.66	1.76
217-062-005	AG/TPZ	37.54	
217-161-004	AG/TPZ	42.15	
217-213-001	AG/AE/TPZ	71.19	

217-214-001	AG/AE-B-5(160)/TPZ	184.47	1.01
217-253-001	AG/AE-B-5(160)/TPZ	323.38	46.13
Total		3695.21	61.18

Based on an analysis of digital elevation models, readily available aerial imagery, work by others, site mapping, and characterization of site soils using the Storie index soil rating technique, it is our opinion that at least 61.18 acres of prime agricultural soils are present on the 16 parcels which total approximately 3,695 acres based on the Humboldt County Web Geographic Information System (HCWGIS) acreages. This total includes seven areas of prime soil identified and delineated by Dirty Business Soil Consulting and Analysis, LLC in a report date December 16, 2016. The Dirty Business Report is included as Appendix 1.

The properties are zoned for agricultural and timber production. The prime soils are located either on the Larabee Creek floodplain or on gently sloping upland meadows and hilltops. All of the areas have slope gradients less than 15%, have excellent soil tilth, have soil profiles that are at least 4 feet deep, are well drained, and were not observed to have any significant rocks, gravels, or apparent redoximorphic features at depths less than 24 inches below the ground surface (bgs).

The previously mapped areas of prime agricultural soil shown on the HCWGIS are limited to those areas where soil mapping, primarily conducted by the U.S. Department of Agriculture, has been completed. Based on a search of the Natural Resources Conservation Service (NRCS) Web Soil Survey, digital data is available only for the prime agricultural soil located on the floodplain terrace of Larabee Creek. The report from the NRCS Web Soil Survey application are attached as Appendix 2. The areas with prime agricultural soils are shown on Map 1 – Site Plan.

On December 4, 2016, PWA Civil Engineer Brad Job described 40 test pits at the locations shown on Map 1. The pits were dug using a small excavator and were five to six feet deep. The soils were logged and a Storie index Rating Calculation was performed as per Humboldt County requirements. The test pit logs are included as Appendix 3. Most of the soil units observed in the test pits were very similar, with variations between the boreholes mostly limited to the depth of the fine silty clay loam topsoil. For this effort, agricultural soils were delineated exclusively within upland areas of open meadow on the property. No evidence of significant erosion was observed at any test pit location.

The extent of newly delineated prime soil was determined in the field by collecting a GPS track defining areas where a clinometer indicated that the slope gradient became too steep to result in a Storie rating greater than 0.80. Generally, the areas assessed were free-draining convex hilltops and benches with a slope gradient lower than 8%. Soils from 15 of the test pits were determined not to qualify as a prime agricultural soil because of slope gradient, shallow redoximorphic features, or topsoil was not present.

The soils were textured by hand and described in conformance with the Unified Soil Classification System (USCS). Test pit logs of the soil stratigraphy were drawn and the soils were evaluated using Storie Index calculations on the soils observed in each test pit. The Storie index was calculated as the product of four factors: soil profile (A); soil texture (B); slope (C); and an integrated measure of productivity (X) involving erodibility, nutrient levels, alkali content' and micro-relief.

The parent geology at the property can produce extremely productive agricultural soil with no significant salinity, alkalinity, or nutrient limitations. Most of the soil profiles were very deep, well developed, and remarkably light and uncompacted. The Storie soil group for the delineated areas is IX. The results from test pits have been extrapolated to those contiguous areas where similar vegetation, slope gradients, geologic and hydrologic conditions are present.

In summary, it is my opinion that the project area meets the criteria of being on prime AG soil as required by the Humboldt County Medical Marijuana Land Use Ordinance and that at most 20% of the prime soil will be covered by the proposed operations. If you have any questions regarding my observations or conclusions please contact me at your earliest convenience.

Sincerely,

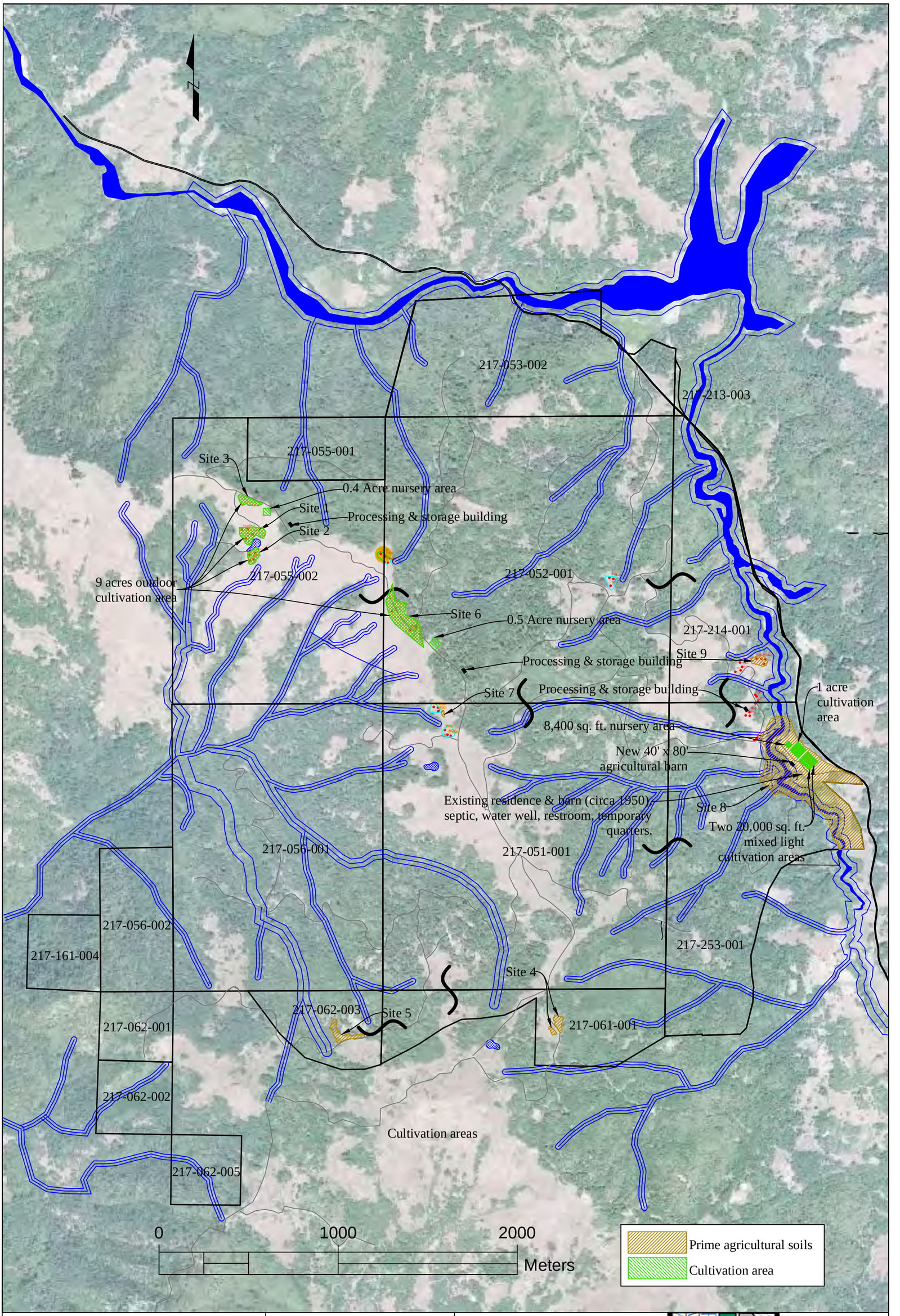


Leonard B. Job,
Sr. Civil Engineer,
PACIFIC WATERSHED ASSOCIATES INC.

California Registered Civil Engineer #C55699
bradj@pacificwatershed.com

Sarah Schuette, Dirty Business Soil Consulting & Analysis, LLC. 2016. Dirty Business Soil Consulting & Analysis, LLCPrime Agricultural Soil Assessment, 30740 Alderpoint Road, Blocksburg, CA, APN(s): 217-055-002, 217051-001, 217061-001

Enclosures:
Map 1. Site
Appendix 1: NRCS Soils Report
Appendix 2: Dirty Business Soil Consulting & Analysis, LLC. 2016. Prime Agricultural Soil Assessment, 30740 Alderpoint Road, Blocksburg, CA, APN(s): 217-055-002, 217051-001, 217061-001
Appendix 3: Test Pit Logs



PROJECT DESCRIPTION: **HUM SUN RANCH** **30740 ALDER POINT ROAD** **BLOCKSBURG, CALIFORNIA 95514** PWA JOB NO.: 50431	DRAWING DESCRIPTION: **SITE PLAN WITH SOILS AND OTHER FEATURES**	**PACIFIC WATERSHED ASSOCIATES, INC.** **P.O. BOX 4433** **ARCATA, CALIFORNIA 95518** **PH: (707) 839-5130 FX: (707) 839-8168** **www.pacificwatershed.com**	DATE 12/22/2016 NOTES PREPARED BY L.B. JOB FIGURES CREATED BY L.B. JOB SHEET 1 OF 2

Appendix 1 – NRCS Soils Report

Appendix 2 – Dirty Business Soil Consulting & Analysis, LLC. 2016. Prime Agricultural Soil Assessment, 30740 Alderpoint Road, Blocksburg, CA, APN(s): 217-055-002, 217051-001, 217061-001

Dirty Business Soil
1115 11th Street
Arcata, CA 95521
707.633.8885
DBSanalytics.com

Prime Agricultural Soil Assessment

30740 Alderpoint Road
Blocksburg, CA

APN(s):
217-055-002
217051-001
217061-001

December 16, 2016

Prepared For: Shane Pacheco

Prepared By: Dirty Business Soil Consulting & Analysis, LLC

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1.0 INTRODUCTION

The purpose of this report is to disclose the findings and methodologies of the prime agricultural soil assessment at 30740 Alderpoint Rd Blocksburg, CA conducted August 3rd and October 7th, 2016.

Per the Humboldt County's Commercial Medical Marijuana Land Use Ordinance (CMMLUO), prime agricultural soils are defined as "*all lands which qualify for rating as Class I or Class II in the Soil Conservation Service land use capability classifications or qualify for rating 80 through 100 in the Storie Index Rating. Additionally, where determined through site-specific fieldwork prepared by a qualified professional, soils meeting these characteristics may be recognized as prime.*"

Prime agricultural soil assessments are conducted either by desktop assessment of existing Natural Resource Conservation Service (NRCS) surveys, Humboldt County GIS portal, and/or field assessment to determine the Storie Index or Land Capability Classification (LCC). The previous methods were examined and it was determined that the Storie Index could be effectively utilized to assess prime agricultural soils throughout this property. Please see Appendix A for detailed methodology of Storie Index assessment.

2.0 RESULTS

This property is a 3,300 acre ranch spanning several different parcels. The Storie Index assessment yielded 298,194 square feet (6.85 acres) of prime agricultural soil across 7 different sites. The landscape consists of open meadows dominated by grassland vegetation. Storie Index scores ranged from 81-95%, with an overall average of 89.8%. All sites reside in upland soils, with deep, moderately to well-developed profiles, 4-5 feet in depth. Surface soil texture ranged from silt loam to loam. All slopes were less than 15%. Drainage for all sites was well drained (WD). All pH values were below 7.3, which indicates no accumulation of alkaline minerals in soil. All Electrical Conductivity (EC) measurements were below 0.6 ds/m indicating no accumulation of phytotoxic nutrients. Soil acidity ranged from very strongly acid to moderately acid, with pH's ranging from 5.0 to 5.8. Erosion and microrelief were used to vet low risk cultivation areas, thus all assessed sites had little to none erosional and microrelief features.

Site and soil auger hole descriptions are discussed in the following sections. A map of the all the prime agricultural sites throughout the property, as well as individual maps for each prime agricultural site, are contained in Appendix B for reference. The complete Storie Index scoring for each evaluated hole is contained in Appendix C. Table 1 is a comprehensive list of all prime agricultural soil sites, their associated Assessor Parcel Numbers (APN), the Storie Index score, and respective site sizes.

Table 1. Comprehensive List of Prime Agricultural Soil Sites

APN(s)	Site Name	Storie Index Score	Area Square Feet	Area Acres
217-055-001	1	95.0	75,027	1.7
217-055-001	2	95.0	47,104	1.1
217-055-001	3	93.1	48,551	1.1
217-061-001	4A	90.0	35,792	0.8
217-061-001	4B	90.0	11,231	0.3
217-062-003	5, Hole 1	88.2	75,683	1.7
217-062-003	5, Hole 2	90.0		
217-062-003	5, Hole 3	85.5		
217-051-001	6	81.0	4,804	0.1
TOTAL			**298,192**	**6.8**
	Average SI Score	89.8		

3.0 SITE DESCRIPTIONS

The following sections contain in-depth descriptions of each prime agricultural soil site. Assessment for all sites follow methodology contained in Appendix A. Each site description includes the final Storie Index score, total area of site, a boundary description of the site perimeter, as well as details of soil characteristics for each Storie Index parameter. Maps of each site are in Appendix B and a table containing all Storie Index scoring details for each site is located in Appendix C.

3.1 SITE 1

Storie Index Score: 95.0%

The total area mapped for Site 1 is 75,027 square feet (1.7 acres). This acreage is spread across a single site with cohesive similarities in slope, vegetation, and soil characteristics. Appendix B contains a map showing the delineated area, a boundary description, area total in square feet, and plot holes. Appendix C contains a summary of the Storie Index rating for this site. Detailed findings for this prime agricultural soil assessment are included below.

Boundary Description

Site 1 is a grassy meadow bench. It is gently sloping and slopes range from 3-8%. There are upslopes to the north and east from 30-35%. To the south there is a short downslope that goes into a seasonal gully. There is a 20-30% slope defining the western border.

Factor A – Physical Profile

Storie Index Characteristic IX - Upland, deep at 4 to 6-feet. There were no surface gravels. Hand auger hole reached depth of greater than 4-feet but profile likely greater than 6-feet because soil features seem like they will continue. This is a great soil. Deep, well drained, chocolate color throughout. No restrictions, rocks, or clay.

Factor B – Surface Texture

Texture by Feel: Loam.

Factor C – Slope
Gently sloping with slopes ranging from 3-6%, except along the margins where the slope began to increase or decrease. Margin slopes were included up to 8%.

Factor X -
Drainage: Well drained. No redoximorphic features were found within 40 inches. No restrictive layers. Slight increase in bulk density with depth.

Alkali: Measured pH of 5.8 indicates no accumulation of alkaline minerals in soil. Well leached soil.

Nutrient: No accumulation of phytotoxic nutrients. EC measured at 0.3 ds/m.

Acidity: Moderately acidic. Measured pH, 5.8.

Erosion: No erosion features observed.

Microrelief: No significant microrelief observed.

3.2 SITE 2

Storie Index Score: 95.0%
The total area mapped for Site 2 is 47,104 square feet (1.1 acres). This acreage is spread across a single site with cohesive similarities in slope, vegetation, and soil characteristics. Appendix B contains a map showing the delineated area, a boundary description, area total in square feet, and plot holes. Appendix C contains a summary of the Storie Index rating for this site. Detailed findings for this prime agricultural soil assessment are included below.

Boundary Description
Site 2 is a grassy meadow bench across a gully from Site 1. It is gently sloping and slopes range from 3-8%. To the north there is a short downslope that goes into a seasonal gully. The southern border is defined by a 25-30% downslope and the western border by a 15-30% downslope. There is an upslope of 30-35% to the east.

Factor A – Physical Profile
Storie Index Characteristic IX - Upland, deep at 4 to 6-feet. There were no surface gravels. Hand auger hole reached depth of greater than 4-feet but profile likely greater than 6-feet because soil features seem like they will continue. This is a great soil. Deep, well drained, chocolate color throughout. No restrictions, rocks, or clay. Very similar to Site 1.

Factor B – Surface Texture
Texture by Feel: Silt Loam.

Factor C – Slope
Slope was fairly level but gently sloping along the margins where the slope began to increase or decrease. Margin slopes were included up to 8%.

Factor X -
Drainage: Well drained. No redoximorphic features were found within 40 inches. No restrictive layers. Slight increase in bulk density with depth.

Alkali: Measured pH of 5.8 indicates no accumulation of alkaline minerals in soil. Well leached soil.

Nutrient: No accumulation of phytotoxic nutrients. EC measured at 0.6 ds/m.

Acidity: Moderately acidic. Measured pH, 5.8.

Erosion: No erosion features observed.

Microrelief: No significant microrelief observed.

3.3 SITE 3

Storie Index Score: 93.1%
The total area mapped for Site 3 is 48,551 square feet (1.1 acres). This acreage is spread across a single site with cohesive similarities in slope, vegetation, and soil characteristics. Appendix B contains a map showing the delineated area, a boundary description, area total in square feet, and plot holes. Appendix C contains a summary of the Storie Index rating for this site. Detailed findings for this prime agricultural soil assessment are included below.

Boundary Description
Site 3 is a grassy meadow ridge with a line of trees to the north. It is fairly flat with slopes ranging from 0-5%. The northern border is defined by a compacted road followed by a tree line. The soil also became rockier in some spots. The eastern and southern boundaries are downslopes ranging from 20-35%. To the west is a downslope of 30%

Factor A – Physical Profile
Storie Index Characteristic IX - Upland, deep at 4 to 6-feet. Hand auger hole reached depth of greater than 4-feet but profile likely greater than 6-feet because soil features seem like they will continue. Surface gravels less than 5%. This is a deep ridge soil with no restrictions, few rocks and no heavy clay.

Factor B – Surface Texture
Texture by Feel: Loam.

Factor C – Slope
Slope was fairly level, 0-5%.

Factor X -
Drainage: Well drained. No redoximorphic features were found within 40 inches. No restrictive layers. Slight increase in bulk density with depth.

Alkali: Measured pH of 5.3 indicates no accumulation of alkaline minerals in soil. Well leached soil.

Nutrient: No accumulation of phytotoxic nutrients. EC measured at 0.3 ds/m.

Acidity: Strongly acidic. Measured pH, 5.3.

Erosion: No erosion features observed.

Microrelief: No significant microrelief observed.

3.4 SITE 4A

Storie Index Score: 90.0%
The total area mapped for Site 4A is 35,792 square feet (0.8 acres). This acreage is spread across a single site with cohesive similarities in slope, vegetation, and soil characteristics. Appendix B contains a map showing the delineated area, a boundary description, area total in square feet, and plot holes. Appendix C contains a summary of the Storie Index rating for this site. Detailed findings for this prime agricultural soil assessment are included below.

Boundary Description
Site 4A is a grassy meadow bench. It is moderately sloping and slopes range from 0-14%. A downslope to the tree line defines the northern, eastern and southern boundaries. A short upslope to site 4B defines the western boundary

Factor A – Physical Profile
Storie Index Characteristic IX - Upland, deep at 4 to 6-feet. There were no surface gravels. Hand auger hole reached depth of greater than 4-feet but profile likely greater than 6-feet because soil features seem like they will continue. No restrictions, rocks, or heavy clay layers. There is a slight clay increase with depth, but not restrictive.

Factor B – Surface Texture
Texture by Feel: Loam.

Factor C – Slope
Moderately sloping, 0-12% and increasing to 14% along the margins.

Factor X -
Drainage: Well drained. No redoximorphic features were found within 40 inches. No restrictive layers. Slight increase in bulk density with depth.

Alkali: Measured pH of 5.6 indicates no accumulation of alkaline minerals in soil. Well leached soil.

Nutrient: No accumulation of phytotoxic nutrients. EC measured at 0.3 ds/m.

Acidity: Moderately acidic. Measured pH, 5.6.

Erosion: No erosion features observed.

Microrelief: No significant microrelief observed.

3.5 SITE 4B

Storie Index Score: 90.0%
The total area mapped for Site 4B is 11,231 square feet (0.3 acres). This acreage is spread across a single site with cohesive similarities in slope, vegetation, and soil characteristics. Appendix B contains a map showing the delineated area, a boundary description, area total in square feet, and plot holes. Appendix C contains a summary of the Storie Index rating for this site. Detailed findings for this prime agricultural soil assessment are included below.

Boundary Description
Site 4B is a grassy meadow bench that sits above site 4B. It is moderately sloping and slopes range from 5-14%. There is a gradual upslope to the north and west of 15-20%. To the east is a short downslope leading to site 4A. A downslope of 25% defines the southern border.

Factor A – Physical Profile
Storie Index Characteristic IX - Upland, deep at 4 to 6-feet. There were no surface gravels. Hand auger hole reached depth of greater than 4-feet but profile likely greater than 6-feet because soil features seem like they will continue. No restrictions, rocks, or heavy clay layers. There is a slight clay increase with depth, but not restrictive. Very similar to 4A.

Factor B – Surface Texture
Texture by Feel: Loam.

Factor C – Slope
Moderately sloping, 0-12% and increasing to 14% along the margins.

Factor X -
Drainage: Well drained. No redoximorphic features were found within 40 inches. No restrictive layers. Slight increase in bulk density with depth.

Alkali: Measured pH of 5.6 indicates no accumulation of alkaline minerals in soil. Well leached soil.

Nutrient: No accumulation of phytotoxic nutrients. EC measured at 0.3 ds/m.

Acidity: Moderately acidic. Measured pH, 5.6.

Erosion: No erosion features observed.

Microrelief: No significant microrelief observed.

3.6 SITE 5

Storie Index Score: Hole 1 – 88.2%; Hole 2 – 90.0%; Hole 3 – 85.5%
The total area mapped for Site 5 is 75,683 square feet (1.7 acres). This acreage is spread across a single site with cohesive similarities in slope, vegetation, and soil characteristics. Appendix B contains a map showing the delineated area, a boundary description, area total in square feet, and plot holes. Appendix C contains a summary of the Storie Index rating for this site. Detailed findings for this prime agricultural soil assessment are included below.

Boundary Description
Site 5 is a grassy meadow ridge surrounded on most side by trees. It is gently moderately sloping. The soil became rockier to the north and east, as well as a tree line. There is also a tree line to the west followed by a downslope. To the south is a compacted road followed by a downslope.

Factor A – Physical Profile
Storie Index Characteristic IX - Upland, deep at 4 to 6-feet. There were no surface gravels in all profiles evaluated. Hand auger holes reached depth of greater than 4-feet but profile likely greater than 6-feet because soil features seem like they will continue. No restrictions, few to no rocks, or heavy clay layers. There is a slight clay increase with depth, but not restrictive.

Factor B – Surface Texture
Texture by Feel: Silt Loam (all holes).

Factor C – Slope
Moderately sloping, 0-14% and 14% along the margins.

Factor X -
Drainage: Well drained. No redoximorphic features were found within 40-inches. No restrictive layers. Slight increase in bulk density with depth.

Alkali: Measured pH's of 5.3-5.5 indicates no accumulation of alkaline minerals in soil. Well leached soil.

Nutrient: No accumulation of phytotoxic nutrients. EC measured at 0.2 ds/m for all holes.

Acidity: Strongly acid. Measured pH's 5.4, 5.5, 5.3 for Holes 1, 2 and 3 respectively.

Erosion: No erosion features observed.

Microrelief: No significant microrelief observed.

3.7 SITE 6

The total area mapped for Site6 is 4,804 square feet (0.1 acres). This acreage is spread across a single site with cohesive similarities in slope, vegetation, and soil characteristics. Appendix B contains a map showing the delineated area, a boundary description, area total in square feet, and plot holes. Appendix C contains a summary of the Storie Index rating for this site. Detailed findings for this prime agricultural soil assessment are included below.

Boundary Description
Site 6 is a small grassy meadow bench that sits above a spring on the side of a hill. It is moderately sloping and slopes range from 0-14%. There are upslopes to the north (25%) and to the east (15-25%). To the south and west there are downslopes of 30%.

Factor A – Physical Profile
Storie Index Characteristic IX - Upland, deep at 4 to 6-feet. There were no surface gravels. Hand auger hole reached depth of greater than 4-feet but profile likely greater than 6-feet because soil features seem like they will continue. No restrictions, rocks, or heavy clay layers. There is a slight clay increase with depth, but not restrictive.

Factor B – Surface Texture
Texture by Feel: Silt Loam.

Factor C – Slope
Moderately sloping, 0-14% and 14% along margins.

Factor X -
Drainage: Well drained. No redoximorphic features were found within 40-inches. No restrictive layers. Slight increase in bulk density with depth.

Alkali: Measured pH of 5.0 indicates no accumulation of alkaline minerals in soil. Well leached soil.

Nutrient: No accumulation of phytotoxic nutrients. EC measured at 0.5 ds/m.

Acidity: Moderately acidic. Measured pH, 5.0.

Erosion: No erosion features observed.

Microrelief: No significant microrelief observed.

4.0 CONCLUSION

This report disclosed the findings and justifications for the prime agricultural soil assessments that were conducted at 30740 Alderpoint Rd Blocksburg, CA. These assessments adhered to the detailed methods and measurements of the Storie Index as set forth in the attached methodology (Appendix A). Storie Index scores ranged from 81-95%, with an overall average of 89.8%. Landscape details and soil characteristics varied a little from site-to-site (generally grassy flat benches), but most were relatively similar with regards to the Storie Index parameters. Overall, slope was the parameter that varied the most from site to site. There were 7 unique sites mapped, for a total area of 298,194 square feet (6.85 acres), that met with the standards set forth by the CMMLUO (i.e., Storie Index of 80% or higher).

Appendix A. Methodology for Prime Agricultural Soil Assessment

Methodology for Determining Prime Agricultural Soils

Desktop Assessment

Existing soil data can be found through the Humboldt County GIS portal which is based on Humboldt County's 1967 soil survey as well as the NRCS Web Soil Survey (WSS) which is based on Humboldt County's most recent soil survey. Surveyed soils are mapped at the third-order, which means boundaries are plotted by observation and interpretation of remotely sensed data. The soil boundaries are verified by traversing representative areas and by some transects. Third-order surveys are made for land uses that do not require precise knowledge of small areas or detailed soils information. Delineations have a minimum size of up to 40-acres (USDA, 1993).

It is important to note that although the Humboldt County soil survey ground mapping has been finished, it has not yet been completely published on the WSS. When a soil survey query in WSS yields a "NOTCOM" result, it means no digital data is available for the project area. Standard practice in "NOTCOM" areas is to contact the local NRCS Soil Survey Field Office to identify if any data exists within the area of interest.

Field Assessment

The Storie Index and LCC are methods for rating soils on their potential for use and productivity. Both methods look at the same characteristics: slope, soil profile depth, drainage, salinity, etc. The Storie Index derives its rating from current conditions; while the Land Capability Classification derives its rating not only from current conditions, but on the potential to overcome those conditions using proper management techniques. LCC Class I soils are broadly defined as soils that "have few limitations which restrict their use." In contrast, LCC Class II soils are those that "have some limitations that reduce the choice of plants or require moderate conservation practices." (Storie, 1978; USDA SCS, 1961). Due to the nature of the Storie Index to assess only the current conditions, the parameters and ratings are generally more rigid in their interpretation than the LCC.

The Storie Index method of soil rating is based on soil characteristics that govern the land's potential utilization and productive capacity and is independent of other physical or economic factors that might determine the desirability of growing certain plants at a given location (Storie, 1932). A rating, between 0% and 100%, is assigned to definable soil properties that are measured either in the field or in the lab. The overall Storie Index Rating is determined by factoring all the ratings together:

Storie Index Rating = [(Factor A)/100 x (Factor B) /100 x (Factor C) /100 x (Factor X) /100] x 100

Table 1 describes the Storie Index parameters and general conditions for ratings. More detail on methodology for each parameter and the results for the assessed site are provided below.

Table 1. Storie Index soil properties and field methods (Storie, 1978).

Factor	Property	Highest Rating	Lowest Rating
A	Physical Profile Group	Based on landform type and soil development	
B	Surface Texture	Loamy Soils	Stony Soils, Dense Soils
C	Slope	Nearly Level/Gently Sloping (0 to 8%)	Steep/Very Steep (30 to over 45%)
X	*Rating of conditions other than A, B, or C*		
	Drainage	Well-drained	Waterlogged
	Alkali	Alkali-free	Strongly affected
	Nutrient (Fertility) Level	Very Low - Optimal	Detrimental nutrient accumulations
	Acidity	Neutral/Slight	Extremely Acidic/Extremely Basic
	Erosion	None/Slight	Severe
	Microrelief	Smooth	Hummocks and dunes

Methodology

Plots to undergo a complete Storie Index rating are found by slope measurements between 0 and 15%, vegetation (mostly open space, no wetland vegetation), and an examination of surface gravels. Locations that undergo a Storie Index rating are chosen because it has been determined to be the most representative part of the plot being evaluated. A soil core is excavated using a hand auger and the Storie Index rating is conducted. A sample of surface soil is taken for lab analysis, as well as the location being recorded with a Garmin GPS unit (accuracy < 15 meters). These rated soil holes are included on the site map.

The total number of holes excavated, rated, and sampled is based on the size of the plot area, uniformity of landscape surface, and vegetation within the plot area. Generally, inclusions of approximately an acre or less, if landscape variables (surface, vegetation) are consistent throughout, one hole is rated. If the plot exceeds an acre 1-2 holes per acre are rated and sampled or a transect is made.

Additionally, within each plot, confirmation holes are dug to evaluate the uniformity of the soil within a specific area and assist in the decision to include or exclude a portion from the plot. Confirmation holes are dug in areas where there is potential soil variation (i.e., in areas of vegetation change or topographic changes). For plots approximately one acre or less, 1-2 confirmation holes are dug. For plots over an acre, 1-4 confirmation holes per acre are dug. If a transect was made, confirmation holes are not necessary since a transect spans the entire plot. The confirmation holes are noted on field data sheets and the location is recorded with a Garmin GPS unit. These confirmation hole locations are included on the site map.

Plot boundaries are delineated by changes in land surface. Slope, soil type, gravel increases, vegetation change, and geomorphological features can all impact perimeter delineations. Field data sheets are used to record perimeter descriptions and these descriptions are included on the site maps along with a plot boundary and total square footage of passing area.

Factor A – Physical Profile Group

Factor A of the Storie Index rates the development of a soil profile. In alluvial soils, a high score indicates a younger undeveloped profile with an absence of gravelly subsoils and no Bt horizon (a horizon containing an accumulation of translocated clay). A lower score is given to older alluvial fans, plains and terraces when the presence of a Bt horizon or other restrictive features (i.e., clay pan, duripan, hardpan) can be confirmed (Storie, 1978; UC ANR,2008).

Upland soils that are formed from bedrock are rated based on depth to lithic (consolidated geologic material) or paralithic (softly consolidated or unconsolidated geologic material) contact (Storie, 1978; UC ANR,2008). The deeper the profile the higher the Storie Index score with a 100 being scored for upland soils that have profile of more than 6 feet (Storie, 1978). It should be noted that soil mapping parameters for Prime Farmland and Farmland of Statewide Importance have been established since the publication of the Storie Index in 1978. Both Prime Farmland and Farmland of Statewide Importance require an examination of effective rooting depth and other soil characteristics up to a depth of 40 inches (FMMP, 2016). Additionally, the LCC I requires a rooting depth of at least 36 inches and the LCC II requires a rooting depth of 20-36 inches (USDA SCS, 1961). These requirements demonstrate a consensus within the USDA and California Department of Conservation that farmland mapping include soils with profile depths of 40 inches or more as prime or agriculturally significant. Table 2 shows a revised scoring for upland soils to include effective rooting depth definitions of Prime Farmland and Farmland of Statewide Importance.

Table 2. Upland Soils/Effective Rooting Depth Score

Rooting Depth	Storie Index Score
>40 inches	100
30-40 inches	95
20-30 inches	90

Factor B – Surface Texture

Surface soil texture is determined using the texture by feel method. This method is the USDA standard field protocol for particle size analysis. If necessary, samples are sent to a lab for further particle size analysis using the hydrometer or micro-pipette method (USDA, 2014). Scoring rubric from Storie, 1978 is used for this rating.

Factor C – Slope

Slopes are measured in the field with clinometer (NRCS, 2012). Table 3 shows scoring rubric based on Storie 1978 but this scoring index removes the ranges for a more reproducible scoring method.

Table 3. Slope Scoring

Storie Index Class	Description	Score
A	Nearly Level (0-2%)	100
AA	Gently Undulating 0%	100
	Gently Undulating 1%	98
	Gently Undulating 2%	95
B	Gently sloping 3%	100
	Gently sloping 4-6%	98
	Gently sloping 6-8%	95
BB	Undulating 3%	100
	Undulating 4-6%	93
	Undulating 6-8%	85
C	Moderately Sloping 9-11%	95
	Moderately Sloping 12-14%	90
	Moderately Sloping 15%	80
CC	Rolling 9-11%	95
	Rolling 12-14%	90
	Rolling 15%	80

Factor X - Rating of conditions other than A, B, or C

Drainage – The subjectivity of the Storie Index drainage ratings has been addressed by an application of the natural drainage classes (i.e., the prevailing wetness conditions) as determined by the NRCS Soil Survey Manual (USDA, 1993) and the Drainage in Soil Surveys of California (USDA, 1989). Drainage is determined by observation to a four-foot depth of wetness, redoximorphic features, restrictive subsurface soil features (claypans, hardpans, etc...), increase in bulk density with depth, depth to bedrock, depth to unconsolidated bedrock (USDA, 1989). The Storie Index Rating, for various drainage classes is summarized in Table 4.

Table 4. Natural Drainage Classes and associated Storie Index Rating.

NRCS Classes	Storie Index Classes	Storie Index Rating (%)
Well Drained (WD)	Well Drained	100
Moderately Well Drained (MWD)	Fairly Well Drained	90
Somewhat Poorly Drained (SPD)		85
Poorly Drained (PD)	Moderately Waterlogged	40-80
Very Poorly Drained (VPD)	Badly Waterlogged	10-40

USDA, 1993; USDA, 1989

Alkali – If a pH value is 7.3 or more, it is considered alkaline (NRCS, 1998) and a carbonate test is conducted to quantify alkalinity (WREP, 2005). Generally, pH values for this region's soils are neutral to acidic, thus the alkali factor generally receives high scores.

Nutrient – Electrical conductivity (EC) and Sodium Absorption Ratio (SAR) are used to measure nutrient concentration in the soil. Having a low EC and SAR indicates a quality agriculture soil as management issues center mainly around accumulation of detrimental nutrients in soils (UC ANR, 2008). To evaluate nutrient levels, an EC measurement is taken from a saturation paste extract (WREP, 2005). If the EC result is 4 ds/m or lower, no SAR measurement is needed and a Storie Index rating of 100 is given. In this region, the heavily leached soils generally do not have high nutrient content, and typically receive high Storie Index ratings for nutrient level.

Acidity – pH is used to measure the acidity of the soil and is determined with a saturation paste (WREP, 2005). The Storie Index Rating, for various pH classes, is summarized in Table 5.

Table 5. Acidity Class, pH range and associated Storie Index Rating.

Classes	pH Range	Storie Index Rating (%)
Extremely acidic	3.5 – 4.4	40-90
Very strongly acidic	4.5 – 5.0	90
Strongly acidic	5.1 – 5.5	90-100
Moderately acidic	5.6 – 6.0	100
Slightly acidic	6.1 – 6.5	100
Neutral	6.6 – 7.3	100

NRCS, 1998; UC ANR 2008 (Figure 5A); FMMP

Erosion – Interpretation of erosion features in the field is conducted following the NRCS Field Book (NRCS, 2012) to properly evaluate erosion rating. Erosion types include none to slight, detrimental deposition, sheet erosion, gullies, and wind erosion.

Microrelief – Microrelief is small, relative differences in elevation between adjacent areas. Interpretation of the site's microrelief was conducted following the NRCS Field Book (NRCS, 2012) to evaluate microrelief features. Examples include smooth, channels, hummocks, and dunes.

Citations

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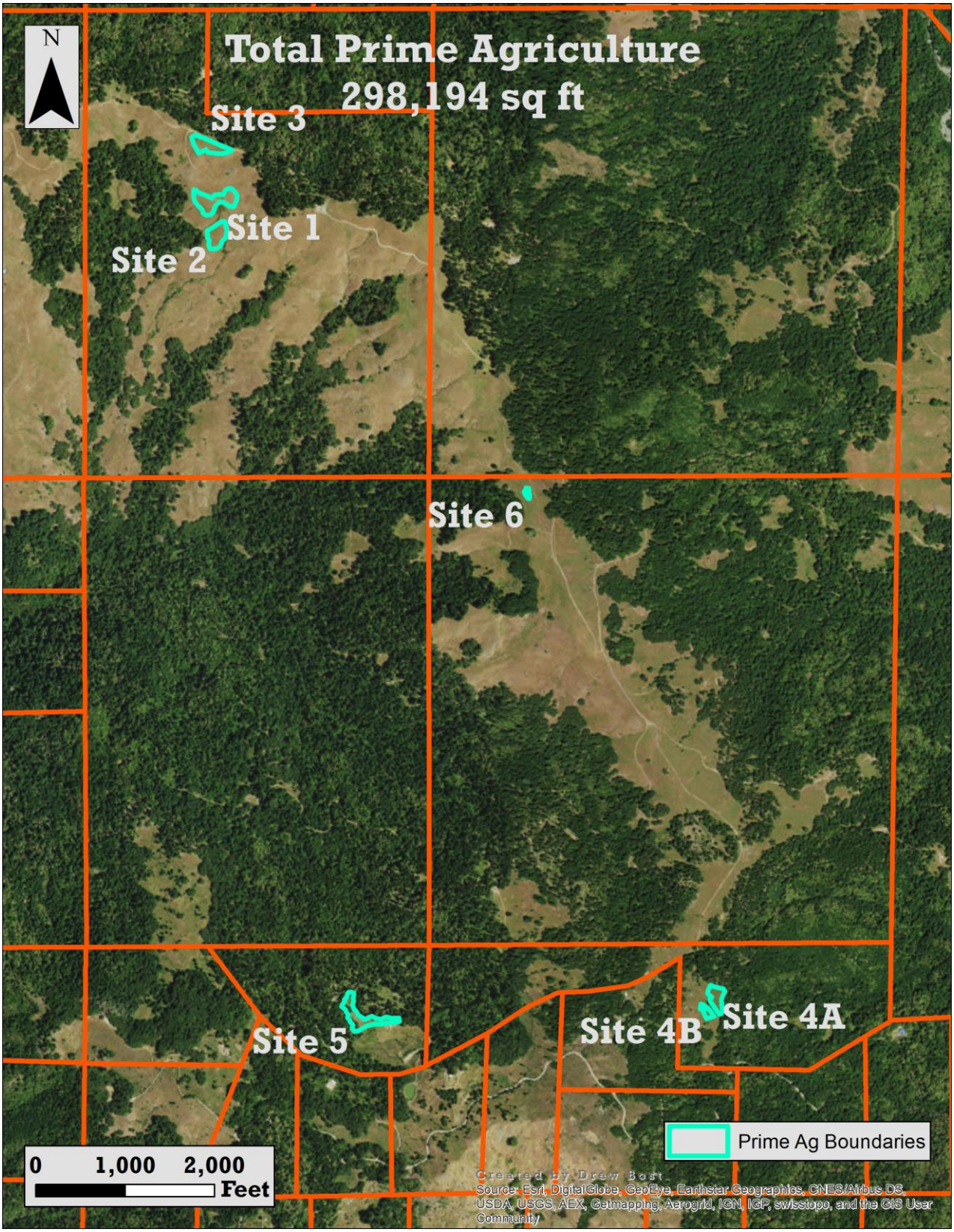
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WREP, 2005 - Gavlak, Ray; Horneck, Donald; Miller, Robert O. Plant, Soil and Water Reference Methods for the Western Region, Third Ed. 2005.

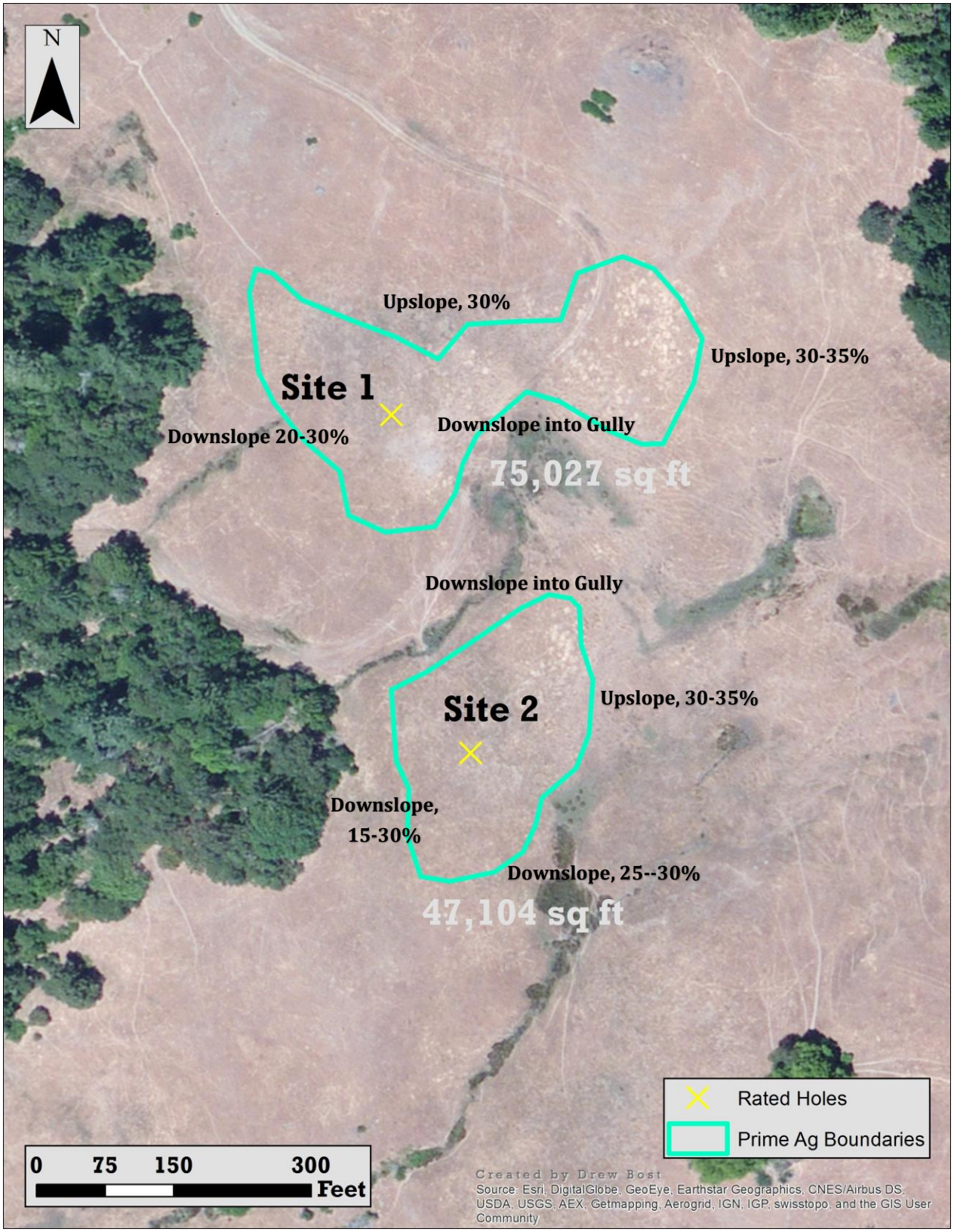
Appendix B. Site Maps

Comprehensive Map: Sites 1-6



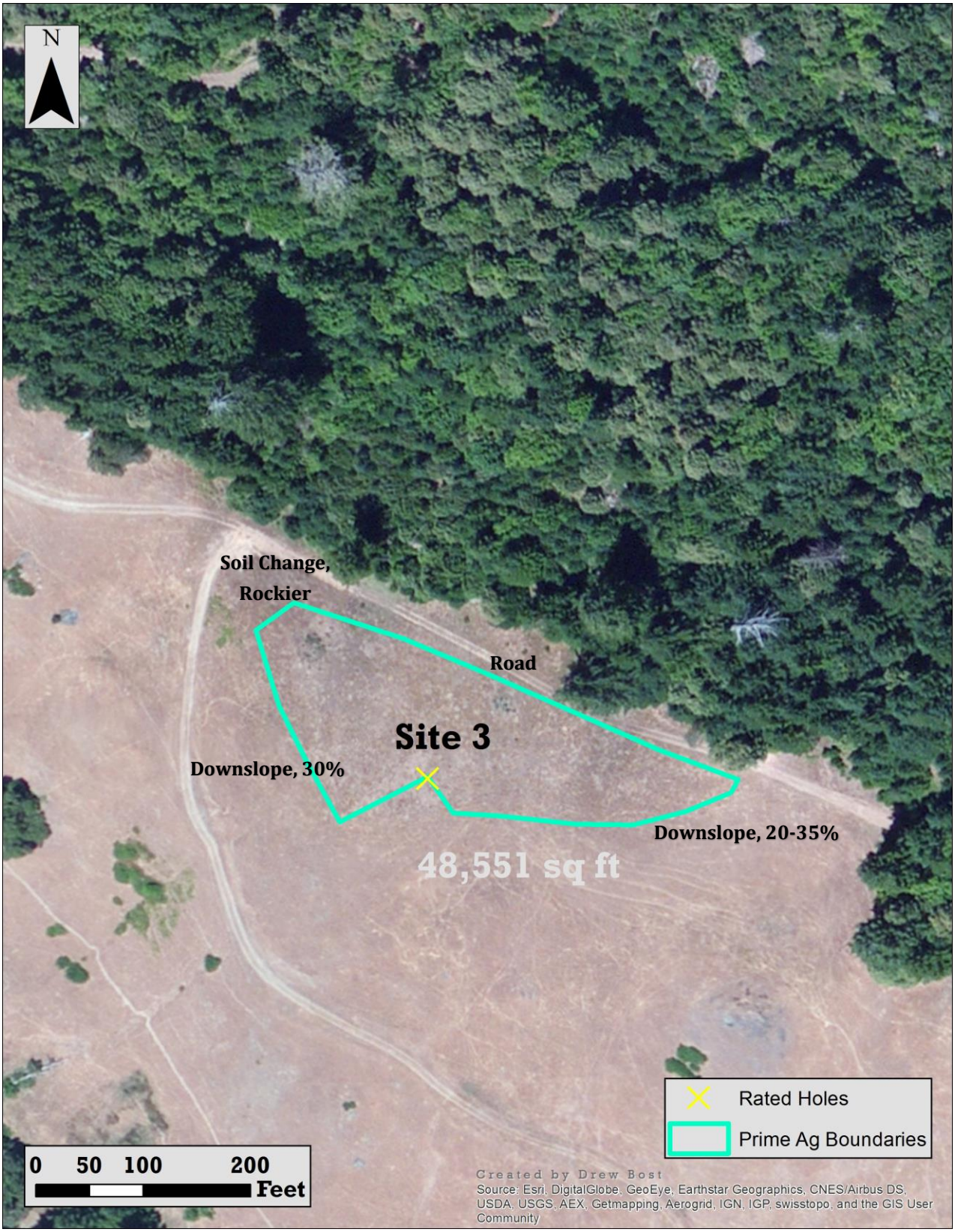
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Sites 1 and 2



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Site 3



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Sites 4A and 4B



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Site 5



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Site 6



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Appendix C. Storie Index Scoring

Site Name	Factor A Physical Profile		Factor B Surface Texture		Factor C Slope		Factor X												*Final Storie Score (%)
							Drainage		Alkali		Nutrient Level		Acidity		Erosion		Microrelief		
	Characteristic	*Score (%)*	*Characteristic*	*Score (%)*	*Characteristic*	*Score (%)*	*Characteristic*	*Score (%)*	*Characteristic*	*Score (%)*	*Characteristic*	*Score (%)*	*Characteristic*	*Score (%)*	*Characteristic*	*Score (%)*	*Characteristic*	*Score (%)*	
Site 1	IX - Upland, Deep	100	Loam	100	Gently Sloping, 3-8%	95	WD	100	Not alkaline	100	Fair, EC=0.3 ds/m	100	Moderately Acid, pH=5.8	100	None	100	Smooth	100	**95.0**
Site 2	IX - Upland, Deep	100	Silt Loam	100	Gently Sloping, 3-8%	95	WD	100	Not alkaline	100	Fair, EC=0.6 ds/m	100	Moderately Acid, pH=5.8	100	None	100	Smooth	100	**95.0**
Site 3	IX - Upland, Deep	100	Loam	100	Gently Sloping, 0-5%	98	WD	100	Not alkaline	100	Fair, EC=0.3 ds/m	100	Strongly Acid, pH=5.3	95	None	100	Smooth	100	**93.1**
Site 4A	IX - Upland, Deep	100	Loam	100	Moderately Sloping, 0-14%	90	WD	100	Not alkaline	100	Fair, EC=0.3 ds/m	100	Moderately Acid, pH=5.6	100	None	100	Smooth	100	**90.0**
Site 4B	IX - Upland, Deep	100	Loam	100	Moderately Sloping, 5-14%	90	WD	100	Not alkaline	100	Fair, EC=0.3 ds/m	100	Moderately Acid, pH=5.6	100	None	100	Smooth	100	**90.0**
Site 5-1	IX - Upland, Deep	100	Silt Loam	100	Moderately Sloping, 0-14%	90	WD	100	Not alkaline	100	Fair, EC=0.2 ds/m	100	Strongly Acid, pH=5.4	98	None	100	Smooth	100	**88.2**
Site 5-2	IX - Upland, Deep	100	Silt Loam	100	Moderately Sloping, 0-14%	90	WD	100	Not alkaline	100	Fair, EC=0.2 ds/m	100	Strongly Acid, pH=5.5	100	None	100	Smooth	100	**90.0**
Site 5-3	IX - Upland, Deep	100	Silt Loam	100	Moderately Sloping, 0-14%	90	WD	100	Not alkaline	100	Fair, EC=0.3 ds/m	100	Strongly Acid, pH=5.3	95	None	100	Smooth	100	**85.5**
Site 6	IX - Upland, Deep	100	Silt Loam	100	Moderately Sloping, 0-14%	90	WD	100	Not alkaline	100	Fair, EC=0.5 ds/m	100	Very Stongly Acid, pH=5.0	90	None	100	Smooth	100	**81.0**
Storie Index Rating Calculation = [(Factor A)/100 x (Factor B) /100 x (Factor C) /100 x (Factor X) /100] x 100																			

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December 16, 2016

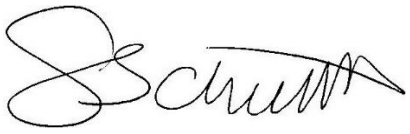
Client: Shane Pacheco
Phone: 530-414-3546
Email: skylimit333@yahoo.com
Project Site Address: 30740 Alderpoint Rd Blocksburg, CA
APN(s): 217-055-002; 217-051-001; and 217-061-001

Re: Prime Agricultural Soil Assessment

Please find the attached report containing the detailed findings for the prime agricultural soil assessment conducted August 3rd and October 7th, 2016 for the property referenced above. This property was found to contain 298,194 square feet (6.85 acres) of prime agricultural soil, as defined by Humboldt County's Commercial Medical Marijuana Land Use Ordinance No. 2544 (CMMLUO). This area was spread across 7 delineated sites and Storie Index scores ranged from 81-95%, with an overall average of 89.8%.

Please let us know if any further information is needed.

Sincerely,



Sarah Schuette
Certified Soil Scientist, APSS #381331

Dirty Business Soil Consulting & Analysis, LLC
1115 11th Street
Arcata, CA 95521

Project Name APN 217-253-001 Project Number 50431

Hole Number TP-1 Hole Size 3'x8' Date Drilled 12/4/2016

Excavation Method test pit Logged By LBJ Hole Elevation 1392.6'

Unconfined Compressive Strength	Moisture Content (%)	Dry Density (pcf)	Sampled Interval	Depth (ft)	Field Classification Based on Unified Soil Classification System (texture, consistency, moisture, color, symbol, remarks)
1,500 psf	~20%	135 pcf		0	SCL - Silty clay loam, A horizon, many roots, blocky structure, soft,moist, no mottles, 10YR/3/1, slope 15%
				1	SCL - Clay loam, B horizon, many roots, soft,moist, no mottles, 2.5YR4/4
	wet			2	
				3	CH - Silty clay , no roots, no rocks, wet, faint mottling, 7.5/YR/6/6
				4	BOB
				5	
				6	
				7	
				8	
				9	
				10	
				11	

Storie Index Calculation

Variable	Value
A - profile	1
B - texture	0.95
C - slope	0.8
X -tilth	1
Result	**0.76**

Start Time 11:00 AM Completion Time 11:15 AM Page 1 of 40

Project Name APN 217-253-001 Project Number 50431

Hole Number TP-2 Hole Size 3'x8' Date Drilled 12/4/2016

Excavation Method test pit Logged By LBJ Hole Elevation 1303.5'

Unconfined Compressive Strength	Moisture Content (%)	Dry Density (pcf)	Sampled Interval	Depth (ft)	Field Classification Based on Unified Soil Classification System (texture, consistency, moisture, color, symbol, remarks)
1,500 psf	wet ~20%	135 pcf		0	SCL - Silty clay loam, A horizon, many roots, blocky structure, soft,moist, no mottles, 10YR/3/2, slope 12%
				1	SCL - Silty clay loam, B horizon, many roots, soft,moist, no mottles, 2.5YR5/4
				2	
				3	CH - Silty clay , no roots, no rocks, wet, mottles, 7.5/YR/5/4
				4	BOB
				5	
				6	
				7	
				8	
				9	
				10	
				11	

Storie Index Calculation

Variable	Value
A - profile	0.95
B - texture	0.95
C - slope	0.85
X -tilth	1.00
Result	**0.77**

Start Time 11:15 AM Completion Time 11:25 AM Page 2 of 40

Project Name APN 217-214-001 Project Number 50431

Hole Number TP-3 Hole Size 3'x8' Date Drilled 12/4/2016

Excavation Method test pit Logged By LBJ Hole Elevation 1283.7'

Unconfined Compressive Strength	Moisture Content (%)	Dry Density (pcf)	Sampled Interval	Depth (ft)	Field Classification Based on Unified Soil Classification System (texture, consistency, moisture, color, symbol, remarks)
1,500 psf	~20% wet	135 pcf		0–1	SCL - Silty clay loam, A horizon, many roots, blocky structure, soft,moist, no mottles, 10YR3/2
				1–2	SCL - Clay loam, B horizon, many roots, soft,moist, no mottles, 2.5YR5/4
				2–3	CH - Silty clay , no roots, no rocks, wet, faint mottling, 7.5/YR/6/6
				5	BOB

Storie Index Calculation

Variable	Value
A - profile	1
B - texture	0.95
C - slope	0.8
X -tilth	0.9
Result	**0.684**

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Project Name APN 217-214-001 Project Number 50431

Hole Number TP-4 Hole Size 3'x8' Date Drilled 12/4/2016

Excavation Method test pit Logged By LBJ Hole Elevation 1283'

Unconfined Compressive Strength	Moisture Content (%)	Dry Density (pcf)	Sampled Interval	Depth (ft)	Field Classification Based on Unified Soil Classification System (texture, consistency, moisture, color, symbol, remarks)
1,500 psf	~20% wet	135 pcf		0–1	SCL - Silty clay loam, A horizon, many roots, blocky structure, soft,moist, no mottles, 10YR5/4
				1–2	SCL - Clay loam, B horizon, many roots, no rocks, soft, moist, no mottles, 2.5YR/4/4
				2–3	CH - Silty clay, firm, no roots, no rocks, wet, mottles, 7.5/YR/6/6
				3–4	
				4–5	BOB
				5–6	
				6–7	
				7–8	
				8–9	
				9–10	
				10–11	

Storie Index Calculation

Variable	Value
A - profile	0.95
B - texture	0.95
C - slope	0.8
X -tilth	0.95
Result	**0.6859**

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Project Name APN 217-253-001 Project Number 50431

Hole Number TP-5 Hole Size 3'x8' Date Drilled 12/4/2016

Excavation Method test pit Logged By LBJ Hole Elevation 1294'

Unconfined Compressive Strength	Moisture Content (%)	Dry Density (pcf)	Sampled Interval	Depth (ft)	Field Classification Based on Unified Soil Classification System (texture, consistency, moisture, color, symbol, remarks)
1,500 psf	~20% wet	135 pcf		0	SCL - Silty clay loam, A horizon, many roots, blocky structure, soft,moist, no mottles, 10YR5/4
				1	SCL - Clay loam, B horizon, many roots, soft,moist, no mottles, 2.5YR5/4
				2	
				3	CH - Silty clay, firm, few roots, no rocks, wet, mottles, 7.5/YR/6/6
				4	BOB
				5	
				6	
				7	
				8	
				9	
				10	
				11	

Start Time 11:50 AM Completion Time 12:00PM Page 5 of 40

Project Name APN 217-253-001 Project Number 50431

Hole Number TP-6 Hole Size 3'x8' Date Drilled 12/4/2016

Excavation Method test pit Logged By LBJ Hole Elevation 1290'

Unconfined Compressive Strength	Moisture Content (%)	Dry Density (pcf)	Sampled Interval	Depth (ft)	Field Classification Based on Unified Soil Classification System (texture, consistency, moisture, color, symbol, remarks)
1,500 psf	~20% wet	135 pcf		1	CL - Clay loam, many roots, blocky structure, 10YR5/4
				2	CH - Silty clay , no roots, no rocks, wet, faint mottling, 7.5/YR/6/6
				3	
				4	BOB
				5	
				6	
				7	
				8	
				9	
				10	
				11	

Start Time 12:00 PM Completion Time 12:10 PM Page 6 of 40

Project Name APN 217-253-001 Project Number 50431

Hole Number TP-7 Hole Size 3'x8' Date Drilled 12/4/2016

Excavation Method test pit Logged By LBJ Hole Elevation 1320'

Unconfined Compressive Strength	Moisture Content (%)	Dry Density (pcf)	Sampled Interval	Depth (ft)	Field Classification Based on Unified Soil Classification System (texture, consistency, moisture, color, symbol, remarks)
1,500 psf	~20%	135 pcf		1	CL - Clay loam, many roots, blocky structure, 10YR5/4
				2	CH - Silty clay , no roots, no rocks, wet, faint mottling, 7.5/YR/6/6
				3	
				4	
				5	BOB
				6	
				7	
				8	
				9	
				10	
				11	

Start Time 12:10 PM Completion Time 12:20 PM Page 7 of 40

Project Name APN 217-214-001 Project Number 50431

Hole Number TP-8 Hole Size 3'x8' Date Drilled 12/4/2016

Excavation Method test pit Logged By LBJ Hole Elevation 1287'

Unconfined Compressive Strength	Moisture Content (%)	Dry Density (pcf)	Sampled Interval	Depth (ft)	Field Classification Based on Unified Soil Classification System (texture, consistency, moisture, color, symbol, remarks)
1,500 psf	~20%	135 pcf		1	CL - Clay loam, many roots, blocky structure, 10YR5/4
				2	CH - Clay w/ fine sand, few roots, 7.5/YR 3/4, wet, refusal @ 30" bgs
				3	
				4	BOB
				5	
				6	
				7	
				8	
				9	
				10	
				11	

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Project Name APN 217-214-001 Project Number 50431

Hole Number TP-9 Hole Size 3'x8' Date Drilled 12/4/2016

Excavation Method test pit Logged By LBJ Hole Elevation 1353'

Unconfined Compressive Strength	Moisture Content (%)	Dry Density (pcf)	Sampled Interval	Depth (ft)	Field Classification Based on Unified Soil Classification System (texture, consistency, moisture, color, symbol, remarks)
1,500 psf	~20%	135 pcf		1	SCL - Clay loam, many roots, blocky structure, 10YR5/4
				2	CH - Clay w/ small pebbles, few roots, 10% pebbles, 2% rocks, 7.5/YR 3/4, damp, refusal @ 30" bgs
				3	
				4	BOB
				5	
				6	
				7	
				8	
				9	
				10	
				11	

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Project Name APN 217-214-001 Project Number 50431

Hole Number TP-10 Hole Size 3'x8' Date Drilled 12/4/2016

Excavation Method test pit Logged By LBJ Hole Elevation 1343.1'

Unconfined Compressive Strength	Moisture Content (%)	Dry Density (pcf)	Sampled Interval	Depth (ft)	Field Classification Based on Unified Soil Classification System (texture, consistency, moisture, color, symbol, remarks)
1,500 psf	~20%	135 pcf		1	SCL - Silty clay loam, A horizon, many roots, blocky structure, soft,moist, no mottles, 10YR5/4
				2	SCL - Clay loam, B horizon, many roots, soft,moist, no mottles, 2.5YR5/4
				3	CH - Silty clay , no roots, no rocks, wet, faint mottling, 7.5/YR/6/6
				4	BOB
				5	
				6	
				7	
				8	
				9	
				10	
				11	

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Project Name APN 217-214-001 Project Number 50431

Hole Number TP-11 Hole Size 3'x8' Date Drilled 12/4/2016

Excavation Method test pit Logged By LBJ Hole Elevation 1340'

Unconfined Compressive Strength	Moisture Content (%)	Dry Density (pcf)	Sampled Interval	Depth (ft)	Field Classification Based on Unified Soil Classification System (texture, consistency, moisture, color, symbol, remarks)
1,500 psf	~20%	135 pcf		1	SCL - Silty clay loam, A horizon, many roots, blocky structure, soft,moist, no mottles, 10YR5/4
				2	SCL - Clay loam, B horizon, many roots, soft,moist, no mottles, 2.5YR5/4
				3	CH - Silty clay , no roots, no rocks, wet, faint mottling, 7.5/YR/6/6
				4	BOB
				5	
				6	
				7	
				8	
				9	
				10	
				11	

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Project Name APN 217-214-001 Project Number 50431

Hole Number TP-12 Hole Size 3'x8' Date Drilled 12/4/2016

Excavation Method test pit Logged By LBJ Hole Elevation 1333.3'

Unconfined Compressive Strength	Moisture Content (%)	Dry Density (pcf)	Sampled Interval	Depth (ft)	Field Classification Based on Unified Soil Classification System (texture, consistency, moisture, color, symbol, remarks)
				0	SCL - Silty clay loam, A horizon, many roots, blocky structure, soft,moist, no mottles, 10YR5/4
				1	SCL - Clay loam, B horizon, many roots, soft,moist, no mottles, 2.5YR5/4
				2	
				3	CH - Silty clay , no roots, no rocks, wet, faint mottling, 7.5/YR/6/6
				4	
				5	
				6	
				7	
				8	
				9	
				10	
				11	

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Project Name APN 217-214-001 Project Number 50431

Hole Number TP-13 Hole Size 3'x8' Date Drilled 12/4/2016

Excavation Method test pit Logged By LBJ Hole Elevation 1303.5'

Unconfined Compressive Strength	Moisture Content (%)	Dry Density (pcf)	Sampled Interval	Depth (ft)	Field Classification Based on Unified Soil Classification System (texture, consistency, moisture, color, symbol, remarks)
				0	SCL - Silty clay loam, A horizon, many roots, blocky structure, soft,moist, no mottles, 10YR5/4
				1	SCL - Clay loam, B horizon, many roots, soft,moist, no mottles, 2.5YR5/4
				3	CH - Silty clay , no roots, no rocks, wet, faint mottling, 7.5/YR/6/6
				4.5	BOB

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Project Name APN 217-214-001 Project Number 50431

Hole Number TP-14 Hole Size 3'x8' Date Drilled 12/4/2016

Excavation Method test pit Logged By LBJ Hole Elevation 1300.2'

Unconfined Compressive Strength	Moisture Content (%)	Dry Density (pcf)	Sampled Interval	Depth (ft)	Field Classification Based on Unified Soil Classification System (texture, consistency, moisture, color, symbol, remarks)
				0	SCL - Silty clay loam, A horizon, many roots, blocky structure, soft,moist, no mottles, 10YR5/4
				1	SCL - Clay loam, B horizon, many roots, soft,moist, no mottles, 2.5YR5/4
				5	BOB

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Project Name APN 217-214-001 Project Number 50431

Hole Number TP-15 Hole Size 3'x8' Date Drilled 12/4/2016

Excavation Method test pit Logged By LBJ Hole Elevation 1300'

Unconfined Compressive Strength	Moisture Content (%)	Dry Density (pcf)	Sampled Interval	Depth (ft)	Field Classification Based on Unified Soil Classification System (texture, consistency, moisture, color, symbol, remarks)
				0	~~SCL - Silty clay loam, A horizon, many roots, blocky structure,~~ soft,moist, no mottles, 10YR5/4
				1	SCL - Clay loam, B horizon, many roots, soft,moist, no mottles, 2.5YR5/4
				2	CH - Silty clay , no roots, no rocks, wet, faint mottling, 7.5/YR/6/6
				3	
				4	
				5	
				6	
				7	
				8	
				9	
				10	
				11	

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Project Name APN 217-214-001 Project Number 50431

Hole Number TP-16 Hole Size 3'x8' Date Drilled 12/4/2016

Excavation Method test pit Logged By LBJ Hole Elevation 1287'

Unconfined Compressive Strength	Moisture Content (%)	Dry Density (pcf)	Sampled Interval	Depth (ft)	Field Classification Based on Unified Soil Classification System (texture, consistency, moisture, color, symbol, remarks)
1,500 psf	~20%	135 pcf	X	0	SCL - Silty clay loam, A horizon, many roots, blocky structure, soft,moist, no mottles, 10YR5/4
				1	SCL - Clay loam, B horizon, many roots, soft,moist, no mottles, 2.5YR5/4
				2	
				3	CH - Silty clay , no roots, no rocks, wet, faint mottling, 7.5/YR/6/6
				4	CH - Clay w/ small pebbles, few roots, 10% pebbles, 2% rocks, 7.5/YR 3/4, damp, refusal @ 30" bgs
				5	BOB
				6	
				7	
				8	
				9	
				10	
				11	

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Project Name APN 217-055-002 Project Number 50431

Hole Number TP-17 Hole Size 3'x8' Date Drilled 12/4/2016

Excavation Method test pit Logged By LBJ Hole Elevation 1323.3'

Unconfined Compressive Strength	Moisture Content (%)	Dry Density (pcf)	Sampled Interval	Depth (ft)	Field Classification Based on Unified Soil Classification System (texture, consistency, moisture, color, symbol, remarks)
				0	SCL - Silty clay loam, A horizon, many roots, blocky structure, soft,moist, no mottles, 10YR/3/1, slope 15%
				1	SCL - Clay loam, B horizon, many roots, soft,moist, no mottles, 2.5YR4/4
				2	
				3	CH - Silty clay , no roots, no rocks, wet, faint mottling, 7.5/YR/6/6
				4	BOB
				5	
				6	
				7	
				8	
				9	
				10	
				11	

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Project Name APN 217-055-002 Project Number 50431

Hole Number TP-18 Hole Size 3'x8' Date Drilled 12/4/2016

Excavation Method test pit Logged By LBJ Hole Elevation 1996.5'

Unconfined Compressive Strength	Moisture Content (%)	Dry Density (pcf)	Sampled Interval	Depth (ft)	Field Classification Based on Unified Soil Classification System (texture, consistency, moisture, color, symbol, remarks)
				0	SCL - Silty clay loam, A horizon, many roots, blocky structure, soft,moist, no mottles, 10YR5/4
				1	SCL - Clay loam, B horizon, many roots, soft,moist, no mottles, 2.5YR5/4
				2	
				3	CH - Silty clay , no roots, no rocks, wet, faint mottling, 7.5/YR/6/6
				4	
				5	
				6	
				7	
				8	
				9	
				10	
				11	

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Project Name APN 217-055-002 Project Number 50431

Hole Number TP-19 Hole Size 3'x8' Date Drilled 12/4/2016

Excavation Method test pit Logged By LBJ Hole Elevation 1970.1'

Unconfined Compressive Strength	Moisture Content (%)	Dry Density (pcf)	Sampled Interval	Depth (ft)	Field Classification Based on Unified Soil Classification System (texture, consistency, moisture, color, symbol, remarks)
				0	SCL - Silty clay loam, A horizon, many roots, blocky structure, soft,moist, no mottles, 10YR5/4
				1	SCL - Clay loam, B horizon, many roots, soft,moist, no mottles, 2.5YR5/4
				3	CH - Silty clay , no roots, no rocks, wet, faint mottling, 7.5/YR/6/6
				5	BOB

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Project Name APN 217-055-002 Project Number 50431

Hole Number TP-20 Hole Size 3'x8' Date Drilled 12/4/2016

Excavation Method test pit Logged By LBJ Hole Elevation 1956.9'

Unconfined Compressive Strength	Moisture Content (%)	Dry Density (pcf)	Sampled Interval	Depth (ft)	Field Classification Based on Unified Soil Classification System (texture, consistency, moisture, color, symbol, remarks)
				1	SCL - Clay loam, B horizon, many roots, soft,moist, no mottles, 2.5YR5/4
				2	
				3	
				4	
				5	
				6	BOB
				7	
				8	
				9	
				10	
				11	

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Project Name APN 217-055-002 Project Number 50431

Hole Number TP-21 Hole Size 3'x8' Date Drilled 12/4/2016

Excavation Method test pit Logged By LBJ Hole Elevation 1953.6'

Unconfined Compressive Strength	Moisture Content (%)	Dry Density (pcf)	Sampled Interval	Depth (ft)	Field Classification Based on Unified Soil Classification System (texture, consistency, moisture, color, symbol, remarks)
				0	SCL - Silty clay loam, A horizon, many roots, blocky structure, soft,moist, no mottles, 10YR5/4
				1	SCL - Clay loam, B horizon, many roots, soft,moist, no mottles, 2.5YR5/4
				2	
				3	
				4	
				5	
				6	
				7	
				8	
				9	
				10	
				11	

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Project Name APN 217-055-002 Project Number 50431

Hole Number TP-22 Hole Size 3'x8' Date Drilled 12/4/2016

Excavation Method test pit Logged By LBJ Hole Elevation 1930.5'

Unconfined Compressive Strength	Moisture Content (%)	Dry Density (pcf)	Sampled Interval	Depth (ft)	Field Classification Based on Unified Soil Classification System (texture, consistency, moisture, color, symbol, remarks)
				1	
				2	
				3	
				4	BOB
				5	
				6	
				7	
				8	
				9	
				10	
				11	

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Project Name APN 217-055-002 Project Number 50431

Hole Number TP-23 Hole Size 3'x8' Date Drilled 12/4/2016

Excavation Method test pit Logged By LBJ Hole Elevation 1927.2'

Unconfined Compressive Strength	Moisture Content (%)	Dry Density (pcf)	Sampled Interval	Depth (ft)	Field Classification Based on Unified Soil Classification System (texture, consistency, moisture, color, symbol, remarks)
				0	SCL - Silty clay loam, A horizon, many roots, blocky structure, soft,moist, no mottles, 10YR/3/1, slope 15%
				1	SCL - Clay loam, B horizon, many roots, soft,moist, no mottles, 2.5YR4/4
				2	
				3	CH - Silty clay , no roots, no rocks, wet, faint mottling, 7.5/YR/6/6
				4	BOB
				5	
				6	
				7	
				8	
				9	
				10	
				11	

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Project Name APN 217-055-002 Project Number 50431

Hole Number TP-24 Hole Size 3'x8' Date Drilled 12/4/2016

Excavation Method test pit Logged By LBJ Hole Elevation 1927.2'

Unconfined Compressive Strength	Moisture Content (%)	Dry Density (pcf)	Sampled Interval	Depth (ft)	Field Classification Based on Unified Soil Classification System (texture, consistency, moisture, color, symbol, remarks)
				1 2 3 4 5 6 7 8 9 10 11	

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Project Name APN 217-055-002 Project Number 50431

Hole Number TP-25 Hole Size 3'x8' Date Drilled 12/4/2016

Excavation Method test pit Logged By LBJ Hole Elevation 1933.8'

Unconfined Compressive Strength	Moisture Content (%)	Dry Density (pcf)	Sampled Interval	Depth (ft)	Field Classification Based on Unified Soil Classification System (texture, consistency, moisture, color, symbol, remarks)
				1	
				2	
				3	
				4	BOB
				5	
				6	
				7	
				8	
				9	
				10	
				11	

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Project Name APN 217-052-001 Project Number 50431

Hole Number TP-26 Hole Size 3'x8' Date Drilled 12/4/2016

Excavation Method test pit Logged By LBJ Hole Elevation 2211'

Unconfined Compressive Strength	Moisture Content (%)	Dry Density (pcf)	Sampled Interval	Depth (ft)	Field Classification Based on Unified Soil Classification System (texture, consistency, moisture, color, symbol, remarks)
				1 2 3 4 5 6 7 8 9 10 11	

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Project Name APN 217-055-002 Project Number 50431

Hole Number TP-27 Hole Size 3'x8' Date Drilled 12/4/2016

Excavation Method test pit Logged By LBJ Hole Elevation 2217.6

Unconfined Compressive Strength	Moisture Content (%)	Dry Density (pcf)	Sampled Interval	Depth (ft)	Field Classification Based on Unified Soil Classification System (texture, consistency, moisture, color, symbol, remarks)
				1	
				2	
				3	
				4	
				5	
				6	
				7	
				8	
				9	
				10	
				11	

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Project Name APN 217-052-001 Project Number 50431

Hole Number TP-28 Hole Size 3'x8' Date Drilled 12/4/2016

Excavation Method test pit Logged By LBJ Hole Elevation 2234'

Unconfined Compressive Strength	Moisture Content (%)	Dry Density (pcf)	Sampled Interval	Depth (ft)	Field Classification Based on Unified Soil Classification System (texture, consistency, moisture, color, symbol, remarks)
				1 2 3 4 5 6 7 8 9 10 11	

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Project Name APN 217-052-001 Project Number 50431

Hole Number TP-29 Hole Size 3'x8' Date Drilled 12/4/2016

Excavation Method test pit Logged By LBJ Hole Elevation 2237.4'

Unconfined Compressive Strength	Moisture Content (%)	Dry Density (pcf)	Sampled Interval	Depth (ft)	Field Classification Based on Unified Soil Classification System (texture, consistency, moisture, color, symbol, remarks)
				1 2 3 4 5 6 7 8 9 10 11	

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Project Name APN 217-051-001 Project Number 50431

Hole Number TP-30 Hole Size 3'x8' Date Drilled 12/4/2016

Excavation Method test pit Logged By LBJ Hole Elevation 2036.1'

Unconfined Compressive Strength	Moisture Content (%)	Dry Density (pcf)	Sampled Interval	Depth (ft)	Field Classification Based on Unified Soil Classification System (texture, consistency, moisture, color, symbol, remarks)
				1	
				2	
				3	
				4	
				5	
				6	
				7	
				8	
				9	
				10	
				11	

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Project Name APN 217-051-001 Project Number 50431

Hole Number TP-31 Hole Size 3'x8' Date Drilled 12/4/2016

Excavation Method test pit Logged By LBJ Hole Elevation 2052.6'

Unconfined Compressive Strength	Moisture Content (%)	Dry Density (pcf)	Sampled Interval	Depth (ft)	Field Classification Based on Unified Soil Classification System (texture, consistency, moisture, color, symbol, remarks)
				1 2 3 4 5 6 7 8 9 10 11	

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Project Name APN 217-051-001 Project Number 50431

Hole Number TP-32 Hole Size 3'x8' Date Drilled 12/4/2016

Excavation Method test pit Logged By LBJ Hole Elevation 2039.4'

Unconfined Compressive Strength	Moisture Content (%)	Dry Density (pcf)	Sampled Interval	Depth (ft)	Field Classification Based on Unified Soil Classification System (texture, consistency, moisture, color, symbol, remarks)
1,500 psf	~20%	135 pcf	X	1 2 3 4 5 6 7 8 9 10 11	

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Project Name APN 217-051-001 Project Number 50431

Hole Number TP-33 Hole Size 3'x8' Date Drilled 12/4/2016

Excavation Method test pit Logged By LBJ Hole Elevation 2059.2'

Unconfined Compressive Strength	Moisture Content (%)	Dry Density (pcf)	Sampled Interval	Depth (ft)	Field Classification Based on Unified Soil Classification System (texture, consistency, moisture, color, symbol, remarks)
1,500 psf	~20%	135 pcf	X	1 2 3 4 5 6 7 8 9 10 11	

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Project Name APN 217-051-001 Project Number 50431

Hole Number TP-34 Hole Size 3'x8' Date Drilled 12/4/2016

Excavation Method test pit Logged By LBJ Hole Elevation 2079'

Unconfined Compressive Strength	Moisture Content (%)	Dry Density (pcf)	Sampled Interval	Depth (ft)	Field Classification Based on Unified Soil Classification System (texture, consistency, moisture, color, symbol, remarks)
1,500 psf	~20%	135 pcf	X	1 2 3 4 5 6 7 8 9 10 11	

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Project Name APN 217-055-002 Project Number 50431

Hole Number TP-35 Hole Size 3'x8' Date Drilled 12/4/2016

Excavation Method test pit Logged By LBJ Hole Elevation 2088.9'

Unconfined Compressive Strength	Moisture Content (%)	Dry Density (pcf)	Sampled Interval	Depth (ft)	Field Classification Based on Unified Soil Classification System (texture, consistency, moisture, color, symbol, remarks)
1,500 psf	~20%	135 pcf		1 2 3 4 5 6 7 8 9 10 11	

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Project Name APN 217-052-001 Project Number 50431

Hole Number TP-36 Hole Size 3'x8' Date Drilled 12/4/2016

Excavation Method test pit Logged By LBJ Hole Elevation 1722.6'

Unconfined Compressive Strength	Moisture Content (%)	Dry Density (pcf)	Sampled Interval	Depth (ft)	Field Classification Based on Unified Soil Classification System (texture, consistency, moisture, color, symbol, remarks)
1,500 psf	~20%	135 pcf		1 2 3 4 5 6 7 8 9 10 11	BOB

Start Time 4:35 PM Completion Time 4:40 PM Page 36 of 40

Project Name APN 217-052-001 Project Number 50431

Hole Number TP-37 Hole Size 3'x8' Date Drilled 12/4/2016

Excavation Method test pit Logged By LBJ Hole Elevation 1716'

Unconfined Compressive Strength	Moisture Content (%)	Dry Density (pcf)	Sampled Interval	Depth (ft)	Field Classification Based on Unified Soil Classification System (texture, consistency, moisture, color, symbol, remarks)
1,500 psf	~20%	135 pcf		1 2 3 4 5 6 7 8 9 10 11	BOB

Start Time 4:40 PM Completion Time 4:45 PM Page 37 of 40

Project Name APN 217-052-001 Project Number 50431

Hole Number TP-38 Hole Size 3'x8' Date Drilled 12/4/2016

Excavation Method test pit Logged By LBJ Hole Elevation 1716'

Unconfined Compressive Strength	Moisture Content (%)	Dry Density (pcf)	Sampled Interval	Depth (ft)	Field Classification Based on Unified Soil Classification System (texture, consistency, moisture, color, symbol, remarks)
1,500 psf	~20%	135 pcf		1 2 3 4 5 6 7 8 9 10 11	CL - Clay loam, many roots, blocky structure, 10YR5/4

Start Time 4:45 PM Completion Time 4:50 PM Page 38 of 40

Project Name APN 217-055-002 Project Number 50431

Hole Number TP-39 Hole Size 3'x8' Date Drilled 12/4/2016

Excavation Method test pit Logged By LBJ Hole Elevation 2194.5'

Unconfined Compressive Strength	Moisture Content (%)	Dry Density (pcf)	Sampled Interval	Depth (ft)	Field Classification Based on Unified Soil Classification System (texture, consistency, moisture, color, symbol, remarks)
1,500 psf	~20%	135 pcf		1 2 3 4 5 6 7 8 9 10 11	

Start Time 4:50 PM Completion Time 4:55 PM Page 39 of 40

Project Name APN 217-051-001 Project Number 50431

Hole Number TP-40 Hole Size 3'x8' Date Drilled 12/4/2016

Excavation Method test pit Logged By LBJ Hole Elevation 1983.3'

Unconfined Compressive Strength	Moisture Content (%)	Dry Density (pcf)	Sampled Interval	Depth (ft)	Field Classification Based on Unified Soil Classification System (texture, consistency, moisture, color, symbol, remarks)
1,500 psf	~20%	135 pcf		0	SCL - Silty clay loam, A horizon, many roots, blocky structure, soft,moist, no mottles, 10YR5/4
				1	SCL - Clay loam, B horizon, many roots, soft,moist, no mottles, 2.5YR5/4
				2	
				3	
				4	BOB
				5	
				6	
				7	
				8	
				9	
				10	
				11	

Storie Index Calculation

Variable	Value
A - profile	1
B - texture	0.95
C - slope	0.95
X -tilth	1
Result	**0.9025**

Start Time 12:00 PM Completion Time 12:10 PM Page 40 of 40

Appendix 2C

Williamson Act Committee Meeting Letter and Supplemental Documents

PLANNING AND BUILDING DEPARTMENT

3015 H Street Eureka CA 95501 Phone: (707)445-7541
http://www.humboldtgov.org/156

TO: WILLIAMSON ACT COMMITTEE (WAC) MEMBERS

FROM: ZSOFIA ODRY, PLANNER

DATE: JUNE 14, 2018

RE: WAC MEETING OF JUNE 20, 2018

Scheduled Matters: Item 2. Hum Sun Ranch Conditional Use Permit Applications
File No.: APN's 217-051-001 et al
Key Application Number 12890

Recommended WAC Action:

Review the proposed applications for consistency with the Williamson Act Guidelines and make recommendations to the County Planning Commission.

Summary

The application consists of four Conditional Use Permits (CUP) for new mix-light commercial cannabis cultivation of one acre each, and eight Conditional Use Permits (CUP) for new outdoor commercial cannabis cultivation of one acre each. The CUPs would allow up to four acres of mix-light commercial cannabis cultivation, and there will be up to five annual cultivation cycles for the mix-light operations. The CUPs would also allow for up to eight acres of outdoor commercial cannabis cultivation, resulting in a total of twelve acres of commercial cannabis cultivation. Additional project components include the development of one nursery of 0.5 acres in size, for the initial stages of propagation to support the proposed commercial cannabis cultivation. The development of a 3,200 square feet, multi-use processing facility is proposed, as well as three drying facilities of 3,200 square feet each. The project also proposes the addition of a 320 square foot conex box for fertilizer storage, resulting in a total of 13,120 square feet of supporting facilities. The project proposes the development of seven rainwater catchment ponds to support the cannabis cultivation. The project does not anticipate the use of employees, as the operations would be carried out by the LLC members. Power for the project comes from on-grid sources, with a proposed grid-tiered solar panel array to supplement electrical needs across the cultivation areas. A grazing and fencing map is attached to this staff report, along with site plans of the proposed developments.

The subject property is an approximately 3,420 acre Class "B" agricultural preserve that was originally established in 1978 as the Fearrien/Dewey agriculture preserve. The preserve consists of seven separate parcels, each under ownership by Crazy Bear LLC. The current owners acquired the property on July 19, 2016, and submitted a request for non-renewal of the Land

HUMSUN RANCH PROJECT
HUMBOLDT COUNTY PLANNING AND BUILDING APPLICATION No. 12856 et. al.; KEY APNs 217-214-001; 217-253-001; 217-061-001; 217-051-001; 217-052-001; 217-055-002; 217-055-003; 217-056-001; 217-053-002.

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Cannabis Svcs.

1. PROJECT OVERVIEW

Twelve (12) applications for development projects have been submitted on the above referenced APNs for the development of twelve (12) acres of commercial cannabis cultivation and accessory uses. Proposed infrastructure includes seven (7) rain catchment ponds and five (5) permitted groundwater wells. Three wells have currently been drilled. Accessory uses of the Property include three drying sheds, a conex container box for fertilizer storage, and one processing shed near the old farmhouse. Eight of the cannabis cultivation sites will be operated as full term outdoor cannabis, and the remaining four will be operated in greenhouses using mixed light cultivation techniques.

2. PARCEL CHARACTERISTICS

The proposed cannabis cultivation sites are located on parcels zoned AE-B-5 (160) and TPZ. The cannabis cultivation sites are located on parcels 217-055-002; 217-052-001 and 217-253-001. The proposed ponds and groundwater sources are located on the above parcels and parcel 217-051-001. The proposed cannabis cultivation sites are located on areas of prime agricultural soils according to the Storie Index. All cannabis will be conducted on slopes of less than 15%.

3. MERGER

To comply with Humboldt County Ordinance Section 314-55.4.8.2.1.1, the Applicant's a merger has been proposed that would create four parcels. The resulting parcels will consist of at least 600 acres in compliance with the requirements of Humboldt County's Williamson Act ordinance for Class B Grazing Land Preserves. A copy of the certificate of compliance is attached hereto as Exhibit A.

4. LAND PRESERVE CONTRACT

On January 17, 1978 a Resolution Establishing an Agricultural Preserve with Uniform Rules Including Compatible Uses was adopted by the Board of Supervisors for the County of Humboldt for the subject parcels (Resolution 78-15). On February 21st, 1978 a Land Conservation Contract covering the subject parcels was executed by and between Edith F. Fearriean and Jo Ann Dewey and the County of Humboldt establishing the land preserve.

The contract provided that during the term of the contract and any extension thereof, the land described shall not be used for any purpose other than agricultural uses,

160-acre minimum parcel size (AE-B-5(160_) must be adopted by the Board of Supervisors either prior to formation of the preserve or prior to the execution of the contract.

3. Non-Prime Agricultural Land. Land within the preserve shall be non-prime agricultural land of statewide or local significance. Non-prime agricultural lands of statewide or local significance are lands, which are not prime agricultural lands defined in Section 51201 (c) of the California Government Code. Prime agricultural lands are defined as land which qualifies for rating as class I or class II in the Natural Resource Conservation Service land use capability or land which qualifies for rating 80 through 100 in the Storie Index. Cal. Gov. Code §51201 (a) and (b).

The lands subject to the contract are comprised of contiguous land units that exceed the 600-acre requirement of the ordinance. Further, those lands that comprise the preserve that are not zoned TPZ are zoned AE-B-5(160). The lands under contract that comprise that zoning designation are approximately 1,000 acres.

There are approximately 60 acres of prime agricultural lands either designated by the United States Department of Agriculture's National Resource Conservation Service as meeting a class I or II designation or have been rated between 80 to 100 on the Storie Index. Independent field analysis of the proposed cultivation areas conducted by the applicant's showing prime agricultural soils is attached hereto as Exhibit B. All cultivation sites of the proposed project are being proposed to be located on the areas of prime agricultural soils, i.e. locations where the land contract does not qualify.

Further, the majority of the land area of the parcels under contract are devoted to agricultural pursuits consistent with the purpose of the preserve in which the property is located. Cattle have access to the entire parcel and graze wherever forage is available over the full 3,200-acre parcel. Fences are located around the perimeter of the contiguous lands under contract held in single ownership, and there are no man-made or natural barriers preventing the free movement of the herd across the ranch. Income data as evidence that the agricultural pursuits contained in Section 1.F.7 of the Guidelines may be provided if necessary to show compliance.

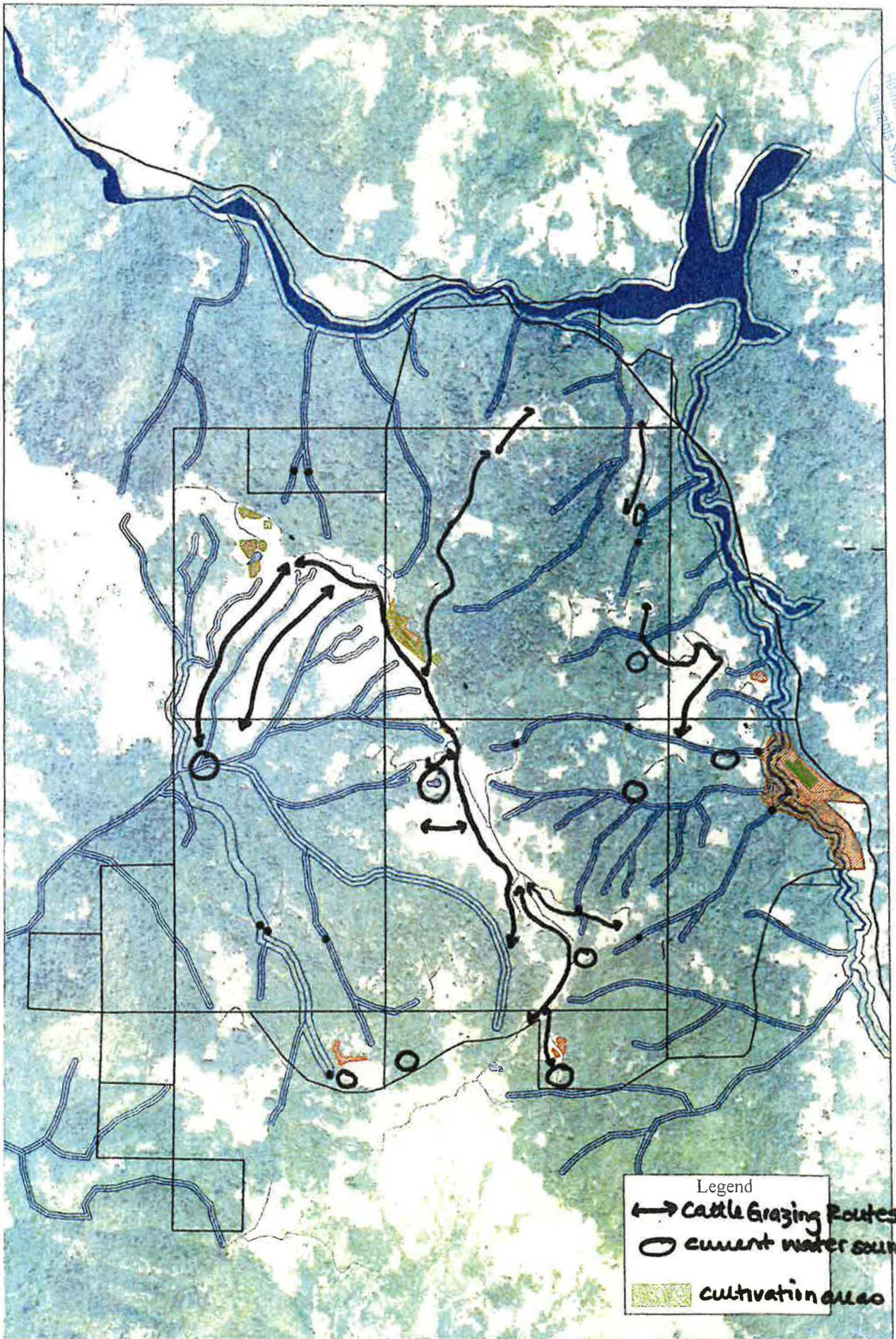
C. PROPOSED PROJECT'S COMPATIBILITY WITH CURRENT AGRICULTURAL USES OF PROPERTY

Resolution 16-144 provides that lands under contract with an agricultural preserve shall be used for the producing of agricultural commodities for commercial purposes and uses compatible with agriculture. The majority of the land area of any property under contract must be devoted to agricultural pursuits consistent with the purpose of the preserve in which the property is located. Resolution 16-144 Section F.4.

crops contained outside or in greenhouses. Greenhouses will be utilized in the mixed light operation on the farm. All nursery facilities used to support the cannabis flowering operation will be conducted in greenhouses. Accordingly, the proposed cannabis cultivation facility would be considered a compatible use with the contract.

D. CONCLUSION

Based on the foregoing, the proposed cannabis uses will not disrupt or significantly displace the current cattle operation that is the current agricultural use of the property. The proposed uses are compatible uses pursuant to the original contract and will be conducted on prime agricultural soils which are outside the scope of the current cattle grazing operation. The proposed water infrastructure will promote the current cattle operation. The majority of the land under contract will remain as a cattle grazing operation, which was the original purpose of the contract. The support facilities used in the cannabis operation may be used in the future to support the current or reasonably foreseeable agricultural operations on the subject parcel, in the event cannabis is no longer cultivated on the property. Accordingly, the Applicant's request the Williamson Act Committee for a finding that the use will not substantially impair or displace the current agricultural uses of the property for which the lands were placed under contract, And that the project as proposed is compliant with the terms and conditions of the existing Willliamson Act contract covering the subject property.



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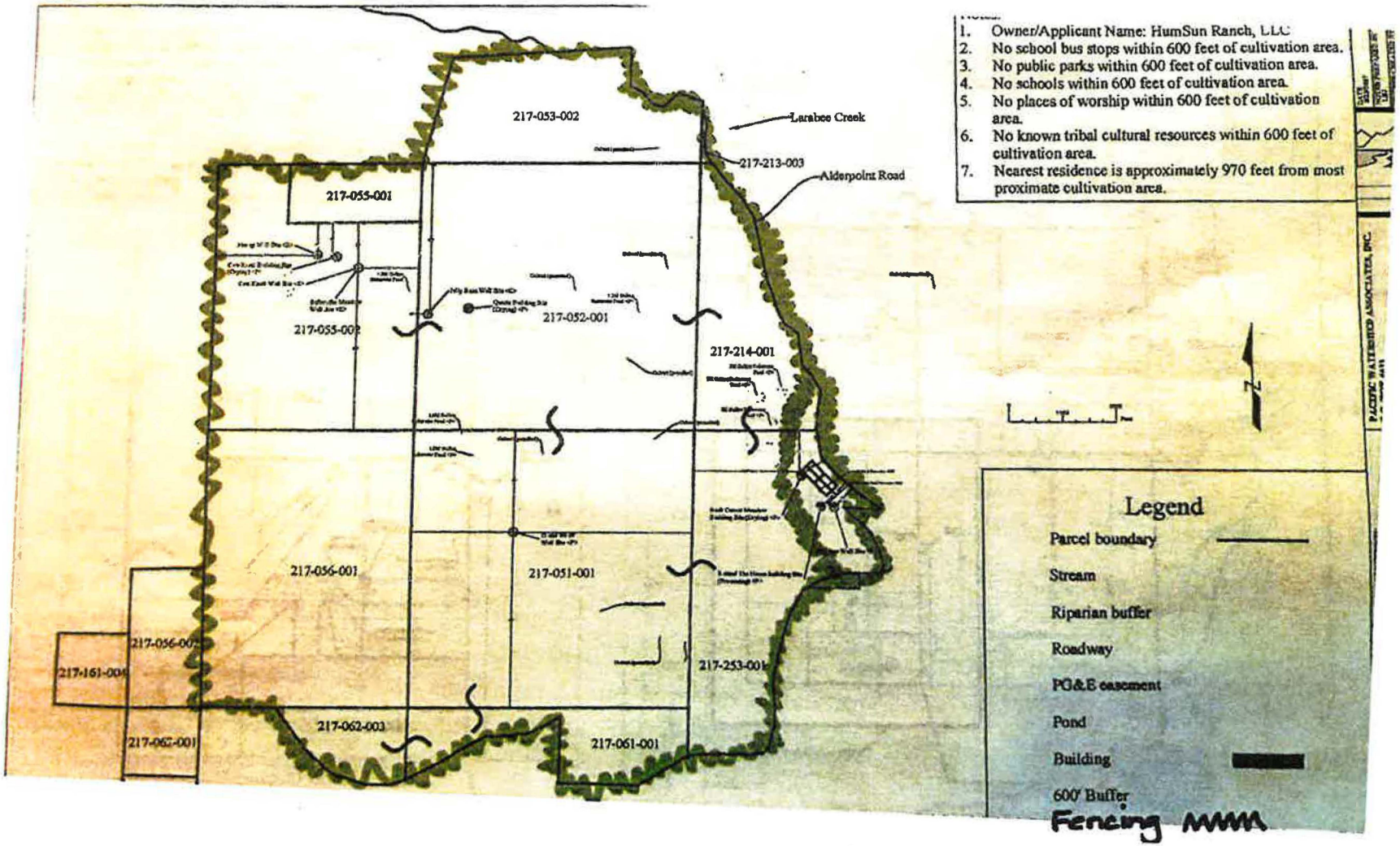
PROJECT DESCRIPTION:
HUM SUN RANCH
30740 ALDER POINT ROAD
BLOCKSBURG, CALIFORNIA 95514
PWA JOB NO.: 6031

DRAWING DESCRIPTION:
STREAM CROSSINGS

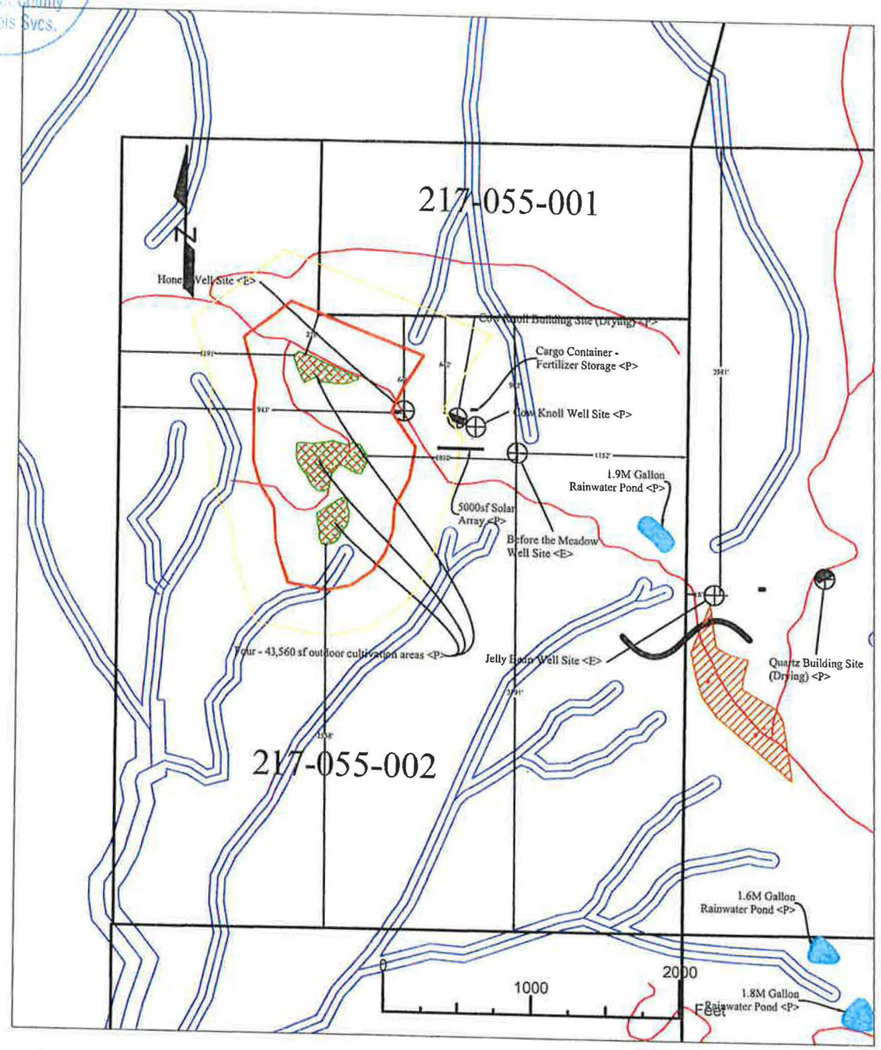
PACIFIC WATERSHED ASSOCIATES, INC.
P.O. BOX 4433
ARCATA, CALIFORNIA 95518
PH: (707) 839-5130 FX: (707) 839-8168
www.pacificwatershed.com

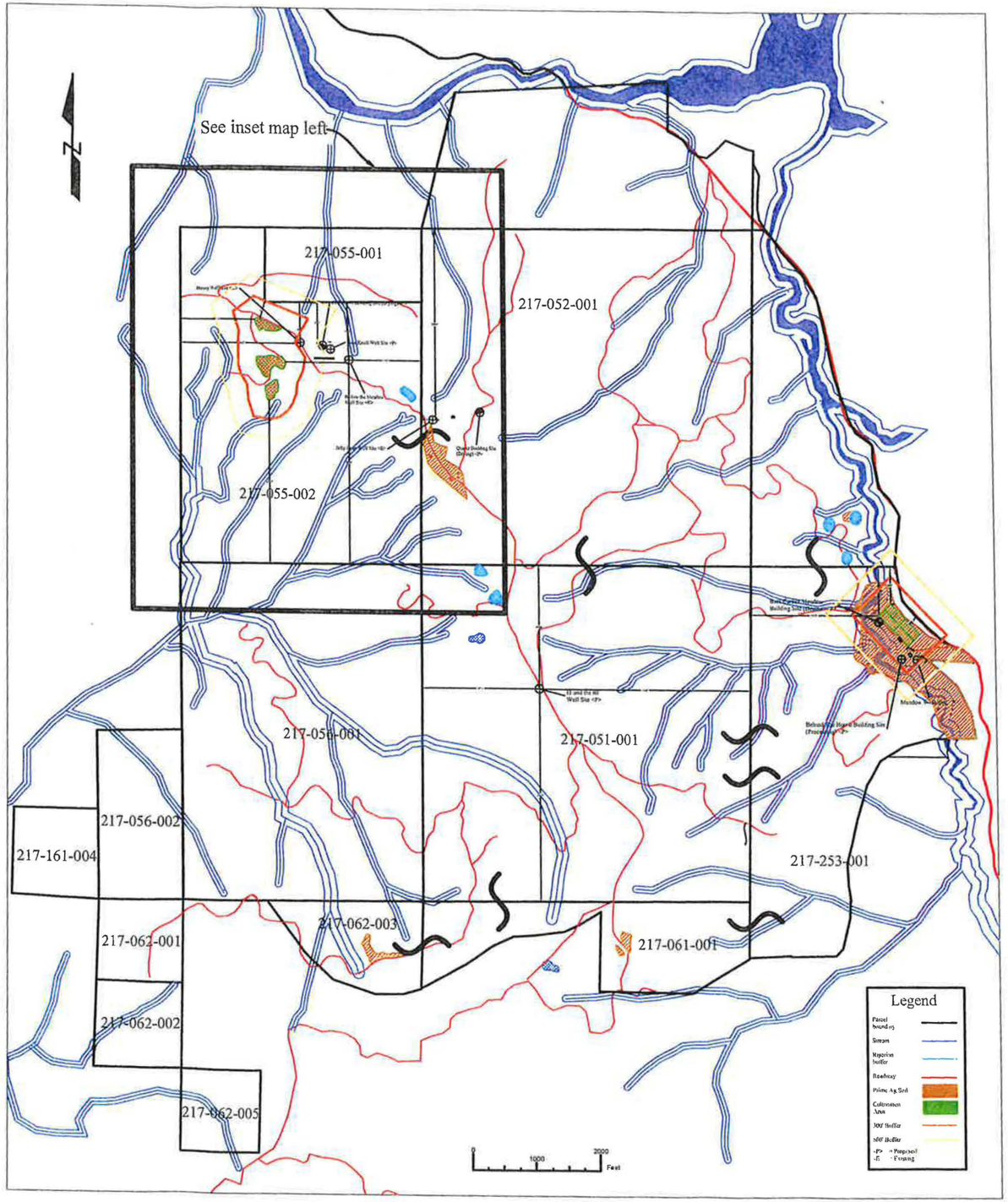
DATE
4/6/2017
NOTES PREPARED BY
L.H. JOB
FIGURES CREATED BY
L.H. JOB
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Cannabis Svcs.



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Cannabis Svcs.





Owner/Applicant Name: HumSun Ranch, LLC
No known easements.
No unpermitted grading, unpermitted culverts, or surface water diversions.
No existing structures on APN 217-055-001 & 002.
Cultivation area setbacks > 30 ft from merged parcel boundaries.
Minimum setback from Class III drainage is ≈ 240 ft.
No school bus stops within 600 feet of cultivation area.
No public parks within 600 feet of cultivation area.
No schools within 600 feet of cultivation area.
No places of worship within 600 feet of cultivation area.
No known tribal cultural resources within 600 feet of cultivation area.
Nearest residence is approximately 11,500 feet from cultivation area.

DATE 8/23/2017
NOTES PREPARED BY L.B. JOB
FIGURES CREATED BY L.B. JOB
SHEET 2 OF 3

PACIFIC WATERSHED ASSOCIATES

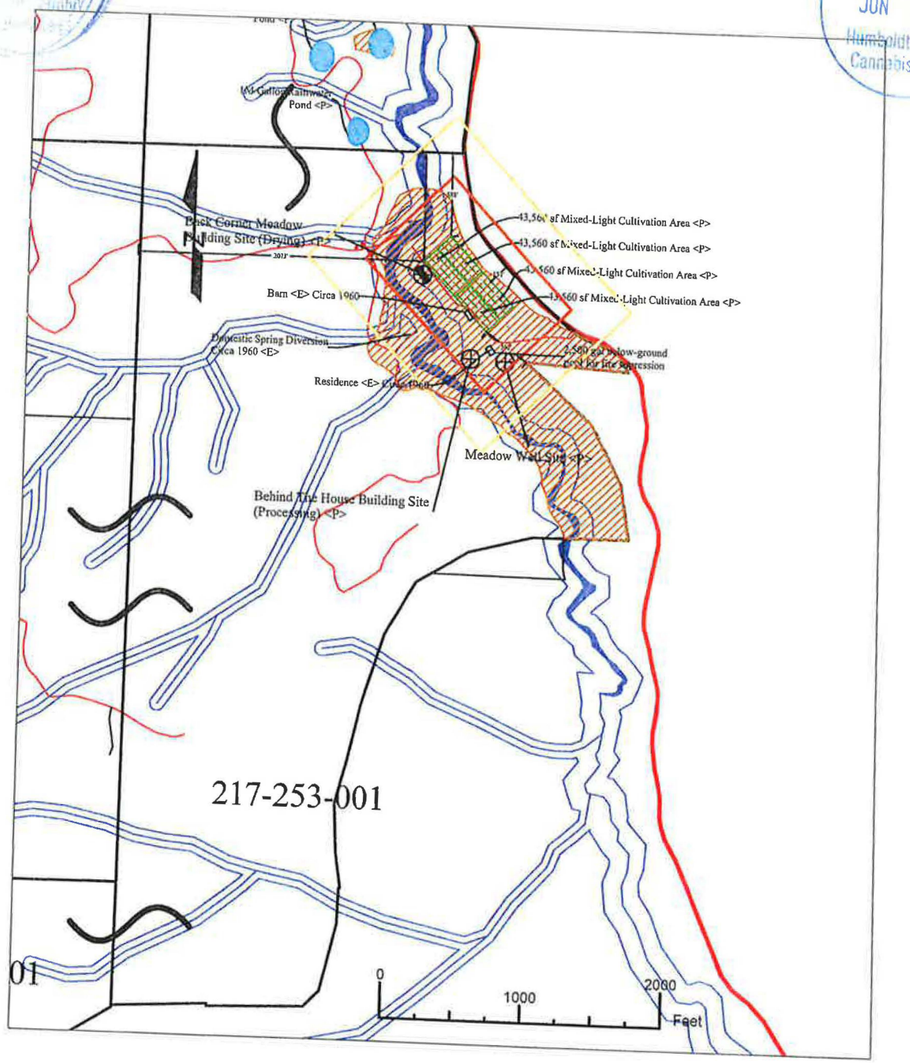
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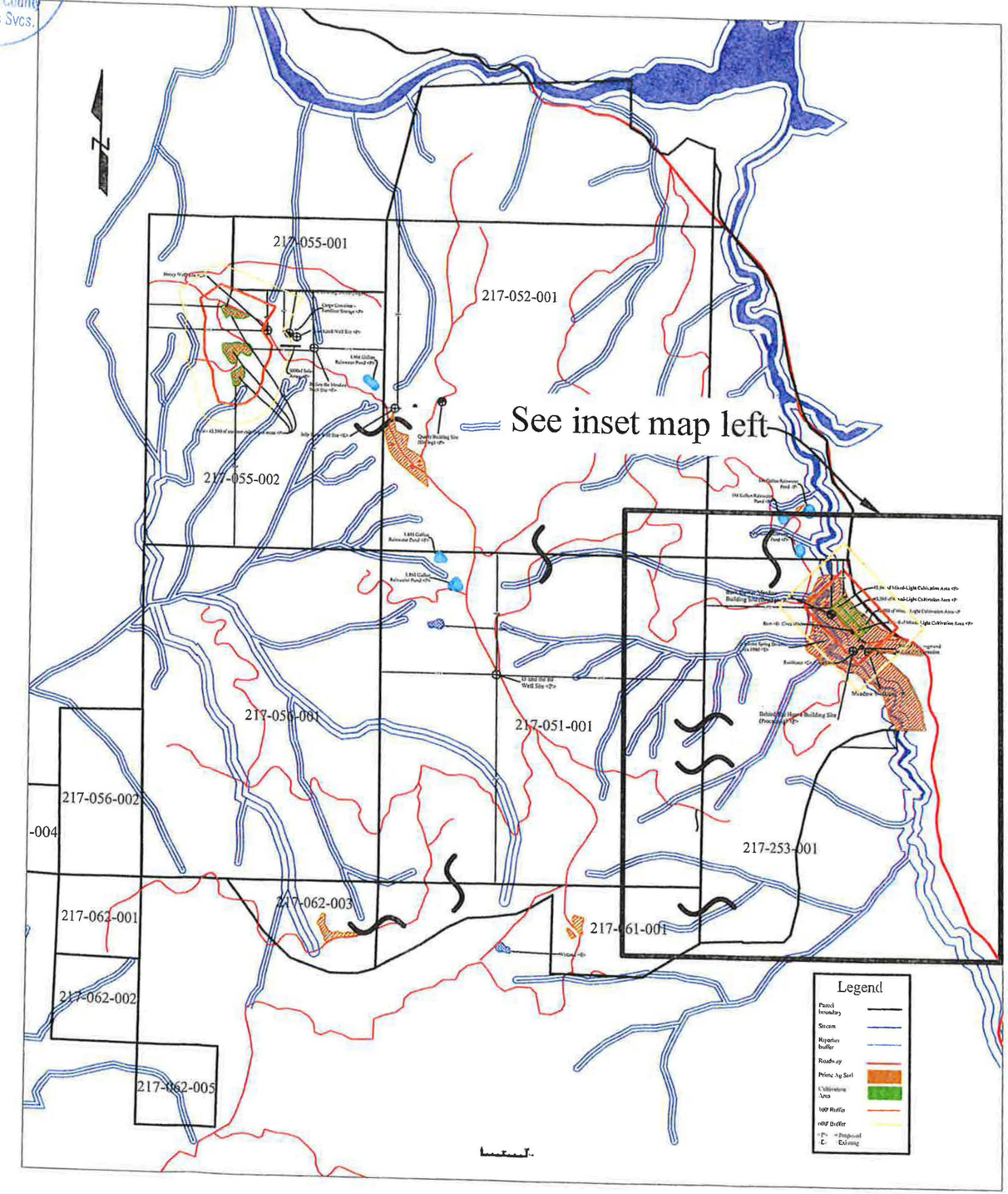
DRAWING DESCRIPTION:
PARCEL 217-055-001
CULTIVATION
APPLICATION SITE MAP

PROJECT DESCRIPTION:
PARCEL OWNER: HUM SUN RANCH, LLC
30740 ALDER POINT ROAD
BLOCKSBURG, CALIFORNIA 95514

PWA JOB NO.: 50431

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Owner/Applicant Name: HumSun Ranch, LLC
No known easements.
No unpermitted grading, unpermitted culverts, or surface water diversions.
Cultivation area setbacks > 30 ft from merged parcel boundaries.
Minimum setback from Class III drainage is ≈ 240 ft.
Single family residence and domestic spring not used in cultivation.
No school bus stops within 600 feet of cultivation area.
No public parks within 600 feet of cultivation area.
No schools within 600 feet of cultivation area.
No places of worship within 600 feet of cultivation area.
No known tribal cultural resources within 600 feet of cultivation area.
Nearest residence is approximately 970 feet from cultivation area.

DATE
8/23/2017
NOTES PREPARED BY
L.B. JOB
FIGURES CREATED BY
L.B. JOB
SHEET 3 OF 3

PACIFIC WATERSHED ASSOCIATES

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DRAWING DESCRIPTION:
PARCEL 217-035-001
CULTIVATION
APPLICATION SITE MAP

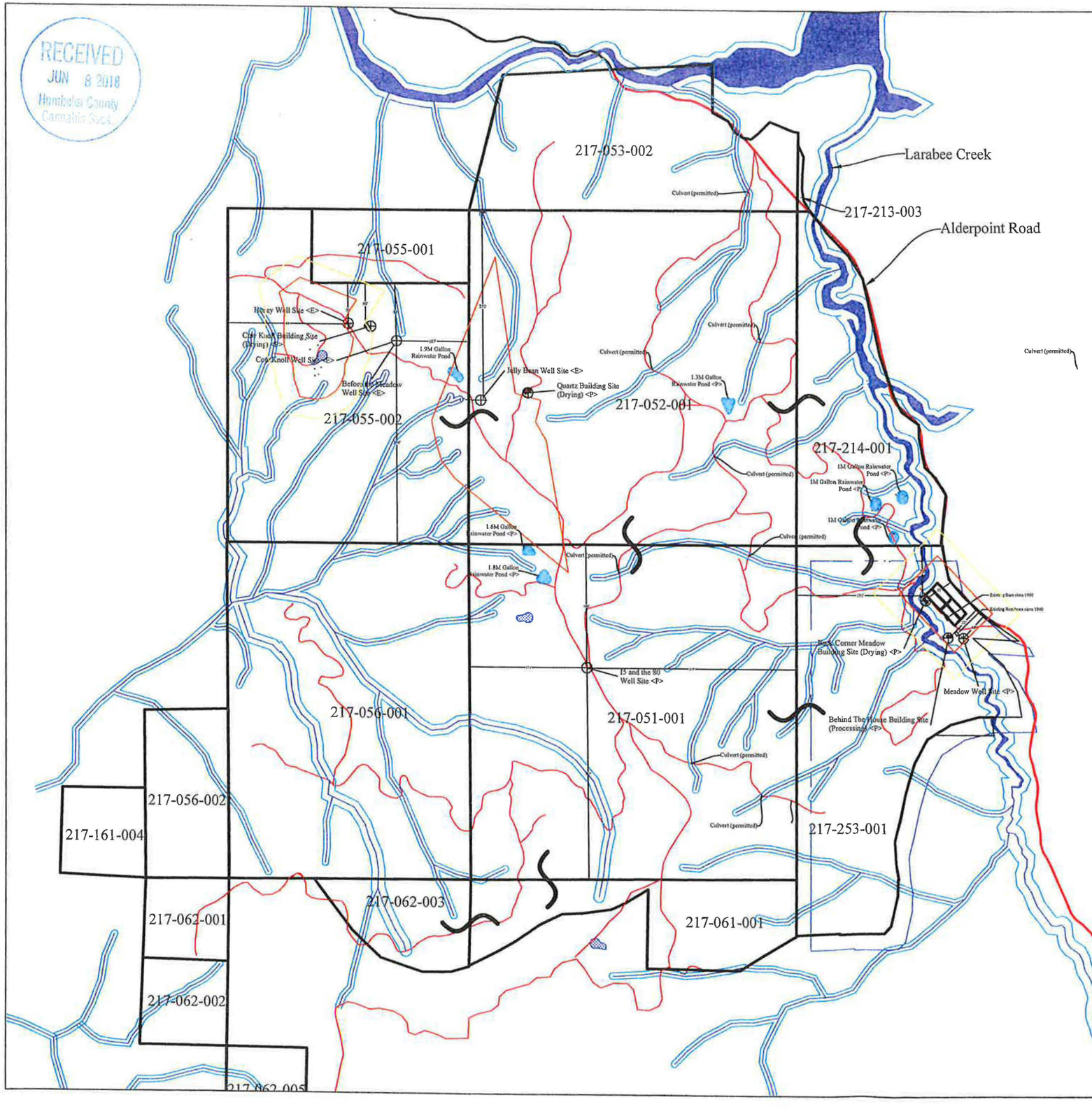
PROJECT DESCRIPTION:
PARCEL OWNER: HUM SUN RANCH, LLC
30740 ALDER POINT ROAD
BLOCKSBURG, CALIFORNIA 95514

PWA JOB NO.: 50431

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Notes:

1. Owner/Applicant Name: HumSun Ranch, LLC
2. No school bus stops within 600 feet of cultivation area.
3. No public parks within 600 feet of cultivation area.
4. No schools within 600 feet of cultivation area.
5. No places of worship within 600 feet of cultivation area.
6. No known tribal cultural resources within 600 feet of cultivation area.
7. Nearest residence is approximately 970 feet from most proximate cultivation area.



Legend

- Parcel boundary
- Stream
- Riparian buffer
- Roadway
- PG&E easement
- Pond
- Building
- 600' Buffer

<P> = Proposed
<E> = Existing

DATE 8/23/2017
NOTES PREPARED BY LBJ
FIGURES CREATED BY LBJ
SHEET 1 OF 3

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ARCATA, CALIFORNIA 95518
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DRAWING DESCRIPTION:
BUILDING, POND, AND WELL LOCATION MAP

PROJECT DESCRIPTION:
HUM SUN RANCH
30740 ALDER POINT ROAD
BLOCKSBURG, CALIFORNIA 95514

PWA JOB NO.: 50431

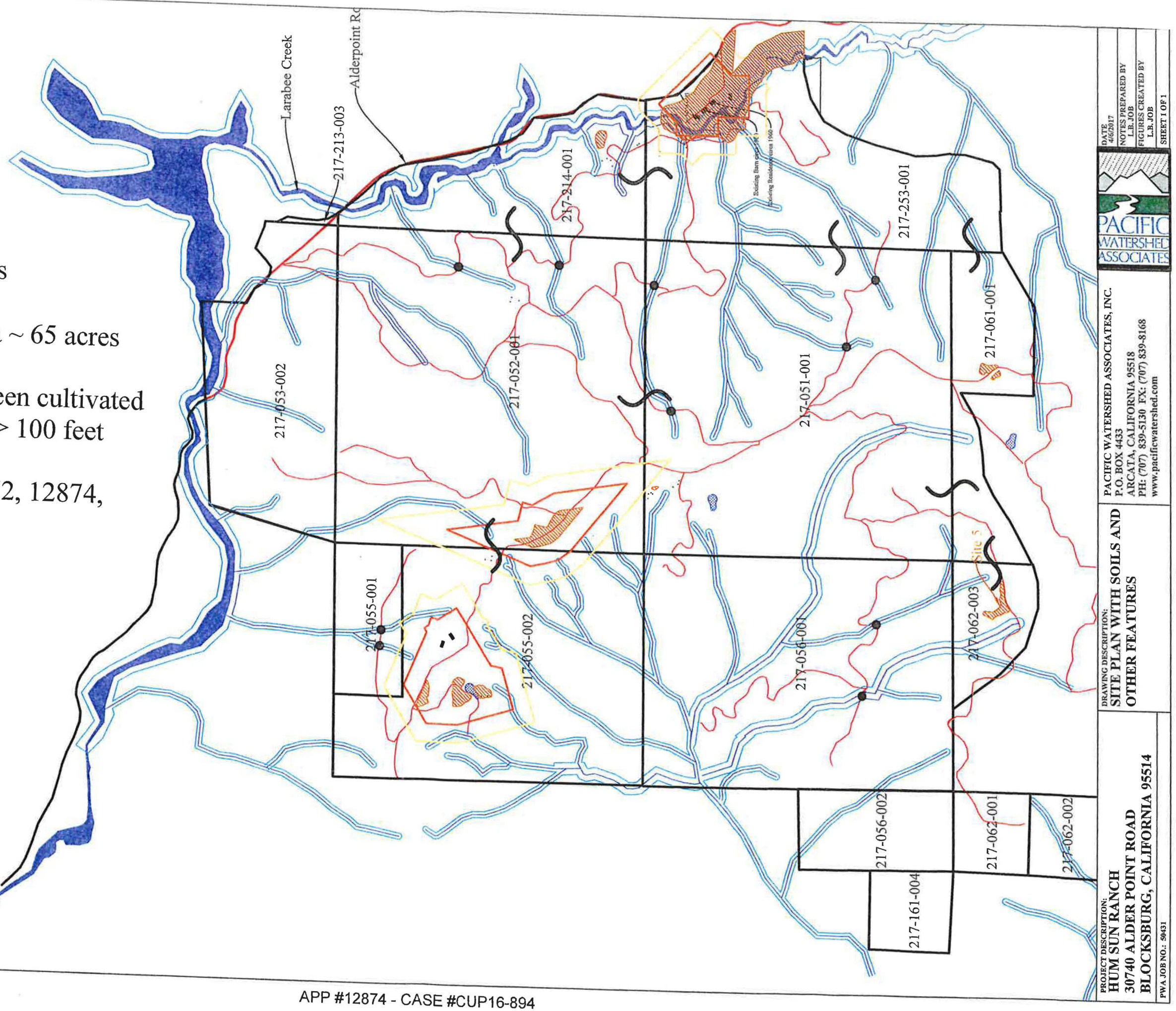
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Total acreage > 1,200 acres

Prime agricultural soil area ~ 65 acres

Minimum separation between cultivated areas and water courses is > 100 feet

Application numbers: 12872, 12874, 12877, 12878



DATE 4/6/2017
NOTES PREPARED BY L.B. JOB
FIGURES CREATED BY L.B. JOB
SHEET 1 OF 1

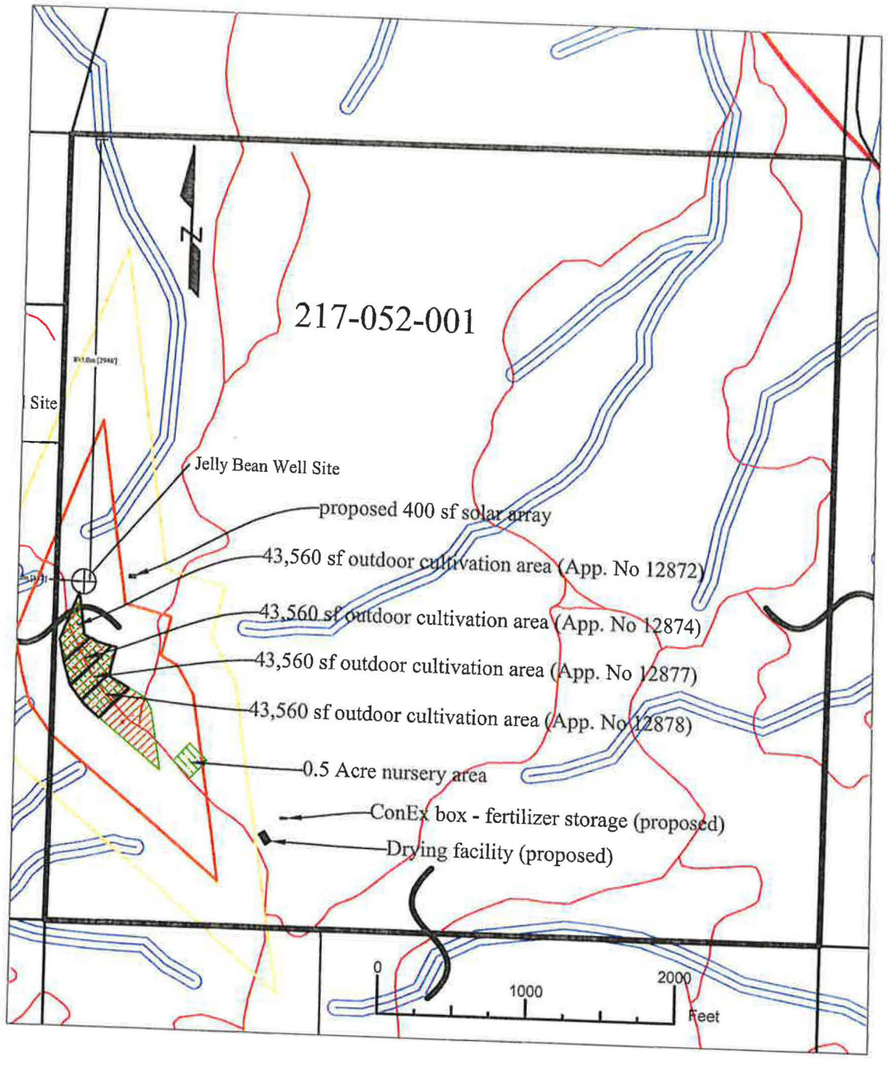
PACIFIC WATERSHED ASSOCIATES

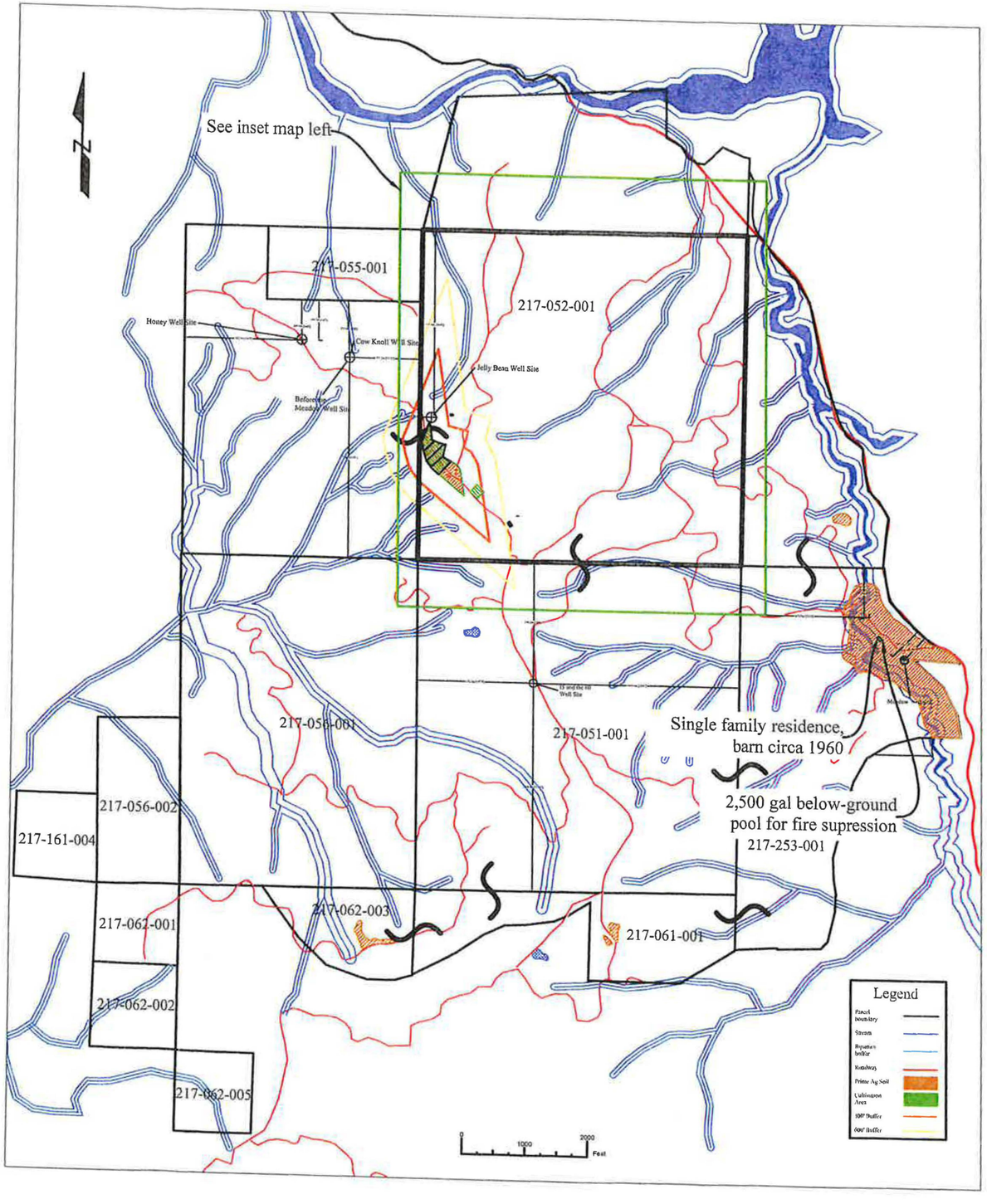
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DRAWING DESCRIPTION:
SITE PLAN WITH SOILS AND OTHER FEATURES

PROJECT DESCRIPTION:
HUM SUN RANCH
30740 ALDER POINT ROAD
BLOCKSBURG, CALIFORNIA 95514

PWA JOB NO.: 59431





No known easements.
No unpermitted grading.
No unpermitted culverts or surface water diversions.
No existing structures on APN 217-052-001.
Cultivation area setbacks > 30 ft from merged parcel boundaries.
No observed erosion or mass wasting.
Minimum setback from Class III drainage is ≈ 240 ft.

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Cannabis Svcs.

DATE: 4/6/2017
NOTES PREPARED BY: L.B. JOB
FIGURES CREATED BY: L.B. JOB
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DRAWING DESCRIPTION:
CULTIVATION
APPLICATION SITE MAP

PROJECT DESCRIPTION:
HUM SUN RANCH
30740 ALDER POINT ROAD
BLOCKSBURG, CALIFORNIA 95514

PWA JOB NO.: 50431

Appendix 2D
Air Quality Analysis

NORTHPOINT
CONSULTING GROUP, INC.

TECHNICAL MEMORANDUM

FROM: NorthPoint Consulting Group, Inc.
1117 Samoa Blvd.
Arcata, CA 95521

TO: Everview Ltd.
9655 Granite Ridge Drive, Suite 200
San Diego, CA 92123

RE: **HumSun 3, LLC - Air Quality Analysis**

DATE: August 24, 2023

Introduction

The intent of this Technical Memorandum (TM) is to provide a summary of potential air quality and greenhouse gas emissions impacts associated with the proposed HumSun 3, LLC ("HumSun") commercial cannabis project.

Project Description

HumSun is applying for a Conditional Use Permit under the Humboldt County Commercial Medical Marijuana Land Use Ordinance (CCMLUO), for a proposed new cannabis cultivation project ("Proposed Project") in the Blacksburg area of Humboldt County, on Assessor Parcel Numbers (APNs) 217-253-001, 217-214-001, 217-052-001, 217-055-002, and 217-051-001, totaling 1,766 acres. Per supplied application materials, the Proposed Project includes a total of 13.17 acres (573,780 square feet [sq. ft.]) of cannabis cultivation and ancillary activities, including the following:

- 3.5 acres (152,460 sq. ft.) of mixed-light cannabis cultivation
- 8.5 acres (370,260 sq. ft.) of outdoor cannabis cultivation
- 1.17 acres (51,060 sq. ft.) of cannabis nursery
- 23,825 sq. ft. of drying/processing buildings (4 total buildings of varying sizes – 6,000 sq. ft., 1,625 sq. ft., 7,200 sq. ft., and 9,000 sq. ft., respectively)

Additionally, the Proposed Project includes the construction of four (4) rainwater catchment ponds, totaling 137,683 sq. ft. in size and requiring 38,366 cubic yards of grading. Approximately 500 cubic yards of rock are estimated to be imported for site preparation, grading, and construction activities. Between nine (9) and 22 employees are anticipated to work onsite daily. Energy for the project would initially be sourced from propane generators and solar and would transition to PG&E and solar energy.

Regulatory Setting

Proposed Project activities are subject to the authority of the California Air Resources Board (CARB) and the North Coast Unified Air Quality Management District (NCUAQMD), which regulates projects within Del Norte, Humboldt, and Trinity Counties, and. The NCUAQMD is listed as "attainment" or "unclassified" for all the federal and state ambient air quality standards except for the state 24-hour particulate (PM10) standard, which relates to concentrations of suspended airborne particles that are 10 micrometers or less in size[1].

In determining whether a project has significant air quality impacts on the environment, agencies often apply their local air district's thresholds of significance to projects in the review process. The NCUAQMD and the County have not formally adopted thresholds of significance for air quality pollutants. The NCUAQMD recommends using the Best Available Control Technology (BACT) emission rates for stationary sources as defined and listed in the NCUAQMD Rule and Regulations, Rule 110 – New Source Review (NSR) and Prevention of Significant Deterioration (PSD), Section 5.1 – BACT (pages 8-9)[2], updated in 2015. The BACT emissions rates include significance thresholds for reactive organic compounds (ROG), nitrogen oxides (NO_x), carbon monoxide (CO), sulfur oxides (SO_x), and total particulate matter (PM_{10}, and $PM_{2.5}$). Significance thresholds from BACT include both daily (pounds per day) and annual (tons per year) limits.

In addition, the Bay Area Quality Management District (BAAQMD) has established significance thresholds. These thresholds are more restrictive for some pollutants than BACT thresholds, and include limits for ROG, NO_x, CO, SO_x, and both exhaust/fugitive PM_{10}, and $PM_{2.5}$ emissions. The BAAQMD thresholds were recently updated in 2022 and can be found in Table 3-1 in Chapter 3 of the 2022 CEQA Air Quality Guidelines[3]. The BAAQMD bases the determination of significance for fugitive dust on consideration of the control measures to be implemented, including the following applicable Best Management Practices (BMPs), which can be found in Table 5-2 in Chapter 5 of the 2022 CEQA Air Quality Guidelines:

- All exposed surfaces (e.g., parking spaces, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
- All haul trucks transporting soil, sand, or loose material off-site shall be covered.
- All vehicle speeds on unpaved roads shall be limited to 15 mph.
- All excavation, grading, and/or demolition activities shall be suspended when average wind speeds exceed 20 mph.

The BAAQMD has also established a significance threshold for greenhouse gas emissions. For land use development projects, the BAAQMD greenhouse gas emissions threshold is less than 1,100 metric tons of carbon dioxide equivalent (CO_2e) emissions per year[4]. The BAAQMD also requires that land use projects be consistent with local greenhouse gas reduction strategies, including local Climate Action Plans. Humboldt County does not have an adopted Climate Action Plan.

[1] https://www.ncuaqmd.org/planning-ceqa
[2] https://ncuaqmd.specialdistrict.org/files/397b4b794/Rule+110.pdf
[3] https://www.baaqmd.gov/plans-and-climate/california-environmental-quality-act-ceqa/updated-ceqa-guidelines
[4] https://www.baaqmd.gov/plans-and-climate/california-environmental-quality-act-ceqa/updated-ceqa-guidelines

CalEEMod Methods

Daily and annual emission rates for air quality and GHGs for the Proposed Project were estimated using the California Emissions Estimator Model (CalEEMod®) Version 2022.1[5]. CalEEMod quantifies direct emissions from construction and operation activities, including vehicle use, as well as indirect emissions, such as GHG emissions from energy use and water use.

Information for the analysis presented herein was derived primarily from information supplied by the applicant, including the Project Description, Site Maps, and Operations Plan. Information was also supplied via correspondence with the applicant and the applicant's agent (Attachment 3). The relevant supplied information was input into the air quality model and default parameters were used where appropriate (e.g., construction equipment list).

Within the model, there are no specific default values for agricultural operations, so the most fitting Land Use Types from CalEEMod were used. Approximately 573,780 sq. ft. of the Land Use Type "Industrial – Unrefrigerated Warehouse- No Rail" was used to calculate emissions related to the mixed-light cultivation, outdoor cultivation, and nursery activities, and 23,825 sq. ft. of "Industrial-General Light Industry" was used to calculate emissions related to the four (4) processing and drying buildings. An estimate of 1,000 sq. ft. of the Land Use Type "Paving" was used to account for potential paving associated with the two (2) proposed ADA-compliant parking spaces.

The model assumes that the maximum number of employees (22) are onsite year-round, however, per the Proposed Project description, employees will fluctuate between nine (9) and 22 depending on the time of year. Therefore, emissions from employee traffic in the model are likely high and reflect a more conservative analysis. Additionally, the results presented reflect the "unmitigated" annual and daily emissions to reflect a more conservative analysis. Assumptions and methods within the model are further described in the Detailed Report, Attachment 2.

Results

To evaluate the air quality and GHG impacts of the Proposed Project, daily and annual emission rates were compared with applicable thresholds of significance, including those established by the BAAQMD and NCUAQMD, for air quality pollutant emissions (ROG, NO_x, CO, SO_x, PM_{10}, and $PM_{2.5}$) and greenhouse gas emissions (CO_2e).

Results were compared to the two thresholds of significance in Tables 1 and 2 which reflect air quality BAAQMD threshold comparisons. Tables 3 and 4 reflect air quality NCUAQMD threshold comparisons. Table 5 reflects greenhouse gas BAAQMD threshold comparisons. Results for air quality emissions are separated by construction and operational emissions.

Table 1: Construction Air Quality Pollutant Emissions Compared to BAAQMD Significance Thresholds (Source: CalEEMod, 2023 – Attachment 1)

Pollutant	Proposed Construction Project Emissions – Average Daily Unmitigated	BAAQMD Significance Thresholds (Average Lbs./day)	Exceeds Threshold?

[5] https://www.caleemod.com/

	(Maximum Lbs./day)		
ROG	1.49	54	No
NO_x	13.6	54	No
CO	13.9	None	n/a
SO_x	0.02	None	n/a
PM_{10} (Exhaust)	0.56	82	No
$PM_{2.5}$ (Exhaust)	1.52	54	No
PM_{10} / (Fugitive Dust)	2.92	None – Implement BMPs	n/a
$PM_{2.5}$ (Fugitive Dust)	0.71	None – Implement BMPs	n/a

Table 2: Operation Air Quality Pollutant Emissions Compared to BAAQMD Significance Thresholds (Source: CalEEMod, 2023 – Attachment 1)

Pollutant	Proposed Operational Project Emissions - Unmitigated		BAAQMD Significance Thresholds		Exceeds Threshold?
	Maximum Tons/year	Maximum Lbs./day	Maximum Tons/year	Average Lbs./day	
ROG	2.42	13.3	10	54	No
NO_x	0.30	1.65	10	54	No
CO	0.36	1.97	9.0 ppm (80hour average) or 20.0 ppm (1-hour average)		No
SO_x	<0.005	<0.005	None		n/a
PM_{10} (Exhaust)	0.02	0.10	15	82	No
$PM_{2.5}$ (Exhaust)	0.02	0.10	10	54	No
PM_{10} / (Fugitive Dust)	0.00	0.00	None		n/a
$PM_{2.5}$ (Fugitive Dust)	0.00	0.00	None		n/a

Table 3: Construction Air Quality Pollutant Emissions Compared to NCUAQMD BACT Significance Thresholds (Source: CalEEMod, 2023 – Attachment 1)

Pollutant	Proposed Project Emissions - Unmitigated		NCUAQMD (BACT) Significance Thresholds		Exceeds Threshold?
	Maximum Tons/year	Maximum Lbs./day	Tons/year	Lbs./day	

ROG	0.27	1.49	40	50	No
NO_x	2.48	13.6	40	50	No
CO	2.54	13.9	100	500	No
SO_x	<0.005	0.02	40	80	No
PM_{10} (Total)	0.63	3.48	15	80	No
$PM_{2.5}$ (Total)	0.22	1.23	10	50	No

Table 4: Operational Air Quality Pollutant Emissions Compared to NCUAQMD BACT Significance Thresholds (Source: CalEEMod, 2023 – Attachment 1)

Pollutant	Proposed Project Emissions - Unmitigated		NCUAQMD (BACT) Significance Thresholds		Exceeds Threshold?
	Maximum Tons/year	Maximum Lbs./day	Tons/year	Lbs./day	
ROG	2.42	13.3	40	50	No
NO_x	0.30	1.65	40	50	No
CO	0.36	1.97	100	500	No
SO_x	<0.005	<0.005	40	80	No
PM_{10} (Total)	0.02	0.10	15	80	No
$PM_{2.5}$ (Total)	0.02	0.10	10	50	No

Table 5: Construction and Operational Greenhouse Gas Emissions (Source: CalEEMod, 2023 – Attachment 1)

Type	Maximum Proposed Project Annual CO_2e Emissions – Unmitigated (MT/year)	BAAQMD Significance Thresholds (MT/year)	Exceeds Threshold?
Construction	481	1,100	No
Operational	545	1,100	No

Conclusion and Recommendations

Based on parameters supplied by the applicant, air quality and greenhouse gas emissions from construction and operation of the Proposed Project are well below relevant significance thresholds. Therefore, impacts for both construction and operation are less than significant.

It is recommended that the project incorporate the following BMPs for minimizing fugitive particulate matter emissions, per BAAQMD recommendation:

- All exposed surfaces (e.g., parking spaces, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
- All haul trucks transporting soil, sand, or loose material off-site shall be covered.
- All vehicle speeds on unpaved roads shall be limited to 15 mph.
- All excavation, grading, and/or demolition activities shall be suspended when average wind speeds exceed 20 mph.

Attachments

Attachment 1: CalEEMod HumSun Summary Report

Attachment 2: CalEEMod Humsun Detailed Report

Attachment 3: Additional Information Supplied by Applicant and Applicant's Agent

Attachment 1. CalEEMod HumSun Summary Report

HumSun Summary Report

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1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	HumSun
Construction Start Date	5/15/2024
Operational Year	2025
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.90
Precipitation (days)	19.6
Location	40.3192, -123.6939
County	Humboldt
City	Unincorporated
Air District	North Coast Unified APCD
Air Basin	North Coast
TAZ	119
EDFZ	2
Electric Utility	Pacific Gas & Electric Company
Gas Utility	Pacific Gas & Electric
App Version	2022.1.1.17

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description

Unrefrigerated Warehouse-No Rail	574	1000sqft	13.2	573,780	0.00	0.00	—	Includes all cultivation and nursery area (152,460 sq. ft. mixed-light, 370,260 sq. ft. of outdoor, and 51,060 nursery area)
General Light Industry	23.8	1000sqft	0.55	23,825	0.00	0.00	—	Includes four (4) buildings for processing and drying, totaling 23,825 sq. ft.
Other Non-Asphalt Surfaces	1.00	1000sqft	0.02	0.00	0.00	0.00	—	Estimated square footage for ADA-accessible parking spaces and other potential paved areas, per the applicant.

1.3. User-Selected Emission Reduction Measures by Emissions Sector

Sector	#	Measure Title
Energy	E-10-B	Establish Onsite Renewable Energy Systems: Solar Power
Water	W-1	Use Reclaimed Non-Potable Water

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Unmit.	4.27	38.7	40.1	0.07	1.60	8.94	10.5	1.47	2.08	3.55	—	8,291	8,291	0.33	0.11	4.72	8,338
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.49	4.50	6.19	0.01	0.20	3.21	3.41	0.18	0.36	0.54	—	1,265	1,265	0.04	0.06	0.04	1,285
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.49	13.6	13.9	0.02	0.56	2.92	3.48	0.52	0.71	1.23	—	2,893	2,893	0.12	0.04	0.67	2,908
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.27	2.48	2.54	< 0.005	0.10	0.53	0.63	0.09	0.13	0.22	—	479	479	0.02	0.01	0.11	481
Exceeds (Daily Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	50.0	50.0	500	80.0	—	—	80.0	—	—	50.0	—	—	—	—	—	—	—
Unmit.	No	No	No	No	Yes	—	No	Yes	—	No	—	—	—	—	—	—	—
Exceeds (Average Daily)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	50.0	50.0	500	80.0	—	—	80.0	—	—	50.0	—	—	—	—	—	—	—
Unmit.	No	No	No	No	Yes	—	No	Yes	—	No	—	—	—	—	—	—	—
Exceeds (Annual)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	40.0	40.0	100	40.0	—	—	15.0	—	—	10.0	—	—	—	—	—	—	—
Unmit.	No	No	No	No	Yes	—	No	Yes	—	No	—	—	Yes	—	—	—	Yes

2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	16.5	10.8	13.8	0.02	0.58	0.00	0.58	0.58	0.00	0.58	571	2,741	3,313	58.0	0.67	6.20	4,968
Mit.	16.5	10.8	13.8	0.02	0.58	0.00	0.58	0.58	0.00	0.58	571	2,741	3,313	58.0	0.67	6.20	4,967
% Reduced	—	—	—	—	—	—	—	—	—	—	—	< 0.5%	< 0.5%	—	—	—	< 0.5%
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	16.5	10.8	13.8	0.02	0.58	0.00	0.58	0.58	0.00	0.58	571	2,741	3,313	58.0	0.67	6.20	4,968
Mit.	16.5	10.8	13.8	0.02	0.58	0.00	0.58	0.58	0.00	0.58	571	2,741	3,313	58.0	0.67	6.20	4,967
% Reduced	—	—	—	—	—	—	—	—	—	—	—	< 0.5%	< 0.5%	—	—	—	< 0.5%
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	13.3	1.65	1.97	< 0.005	0.10	0.00	0.10	0.10	0.00	0.10	571	1,072	1,643	57.9	0.66	6.20	3,293
Mit.	13.3	1.65	1.97	< 0.005	0.10	0.00	0.10	0.10	0.00	0.10	571	1,072	1,643	57.9	0.66	6.20	3,293
% Reduced	—	—	—	—	—	—	—	—	—	—	—	< 0.5%	< 0.5%	—	—	—	< 0.5%
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	2.42	0.30	0.36	< 0.005	0.02	0.00	0.02	0.02	0.00	0.02	94.6	177	272	9.59	0.11	1.03	545
Mit.	2.42	0.30	0.36	< 0.005	0.02	0.00	0.02	0.02	0.00	0.02	94.6	177	272	9.59	0.11	1.03	545
% Reduced	—	—	—	—	—	—	—	—	—	—	—	< 0.5%	< 0.5%	< 0.5%	< 0.5%	—	< 0.5%
Exceeds (Daily Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	50.0	50.0	500	80.0	—	—	80.0	—	—	50.0	—	—	—	—	—	—	—
Unmit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	—

Mit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	—
Exceeds (Average Daily)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	50.0	50.0	500	80.0	—	—	80.0	—	—	50.0	—	—	—	—	—	—	—
Unmit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	—
Mit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	—
Exceeds (Annual)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	40.0	40.0	100	40.0	—	—	15.0	—	—	10.0	—	—	—	—	—	—	1,100
Unmit.	No	No	No	No	—	—	No	—	—	No	—	—	Yes	—	—	—	No
Mit.	No	No	No	No	—	—	No	—	—	No	—	—	Yes	—	—	—	No

6. Climate Risk Detailed Report

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	N/A	N/A	N/A	N/A
Extreme Precipitation	4	0	0	N/A
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	1	0	0	N/A
Flooding	0	0	0	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	N/A	N/A	N/A	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.

The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	N/A	N/A	N/A	N/A
Extreme Precipitation	4	1	1	4
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	1	1	1	2
Flooding	1	1	1	2
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	N/A	N/A	N/A	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

7. Health and Equity Details

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	29.0
Healthy Places Index Score for Project Location (b)	13.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	No
Project Located in a Low-Income Community (Assembly Bill 1550)	Yes
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

Attachment 2. CalEEMod HumSun Detailed Report

HumSun Detailed Report

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8. User Changes to Default Data

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	HumSun
Construction Start Date	5/15/2024
Operational Year	2025
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.90
Precipitation (days)	19.6
Location	40.3192, -123.6939
County	Humboldt
City	Unincorporated
Air District	North Coast Unified APCD
Air Basin	North Coast
TAZ	119
EDFZ	2
Electric Utility	Pacific Gas & Electric Company
Gas Utility	Pacific Gas & Electric
App Version	2022.1.1.17

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description

Unrefrigerated Warehouse-No Rail	574	1000sqft	13.2	573,780	0.00	0.00	—	Includes all cultivation and nursery area (152,460 sq. ft. mixed-light, 370,260 sq. ft. of outdoor, and 51,060 nursery area)
General Light Industry	23.8	1000sqft	0.55	23,825	0.00	0.00	—	Includes four (4) buildings for processing and drying, totaling 23,825 sq. ft.
Other Non-Asphalt Surfaces	1.00	1000sqft	0.02	0.00	0.00	0.00	—	Estimated square footage for ADA-accessible parking spaces and other potential paved areas, per the applicant.

1.3. User-Selected Emission Reduction Measures by Emissions Sector

Sector	#	Measure Title
Energy	E-10-B	Establish Onsite Renewable Energy Systems: Solar Power
Water	W-1	Use Reclaimed Non-Potable Water

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Unmit.	4.27	38.7	40.1	0.07	1.60	8.94	10.5	1.47	2.08	3.55	—	8,291	8,291	0.33	0.11	4.72	8,338
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.49	4.50	6.19	0.01	0.20	3.21	3.41	0.18	0.36	0.54	—	1,265	1,265	0.04	0.06	0.04	1,285
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.49	13.6	13.9	0.02	0.56	2.92	3.48	0.52	0.71	1.23	—	2,893	2,893	0.12	0.04	0.67	2,908
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.27	2.48	2.54	< 0.005	0.10	0.53	0.63	0.09	0.13	0.22	—	479	479	0.02	0.01	0.11	481
Exceeds (Daily Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	50.0	50.0	500	80.0	—	—	80.0	—	—	50.0	—	—	—	—	—	—	—
Unmit.	No	No	No	No	Yes	—	No	Yes	—	No	—	—	—	—	—	—	—
Exceeds (Average Daily)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	50.0	50.0	500	80.0	—	—	80.0	—	—	50.0	—	—	—	—	—	—	—
Unmit.	No	No	No	No	Yes	—	No	Yes	—	No	—	—	—	—	—	—	—
Exceeds (Annual)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	40.0	40.0	100	40.0	—	—	15.0	—	—	10.0	—	—	—	—	—	—	—
Unmit.	No	No	No	No	Yes	—	No	Yes	—	No	—	—	Yes	—	—	—	Yes

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	4.27	38.7	40.1	0.07	1.60	8.94	10.5	1.47	2.08	3.55	—	8,291	8,291	0.33	0.11	4.72	8,338
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	0.49	4.50	6.19	0.01	0.20	3.21	3.41	0.18	0.36	0.54	—	1,265	1,265	0.04	0.06	0.04	1,285
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	1.49	13.6	13.9	0.02	0.56	2.92	3.48	0.52	0.71	1.23	—	2,893	2,893	0.12	0.04	0.67	2,908
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	0.27	2.48	2.54	< 0.005	0.10	0.53	0.63	0.09	0.13	0.22	—	479	479	0.02	0.01	0.11	481

2.3. Construction Emissions by Year, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	4.27	38.7	40.1	0.07	1.60	8.94	10.5	1.47	2.08	3.55	—	8,291	8,291	0.33	0.11	4.72	8,338
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	0.49	4.50	6.19	0.01	0.20	3.21	3.41	0.18	0.36	0.54	—	1,265	1,265	0.04	0.06	0.04	1,285
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	1.49	13.6	13.9	0.02	0.56	2.92	3.48	0.52	0.71	1.23	—	2,893	2,893	0.12	0.04	0.67	2,908
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	0.27	2.48	2.54	< 0.005	0.10	0.53	0.63	0.09	0.13	0.22	—	479	479	0.02	0.01	0.11	481

2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	16.5	10.8	13.8	0.02	0.58	0.00	0.58	0.58	0.00	0.58	571	2,741	3,313	58.0	0.67	6.20	4,968
Mit.	16.5	10.8	13.8	0.02	0.58	0.00	0.58	0.58	0.00	0.58	571	2,741	3,313	58.0	0.67	6.20	4,967
% Reduced	—	—	—	—	—	—	—	—	—	—	—	< 0.5%	< 0.5%	—	—	—	< 0.5%
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	16.5	10.8	13.8	0.02	0.58	0.00	0.58	0.58	0.00	0.58	571	2,741	3,313	58.0	0.67	6.20	4,968
Mit.	16.5	10.8	13.8	0.02	0.58	0.00	0.58	0.58	0.00	0.58	571	2,741	3,313	58.0	0.67	6.20	4,967
% Reduced	—	—	—	—	—	—	—	—	—	—	—	< 0.5%	< 0.5%	—	—	—	< 0.5%
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	13.3	1.65	1.97	< 0.005	0.10	0.00	0.10	0.10	0.00	0.10	571	1,072	1,643	57.9	0.66	6.20	3,293
Mit.	13.3	1.65	1.97	< 0.005	0.10	0.00	0.10	0.10	0.00	0.10	571	1,072	1,643	57.9	0.66	6.20	3,293
% Reduced	—	—	—	—	—	—	—	—	—	—	—	< 0.5%	< 0.5%	—	—	—	< 0.5%
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	2.42	0.30	0.36	< 0.005	0.02	0.00	0.02	0.02	0.00	0.02	94.6	177	272	9.59	0.11	1.03	545
Mit.	2.42	0.30	0.36	< 0.005	0.02	0.00	0.02	0.02	0.00	0.02	94.6	177	272	9.59	0.11	1.03	545
% Reduced	—	—	—	—	—	—	—	—	—	—	—	< 0.5%	< 0.5%	< 0.5%	< 0.5%	—	< 0.5%

Exceeds (Daily Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	50.0	50.0	500	80.0	—	—	80.0	—	—	50.0	—	—	—	—	—	—	—
Unmit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	—
Mit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	—
Exceeds (Average Daily)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	50.0	50.0	500	80.0	—	—	80.0	—	—	50.0	—	—	—	—	—	—	—
Unmit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	—
Mit.	No	No	No	No	—	—	No	—	—	No	—	—	—	—	—	—	—
Exceeds (Annual)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	40.0	40.0	100	40.0	—	—	15.0	—	—	10.0	—	—	—	—	—	—	1,100
Unmit.	No	No	No	No	—	—	No	—	—	No	—	—	Yes	—	—	—	No
Mit.	No	No	No	No	—	—	No	—	—	No	—	—	Yes	—	—	—	No

2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Area	12.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.02	0.37	0.31	< 0.005	0.03	—	0.03	0.03	—	0.03	—	493	493	0.05	< 0.005	—	495
Water	—	—	—	—	—	—	—	—	—	—	265	344	609	27.2	0.65	—	1,483
Waste	—	—	—	—	—	—	—	—	—	—	307	0.00	307	30.6	0.00	—	1,073
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6.20	6.20

Stationary	3.72	10.4	13.5	0.02	0.55	0.00	0.55	0.55	0.00	0.55	0.00	1,904	1,904	0.08	0.01	0.00	1,910
Total	16.5	10.8	13.8	0.02	0.58	0.00	0.58	0.58	0.00	0.58	571	2,741	3,313	58.0	0.67	6.20	4,968
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Area	12.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.02	0.37	0.31	< 0.005	0.03	—	0.03	0.03	—	0.03	—	493	493	0.05	< 0.005	—	495
Water	—	—	—	—	—	—	—	—	—	—	265	344	609	27.2	0.65	—	1,483
Waste	—	—	—	—	—	—	—	—	—	—	307	0.00	307	30.6	0.00	—	1,073
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6.20	6.20
Stationary	3.72	10.4	13.5	0.02	0.55	0.00	0.55	0.55	0.00	0.55	0.00	1,904	1,904	0.08	0.01	0.00	1,910
Total	16.5	10.8	13.8	0.02	0.58	0.00	0.58	0.58	0.00	0.58	571	2,741	3,313	58.0	0.67	6.20	4,968
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Area	12.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.02	0.37	0.31	< 0.005	0.03	—	0.03	0.03	—	0.03	—	493	493	0.05	< 0.005	—	495
Water	—	—	—	—	—	—	—	—	—	—	265	344	609	27.2	0.65	—	1,483
Waste	—	—	—	—	—	—	—	—	—	—	307	0.00	307	30.6	0.00	—	1,073
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6.20	6.20
Stationary	0.46	1.28	1.67	< 0.005	0.07	0.00	0.07	0.07	0.00	0.07	0.00	235	235	0.01	< 0.005	0.00	236
Total	13.3	1.65	1.97	< 0.005	0.10	0.00	0.10	0.10	0.00	0.10	571	1,072	1,643	57.9	0.66	6.20	3,293
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Area	2.33	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	< 0.005	0.07	0.06	< 0.005	0.01	—	0.01	0.01	—	0.01	—	81.7	81.7	0.01	< 0.005	—	82.0
Water	—	—	—	—	—	—	—	—	—	—	43.8	56.9	101	4.50	0.11	—	246
Waste	—	—	—	—	—	—	—	—	—	—	50.8	0.00	50.8	5.07	0.00	—	178
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.03	1.03

Stationar	0.08	0.23	0.30	< 0.005	0.01	0.00	0.01	0.01	0.00	0.01	0.00	38.9	38.9	< 0.005	< 0.005	0.00	39.0
Total	2.42	0.30	0.36	< 0.005	0.02	0.00	0.02	0.02	0.00	0.02	94.6	177	272	9.59	0.11	1.03	545

2.6. Operations Emissions by Sector, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Area	12.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.02	0.37	0.31	< 0.005	0.03	—	0.03	0.03	—	0.03	—	493	493	0.05	< 0.005	—	495
Water	—	—	—	—	—	—	—	—	—	—	265	344	609	27.2	0.65	—	1,483
Waste	—	—	—	—	—	—	—	—	—	—	307	0.00	307	30.6	0.00	—	1,073
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6.20	6.20
Stationary	3.72	10.4	13.5	0.02	0.55	0.00	0.55	0.55	0.00	0.55	0.00	1,904	1,904	0.08	0.01	0.00	1,910
Total	16.5	10.8	13.8	0.02	0.58	0.00	0.58	0.58	0.00	0.58	571	2,741	3,313	58.0	0.67	6.20	4,967
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Area	12.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.02	0.37	0.31	< 0.005	0.03	—	0.03	0.03	—	0.03	—	493	493	0.05	< 0.005	—	495
Water	—	—	—	—	—	—	—	—	—	—	265	344	609	27.2	0.65	—	1,483
Waste	—	—	—	—	—	—	—	—	—	—	307	0.00	307	30.6	0.00	—	1,073
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6.20	6.20
Stationary	3.72	10.4	13.5	0.02	0.55	0.00	0.55	0.55	0.00	0.55	0.00	1,904	1,904	0.08	0.01	0.00	1,910
Total	16.5	10.8	13.8	0.02	0.58	0.00	0.58	0.58	0.00	0.58	571	2,741	3,313	58.0	0.67	6.20	4,967
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Area	12.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	0.02	0.37	0.31	< 0.005	0.03	—	0.03	0.03	—	0.03	—	493	493	0.05	< 0.005	—	495
Water	—	—	—	—	—	—	—	—	—	—	265	344	609	27.2	0.65	—	1,483
Waste	—	—	—	—	—	—	—	—	—	—	307	0.00	307	30.6	0.00	—	1,073
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6.20	6.20
Stationary	0.46	1.28	1.67	< 0.005	0.07	0.00	0.07	0.07	0.00	0.07	0.00	235	235	0.01	< 0.005	0.00	236
Total	13.3	1.65	1.97	< 0.005	0.10	0.00	0.10	0.10	0.00	0.10	571	1,072	1,643	57.9	0.66	6.20	3,293
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Area	2.33	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Energy	< 0.005	0.07	0.06	< 0.005	0.01	—	0.01	0.01	—	0.01	—	81.6	81.6	0.01	< 0.005	—	81.9
Water	—	—	—	—	—	—	—	—	—	—	43.8	56.9	101	4.50	0.11	—	246
Waste	—	—	—	—	—	—	—	—	—	—	50.8	0.00	50.8	5.07	0.00	—	178
Refrig.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.03	1.03
Stationary	0.08	0.23	0.30	< 0.005	0.01	0.00	0.01	0.01	0.00	0.01	0.00	38.9	38.9	< 0.005	< 0.005	0.00	39.0
Total	2.42	0.30	0.36	< 0.005	0.02	0.00	0.02	0.02	0.00	0.02	94.6	177	272	9.59	0.11	1.03	545

3. Construction Emissions Details

3.1. Grading (2024) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.52	34.3	30.2	0.06	1.45	—	1.45	1.33	—	1.33	—	6,598	6,598	0.27	0.05	—	6,621

Dust From Material Movement	—	—	—	—	—	3.59	3.59	—	1.42	1.42	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.05	0.02	< 0.005	< 0.005	1.48	1.48	< 0.005	0.15	0.15	—	17.6	17.6	< 0.005	< 0.005	0.03	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.25	12.2	10.7	0.02	0.52	—	0.52	0.47	—	0.47	—	2,350	2,350	0.10	0.02	—	2,358
Dust From Material Movement	—	—	—	—	—	1.28	1.28	—	0.51	0.51	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.02	0.01	< 0.005	< 0.005	0.50	0.50	< 0.005	0.05	0.05	—	6.29	6.29	< 0.005	< 0.005	< 0.005	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.23	2.23	1.96	< 0.005	0.09	—	0.09	0.09	—	0.09	—	389	389	0.02	< 0.005	—	390
Dust From Material Movement	—	—	—	—	—	0.23	0.23	—	0.09	0.09	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.09	0.09	< 0.005	0.01	0.01	—	1.04	1.04	< 0.005	< 0.005	< 0.005	—
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.16	0.28	2.73	0.00	0.00	0.44	0.44	0.00	0.10	0.10	—	457	457	0.02	0.02	2.23	—
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—
Hauling	< 0.005	0.11	0.01	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	84.5	84.5	< 0.005	0.01	0.17	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.11	1.00	0.00	0.00	0.15	0.15	0.00	0.04	0.04	—	163	163	0.01	0.01	0.34	—
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—
Hauling	< 0.005	0.04	< 0.005	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	30.1	30.1	< 0.005	< 0.005	0.03	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.02	0.18	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	27.0	27.0	< 0.005	< 0.005	0.06	—
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—
Hauling	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	4.98	4.98	< 0.005	< 0.005	< 0.005	—

3.2. Grading (2024) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.52	34.3	30.2	0.06	1.45	—	1.45	1.33	—	1.33	—	6,598	6,598	0.27	0.05	—	6,621
Dust From Material Movement	—	—	—	—	—	3.59	3.59	—	1.42	1.42	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.05	0.02	< 0.005	< 0.005	1.48	1.48	< 0.005	0.15	0.15	—	17.6	17.6	< 0.005	< 0.005	0.03	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.25	12.2	10.7	0.02	0.52	—	0.52	0.47	—	0.47	—	2,350	2,350	0.10	0.02	—	2,358
Dust From Material Movement	—	—	—	—	—	1.28	1.28	—	0.51	0.51	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.02	0.01	< 0.005	< 0.005	0.50	0.50	< 0.005	0.05	0.05	—	6.29	6.29	< 0.005	< 0.005	< 0.005	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.23	2.23	1.96	< 0.005	0.09	—	0.09	0.09	—	0.09	—	389	389	0.02	< 0.005	—	390
Dust From Material Movement	—	—	—	—	—	0.23	0.23	—	0.09	0.09	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.09	0.09	< 0.005	0.01	0.01	—	1.04	1.04	< 0.005	< 0.005	< 0.005	—
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.16	0.28	2.73	0.00	0.00	0.44	0.44	0.00	0.10	0.10	—	457	457	0.02	0.02	2.23	—
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—
Hauling	< 0.005	0.11	0.01	< 0.005	< 0.005	0.02	0.02	< 0.005	0.01	0.01	—	84.5	84.5	< 0.005	0.01	0.17	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.11	1.00	0.00	0.00	0.15	0.15	0.00	0.04	0.04	—	163	163	0.01	0.01	0.34	—
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—

Hauling	< 0.005	0.04	< 0.005	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	30.1	30.1	< 0.005	< 0.005	0.03	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.02	0.18	0.00	0.00	0.03	0.03	0.00	0.01	0.01	—	27.0	27.0	< 0.005	< 0.005	0.06	—
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—
Hauling	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	4.98	4.98	< 0.005	< 0.005	< 0.005	—

3.3. Building Construction (2024) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.44	3.63	4.39	0.01	0.15	—	0.15	0.14	—	0.14	—	642	642	0.03	0.01	—	644
Onsite truck	< 0.005	0.07	0.02	< 0.005	< 0.005	2.97	2.97	< 0.005	0.30	0.30	—	32.0	32.0	< 0.005	0.01	0.06	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.13	1.05	1.27	< 0.005	0.04	—	0.04	0.04	—	0.04	—	186	186	0.01	< 0.005	—	187
Onsite truck	< 0.005	0.02	0.01	< 0.005	< 0.005	0.82	0.82	< 0.005	0.08	0.08	—	9.31	9.31	< 0.005	< 0.005	0.01	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.19	0.23	< 0.005	0.01	—	0.01	0.01	—	0.01	—	30.9	30.9	< 0.005	< 0.005	—	31.0
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.15	0.15	< 0.005	0.01	0.01	—	1.54	1.54	< 0.005	< 0.005	< 0.005	—

Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.16	0.28	2.73	0.00	0.00	0.44	0.44	0.00	0.10	0.10	—	457	457	0.02	0.02	2.23	—
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	3.49	3.49	< 0.005	< 0.005	0.01	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.09	0.81	0.00	0.00	0.13	0.13	0.00	0.03	0.03	—	133	133	0.01	< 0.005	0.28	—
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.01	1.01	< 0.005	< 0.005	< 0.005	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.02	0.15	0.00	0.00	0.02	0.02	0.00	0.01	0.01	—	22.0	22.0	< 0.005	< 0.005	0.05	—
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.17	0.17	< 0.005	< 0.005	< 0.005	—

3.4. Building Construction (2024) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.44	3.63	4.39	0.01	0.15	—	0.15	0.14	—	0.14	—	642	642	0.03	0.01	—	644

Onsite truck	< 0.005	0.07	0.02	< 0.005	< 0.005	2.97	2.97	< 0.005	0.30	0.30	—	32.0	32.0	< 0.005	0.01	0.06	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.13	1.05	1.27	< 0.005	0.04	—	0.04	0.04	—	0.04	—	186	186	0.01	< 0.005	—	187
Onsite truck	< 0.005	0.02	0.01	< 0.005	< 0.005	0.82	0.82	< 0.005	0.08	0.08	—	9.31	9.31	< 0.005	< 0.005	0.01	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.19	0.23	< 0.005	0.01	—	0.01	0.01	—	0.01	—	30.9	30.9	< 0.005	< 0.005	—	31.0
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.15	0.15	< 0.005	0.01	0.01	—	1.54	1.54	< 0.005	< 0.005	< 0.005	—
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.16	0.28	2.73	0.00	0.00	0.44	0.44	0.00	0.10	0.10	—	457	457	0.02	0.02	2.23	—
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	3.49	3.49	< 0.005	< 0.005	0.01	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.09	0.81	0.00	0.00	0.13	0.13	0.00	0.03	0.03	—	133	133	0.01	< 0.005	0.28	—
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.01	1.01	< 0.005	< 0.005	< 0.005	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.01	0.02	0.15	0.00	0.00	0.02	0.02	0.00	0.01	0.01	—	22.0	22.0	< 0.005	< 0.005	0.05	—
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.17	0.17	< 0.005	< 0.005	< 0.005	—

3.5. Paving (2024) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.43	3.91	5.01	0.01	0.19	—	0.19	0.18	—	0.18	—	756	756	0.03	0.01	—	758
Paving	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.07	0.02	< 0.005	< 0.005	2.97	2.97	< 0.005	0.30	0.30	—	32.1	32.1	< 0.005	0.01	< 0.005	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.04	0.05	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	8.28	8.28	< 0.005	< 0.005	—	8.31
Paving	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.03	0.03	< 0.005	< 0.005	< 0.005	—	0.35	0.35	< 0.005	< 0.005	< 0.005	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.37	1.37	< 0.005	< 0.005	—	1.38
Paving	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	0.06	0.06	< 0.005	< 0.005	< 0.005	—
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.13	1.07	0.00	0.00	0.16	0.16	0.00	0.04	0.04	—	171	171	0.01	0.01	0.02	—
Vendor	0.01	0.39	0.09	< 0.005	< 0.005	0.08	0.08	< 0.005	0.02	0.03	—	307	307	< 0.005	0.04	0.02	—
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.88	1.88	< 0.005	< 0.005	< 0.005	—
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	3.36	3.36	< 0.005	< 0.005	< 0.005	—
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.31	0.31	< 0.005	< 0.005	< 0.005	—
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.56	0.56	< 0.005	< 0.005	< 0.005	—
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—

3.6. Paving (2024) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.43	3.91	5.01	0.01	0.19	—	0.19	0.18	—	0.18	—	756	756	0.03	0.01	—	758
Paving	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	0.07	0.02	< 0.005	< 0.005	2.97	2.97	< 0.005	0.30	0.30	—	32.1	32.1	< 0.005	0.01	< 0.005	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.04	0.05	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	8.28	8.28	< 0.005	< 0.005	—	8.31
Paving	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.03	0.03	< 0.005	< 0.005	< 0.005	—	0.35	0.35	< 0.005	< 0.005	< 0.005	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.37	1.37	< 0.005	< 0.005	—	1.38
Paving	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	0.06	0.06	< 0.005	< 0.005	< 0.005	—
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.06	0.13	1.07	0.00	0.00	0.16	0.16	0.00	0.04	0.04	—	171	171	0.01	0.01	0.02	—
Vendor	0.01	0.39	0.09	< 0.005	< 0.005	0.08	0.08	< 0.005	0.02	0.03	—	307	307	< 0.005	0.04	0.02	—
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.88	1.88	< 0.005	< 0.005	< 0.005	—
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	3.36	3.36	< 0.005	< 0.005	< 0.005	—
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.31	0.31	< 0.005	< 0.005	< 0.005	—
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.56	0.56	< 0.005	< 0.005	< 0.005	—
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	—

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

Mobile source emissions results are presented in Sections 2.6. No further detailed breakdown of emissions is available.

4.1.2. Mitigated

Mobile source emissions results are presented in Sections 2.5. No further detailed breakdown of emissions is available.

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	—	5.59	5.59	< 0.005	< 0.005	—	5.64

General Light Industry	—	—	—	—	—	—	—	—	—	—	—	50.3	50.3	0.01	< 0.005	—	50.8
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	55.9	55.9	0.01	< 0.005	—	56.4
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	—	5.59	5.59	< 0.005	< 0.005	—	5.64
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	50.3	50.3	0.01	< 0.005	—	50.8
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	55.9	55.9	0.01	< 0.005	—	56.4
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	—	0.93	0.93	< 0.005	< 0.005	—	0.93
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	8.33	8.33	< 0.005	< 0.005	—	8.41
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	9.25	9.25	< 0.005	< 0.005	—	9.34

4.2.2. Electricity Emissions By Land Use - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	—	5.44	5.44	< 0.005	< 0.005	—	5.49
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	50.3	50.3	0.01	< 0.005	—	50.8
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	55.7	55.7	0.01	< 0.005	—	56.3
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	—	5.44	5.44	< 0.005	< 0.005	—	5.49
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	50.3	50.3	0.01	< 0.005	—	50.8
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	55.7	55.7	0.01	< 0.005	—	56.3
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Unrefriger Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	—	0.90	0.90	< 0.005	< 0.005	—	0.91
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	8.33	8.33	< 0.005	< 0.005	—	8.41
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	—	9.23	9.23	< 0.005	< 0.005	—	9.32

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
General Light Industry	0.02	0.37	0.31	< 0.005	0.03	—	0.03	0.03	—	0.03	—	437	437	0.04	< 0.005	—	439
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.02	0.37	0.31	< 0.005	0.03	—	0.03	0.03	—	0.03	—	437	437	0.04	< 0.005	—	439
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Unrefrigerated Warehouse-No	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
General Light Industry	0.02	0.37	0.31	< 0.005	0.03	—	0.03	0.03	—	0.03	—	437	437	0.04	< 0.005	—	439
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.02	0.37	0.31	< 0.005	0.03	—	0.03	0.03	—	0.03	—	437	437	0.04	< 0.005	—	439
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
General Light Industry	< 0.005	0.07	0.06	< 0.005	0.01	—	0.01	0.01	—	0.01	—	72.4	72.4	0.01	< 0.005	—	72.6
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	< 0.005	0.07	0.06	< 0.005	0.01	—	0.01	0.01	—	0.01	—	72.4	72.4	0.01	< 0.005	—	72.6

4.2.4. Natural Gas Emissions By Land Use - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Unrefrigerated Warehouse-No Rail	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
General Light Industry	0.02	0.37	0.31	< 0.005	0.03	—	0.03	0.03	—	0.03	—	437	437	0.04	< 0.005	—	439
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.02	0.37	0.31	< 0.005	0.03	—	0.03	0.03	—	0.03	—	437	437	0.04	< 0.005	—	439
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
General Light Industry	0.02	0.37	0.31	< 0.005	0.03	—	0.03	0.03	—	0.03	—	437	437	0.04	< 0.005	—	439
Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	0.02	0.37	0.31	< 0.005	0.03	—	0.03	0.03	—	0.03	—	437	437	0.04	< 0.005	—	439
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
General Light Industry	< 0.005	0.07	0.06	< 0.005	0.01	—	0.01	0.01	—	0.01	—	72.4	72.4	0.01	< 0.005	—	72.6

Other Non-Asphalt Surfaces	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	—	0.00	—	0.00	0.00	0.00	0.00	—	0.00
Total	< 0.005	0.07	0.06	< 0.005	0.01	—	0.01	0.01	—	0.01	—	72.4	72.4	0.01	< 0.005	—	72.6

4.3. Area Emissions by Source

4.3.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	12.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	12.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	12.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	12.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Consumer Products	2.33	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	2.33	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.3.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	12.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	12.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Consumer Products	12.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	12.8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Consumer Products	2.33	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Architectural Coatings	< 0.005	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	2.33	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	254	330	584	26.1	0.63	—	1,424
General Light Industry	—	—	—	—	—	—	—	—	—	—	10.6	13.7	24.3	1.08	0.03	—	59.1
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	265	344	609	27.2	0.65	—	1,483
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	254	330	584	26.1	0.63	—	1,424
General Light Industry	—	—	—	—	—	—	—	—	—	—	10.6	13.7	24.3	1.08	0.03	—	59.1
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	265	344	609	27.2	0.65	—	1,483
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	42.1	54.7	96.8	4.33	0.10	—	236
General Light Industry	—	—	—	—	—	—	—	—	—	—	1.75	2.27	4.02	0.18	< 0.005	—	9.79
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	43.8	56.9	101	4.50	0.11	—	246

4.4.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Unrefrigerated Warehouse-No	—	—	—	—	—	—	—	—	—	—	254	330	584	26.1	0.63	—	1,424
General Light Industry	—	—	—	—	—	—	—	—	—	—	10.6	13.7	24.3	1.08	0.03	—	59.1
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	265	344	609	27.2	0.65	—	1,483
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	254	330	584	26.1	0.63	—	1,424
General Light Industry	—	—	—	—	—	—	—	—	—	—	10.6	13.7	24.3	1.08	0.03	—	59.1
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	265	344	609	27.2	0.65	—	1,483
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	42.1	54.7	96.8	4.33	0.10	—	236
General Light Industry	—	—	—	—	—	—	—	—	—	—	1.75	2.27	4.02	0.18	< 0.005	—	9.79

Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	43.8	56.9	101	4.50	0.11	—	246

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	291	0.00	291	29.1	0.00	—	1,017
General Light Industry	—	—	—	—	—	—	—	—	—	—	15.9	0.00	15.9	1.59	0.00	—	55.7
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	307	0.00	307	30.6	0.00	—	1,073
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	291	0.00	291	29.1	0.00	—	1,017

General Light Industry	—	—	—	—	—	—	—	—	—	—	15.9	0.00	15.9	1.59	0.00	—	55.7
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	307	0.00	307	30.6	0.00	—	1,073
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	48.1	0.00	48.1	4.81	0.00	—	168
General Light Industry	—	—	—	—	—	—	—	—	—	—	2.64	0.00	2.64	0.26	0.00	—	9.22
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	50.8	0.00	50.8	5.07	0.00	—	178

4.5.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	291	0.00	291	29.1	0.00	—	1,017
General Light Industry	—	—	—	—	—	—	—	—	—	—	15.9	0.00	15.9	1.59	0.00	—	55.7

Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	307	0.00	307	30.6	0.00	—	1,073
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	291	0.00	291	29.1	0.00	—	1,017
General Light Industry	—	—	—	—	—	—	—	—	—	—	15.9	0.00	15.9	1.59	0.00	—	55.7
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	307	0.00	307	30.6	0.00	—	1,073
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unrefrigerated Warehouse-No Rail	—	—	—	—	—	—	—	—	—	—	48.1	0.00	48.1	4.81	0.00	—	168
General Light Industry	—	—	—	—	—	—	—	—	—	—	2.64	0.00	2.64	0.26	0.00	—	9.22
Other Non-Asphalt Surfaces	—	—	—	—	—	—	—	—	—	—	0.00	0.00	0.00	0.00	0.00	—	0.00
Total	—	—	—	—	—	—	—	—	—	—	50.8	0.00	50.8	5.07	0.00	—	178

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6.20	6.20
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6.20	6.20
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6.20	6.20
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6.20	6.20
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.03	1.03
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.03	1.03

4.6.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6.20	6.20

Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6.20	6.20
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6.20	6.20
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6.20	6.20
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General Light Industry	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.03	1.03
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.03	1.03

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.7.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Emergency Generator	3.72	10.4	13.5	0.02	0.55	0.00	0.55	0.55	0.00	0.55	0.00	1,904	1,904	0.08	0.01	0.00	0.00
undefined	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1,910
Total	3.72	10.4	13.5	0.02	0.55	0.00	0.55	0.55	0.00	0.55	0.00	1,904	1,904	0.08	0.01	0.00	1,910

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Emergency Generator	3.72	10.4	13.5	0.02	0.55	0.00	0.55	0.55	0.00	0.55	0.00	1,904	1,904	0.08	0.01	0.00	0.00
undefined	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1,910
Total	3.72	10.4	13.5	0.02	0.55	0.00	0.55	0.55	0.00	0.55	0.00	1,904	1,904	0.08	0.01	0.00	1,910
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Emergency Generator	0.08	0.23	0.30	< 0.005	0.01	0.00	0.01	0.01	0.00	0.01	0.00	38.9	38.9	< 0.005	< 0.005	0.00	0.00
undefined	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	39.0
Total	0.08	0.23	0.30	< 0.005	0.01	0.00	0.01	0.01	0.00	0.01	0.00	38.9	38.9	< 0.005	< 0.005	0.00	39.0

4.8.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Emergency Generator	3.72	10.4	13.5	0.02	0.55	0.00	0.55	0.55	0.00	0.55	0.00	1,904	1,904	0.08	0.01	0.00	0.00
undefined	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1,910
Total	3.72	10.4	13.5	0.02	0.55	0.00	0.55	0.55	0.00	0.55	0.00	1,904	1,904	0.08	0.01	0.00	1,910
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Emergen Generator	3.72	10.4	13.5	0.02	0.55	0.00	0.55	0.55	0.00	0.55	0.00	1,904	1,904	0.08	0.01	0.00	0.00
undefined	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1,910
Total	3.72	10.4	13.5	0.02	0.55	0.00	0.55	0.55	0.00	0.55	0.00	1,904	1,904	0.08	0.01	0.00	1,910
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Emergency Generator	0.08	0.23	0.30	< 0.005	0.01	0.00	0.01	0.01	0.00	0.01	0.00	38.9	38.9	< 0.005	< 0.005	0.00	0.00
undefined	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	39.0
Total	0.08	0.23	0.30	< 0.005	0.01	0.00	0.01	0.01	0.00	0.01	0.00	38.9	38.9	< 0.005	< 0.005	0.00	39.0

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.9.2. Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.4. Soil Carbon Accumulation By Vegetation Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.5. Above and Belowground Carbon Accumulation by Land Use Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Grading	Grading	5/15/2024	9/21/2024	7.00	130	Grading for cultivation areas, ponds, and nursery area. Scraping/flattening for parking.
Building Construction	Building Construction	6/17/2024	9/30/2024	7.00	106	Construction of hoop-houses and four buildings.
Paving	Paving	10/1/2024	10/4/2024	5.00	4.00	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Grading	Excavators	Diesel	Average	2.00	8.00	36.0	0.38
Grading	Graders	Diesel	Average	1.00	8.00	148	0.41
Grading	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Grading	Scrapers	Diesel	Average	2.00	8.00	423	0.48
Grading	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	84.0	0.37
Building Construction	Forklifts	Diesel	Average	1.00	4.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	1.00	7.00	84.0	0.37
Building Construction	Welders	Diesel	Average	1.00	8.00	46.0	0.45
Paving	Pavers	Diesel	Average	1.00	8.00	81.0	0.42
Paving	Paving Equipment	Diesel	Average	1.00	8.00	89.0	0.36
Paving	Rollers	Diesel	Average	1.00	8.00	36.0	0.38

5.2.2. Mitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Grading	Excavators	Diesel	Average	2.00	8.00	36.0	0.38
Grading	Graders	Diesel	Average	1.00	8.00	148	0.41
Grading	Rubber Tired Dozers	Diesel	Average	1.00	8.00	367	0.40
Grading	Scrapers	Diesel	Average	2.00	8.00	423	0.48
Grading	Tractors/Loaders/Backhoes	Diesel	Average	2.00	8.00	84.0	0.37
Building Construction	Forklifts	Diesel	Average	1.00	4.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Average	1.00	8.00	14.0	0.74
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	1.00	7.00	84.0	0.37
Building Construction	Welders	Diesel	Average	1.00	8.00	46.0	0.45
Paving	Pavers	Diesel	Average	1.00	8.00	81.0	0.42
Paving	Paving Equipment	Diesel	Average	1.00	8.00	89.0	0.36
Paving	Rollers	Diesel	Average	1.00	8.00	36.0	0.38

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Grading	—	—	—	—
Grading	Worker	20.0	31.0	LDA,LDT1,LDT2
Grading	Vendor	0.00	48.0	HHDT,MHDT
Grading	Hauling	0.48	48.0	HHDT
Grading	Onsite truck	2.00	2.00	HHDT
Building Construction	—	—	—	—

Building Construction	Worker	20.0	31.0	LDA,LDT1,LDT2
Building Construction	Vendor	0.00	48.0	HHDT,MHDT
Building Construction	Hauling	0.02	48.0	HHDT
Building Construction	Onsite truck	2.00	4.00	HHDT
Paving	—	—	—	—
Paving	Worker	7.50	31.0	LDA,LDT1,LDT2
Paving	Vendor	2.00	48.0	HHDT,MHDT
Paving	Hauling	0.00	48.0	HHDT
Paving	Onsite truck	2.00	4.00	HHDT

5.3.2. Mitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Grading	—	—	—	—
Grading	Worker	20.0	31.0	LDA,LDT1,LDT2
Grading	Vendor	0.00	48.0	HHDT,MHDT
Grading	Hauling	0.48	48.0	HHDT
Grading	Onsite truck	2.00	2.00	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	20.0	31.0	LDA,LDT1,LDT2
Building Construction	Vendor	0.00	48.0	HHDT,MHDT
Building Construction	Hauling	0.02	48.0	HHDT
Building Construction	Onsite truck	2.00	4.00	HHDT
Paving	—	—	—	—
Paving	Worker	7.50	31.0	LDA,LDT1,LDT2
Paving	Vendor	2.00	48.0	HHDT,MHDT
Paving	Hauling	0.00	48.0	HHDT
Paving	Onsite truck	2.00	4.00	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Control Strategies Applied	PM10 Reduction	PM2.5 Reduction
Water unpaved roads twice daily	55%	55%
Limit vehicle speeds on unpaved roads to 25 mph	44%	44%

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (Cubic Yards)	Material Exported (Cubic Yards)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Grading	500	0.00	390	0.00	—
Paving	0.00	0.00	0.00	0.00	0.02

5.6.2. Construction Earthmoving Control Strategies

Control Strategies Applied	Frequency (per day)	PM10 Reduction	PM2.5 Reduction
Water Exposed Area	2	61%	61%

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Unrefrigerated Warehouse-No Rail	0.00	0%
General Light Industry	0.00	0%

Other Non-Asphalt Surfaces	0.02	0%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2024	0.00	204	0.03	< 0.005

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Total all Land Uses	30.5	30.5	30.5	11,133	1,240	1,240	1,240	452,600

5.9.2. Mitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Total all Land Uses	30.5	30.5	30.5	11,133	1,240	1,240	1,240	452,600

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

5.10.1.2. Mitigated

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)

0	0.00	0.00	0.00	390

5.10.3. Landscape Equipment

Equipment Type	Fuel Type	Number Per Day	Hours per Day	Hours per Year	Horsepower	Load Factor

5.10.4. Landscape Equipment - Mitigated

Equipment Type	Fuel Type	Number Per Day	Hours per Day	Hours per Year	Horsepower	Load Factor

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Unrefrigerated Warehouse-No Rail	10,000	204	0.0330	0.0040	0.00
General Light Industry	90,000	204	0.0330	0.0040	1,364,857
Other Non-Asphalt Surfaces	0.00	204	0.0330	0.0040	0.00

5.11.2. Mitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Unrefrigerated Warehouse-No Rail	9,735	204	0.0330	0.0040	0.00
General Light Industry	90,000	204	0.0330	0.0040	1,364,857
Other Non-Asphalt Surfaces	0.00	204	0.0330	0.0040	0.00

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Unrefrigerated Warehouse-No Rail	132,686,625	0.00
General Light Industry	5,509,531	0.00
Other Non-Asphalt Surfaces	0.00	0.00

5.12.2. Mitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Unrefrigerated Warehouse-No Rail	132,686,625	0.00
General Light Industry	5,509,531	0.00
Other Non-Asphalt Surfaces	0.00	0.00

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Unrefrigerated Warehouse-No Rail	539	—
General Light Industry	29.5	—
Other Non-Asphalt Surfaces	0.00	—

5.13.2. Mitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Unrefrigerated Warehouse-No Rail	539	—
General Light Industry	29.5	—
Other Non-Asphalt Surfaces	0.00	—

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
General Light Industry	Other commercial A/C and heat pumps	R-410A	2,088	0.30	4.00	4.00	18.0

5.14.2. Mitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
General Light Industry	Other commercial A/C and heat pumps	R-410A	2,088	0.30	4.00	4.00	18.0

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.15.2. Mitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

Equipment Type	Fuel Type	Number per Day	Hours per Day	Hours per Year	Horsepower	Load Factor
Emergency Generator	Diesel	3.00	6.00	270	126	0.73

5.16.2. Process Boilers

Equipment Type	Fuel Type	Number	Boiler Rating (MMBtu/hr)	Daily Heat Input (MMBtu/day)	Annual Heat Input (MMBtu/yr)

5.17. User Defined

Equipment Type	Fuel Type

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

5.18.2.2. Mitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	13.4	annual days of extreme heat
Extreme Precipitation	26.8	annual days with precipitation above 20 mm
Sea Level Rise	0.00	meters of inundation depth
Wildfire	31.5	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider different increments of sea level rise coupled with extreme storm events. Users may select from four model simulations to view the range in potential inundation depth for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 50 meters (m) by 50 m, or about 164 feet (ft) by 164 ft.
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score

Temperature and Extreme Heat	N/A	N/A	N/A	N/A
Extreme Precipitation	4	0	0	N/A
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	1	0	0	N/A
Flooding	0	0	0	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	N/A	N/A	N/A	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	N/A	N/A	N/A	N/A
Extreme Precipitation	4	1	1	4
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	1	1	1	2
Flooding	1	1	1	2
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	N/A	N/A	N/A	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	3.83
AQ-PM	1.14
AQ-DPM	1.69
Drinking Water	9.15
Lead Risk Housing	51.7
Pesticides	1.38
Toxic Releases	2.76
Traffic	0.91
Effect Indicators	—
CleanUp Sites	0.00
Groundwater	94.7
Haz Waste Facilities/Generators	0.00
Impaired Water Bodies	51.2
Solid Waste	99.1
Sensitive Population	—
Asthma	69.7
Cardio-vascular	68.8
Low Birth Weights	58.6
Socioeconomic Factor Indicators	—

Education	56.5
Housing	68.5
Linguistic	0.00
Poverty	76.9
Unemployment	—

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	21.95560118
Employed	3.541639933
Median HI	11.93378673
Education	—
Bachelor's or higher	25.40741691
High school enrollment	5.569100475
Preschool enrollment	23.81624535
Transportation	—
Auto Access	71.35891184
Active commuting	84.98652637
Social	—
2-parent households	4.850506865
Voting	46.10547928
Neighborhood	—
Alcohol availability	67.72744771
Park access	16.75862954
Retail density	1.578339535

Supermarket access	28.75657641
Tree canopy	99.42255871
Housing	—
Homeownership	55.11356345
Housing habitability	10.94572052
Low-inc homeowner severe housing cost burden	34.83895804
Low-inc renter severe housing cost burden	26.31849095
Uncrowded housing	57.46182471
Health Outcomes	—
Insured adults	4.516874118
Arthritis	0.0
Asthma ER Admissions	45.5
High Blood Pressure	0.0
Cancer (excluding skin)	0.0
Asthma	0.0
Coronary Heart Disease	0.0
Chronic Obstructive Pulmonary Disease	0.0
Diagnosed Diabetes	0.0
Life Expectancy at Birth	54.5
Cognitively Disabled	25.4
Physically Disabled	8.8
Heart Attack ER Admissions	28.8
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0
Pedestrian Injuries	82.7
Physical Health Not Good	0.0

Stroke	0.0
Health Risk Behaviors	—
Binge Drinking	0.0
Current Smoker	0.0
No Leisure Time for Physical Activity	0.0
Climate Change Exposures	—
Wildfire Risk	29.9
SLR Inundation Area	0.0
Children	87.0
Elderly	42.0
English Speaking	90.2
Foreign-born	1.1
Outdoor Workers	8.9
Climate Change Adaptive Capacity	—
Impervious Surface Cover	96.7
Traffic Density	0.3
Traffic Access	0.0
Other Indices	—
Hardship	54.3
Other Decision Support	—
2016 Voting	35.2

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	29.0
Healthy Places Index Score for Project Location (b)	13.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	No

Project Located in a Low-Income Community (Assembly Bill 1550)	Yes
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Construction: Construction Phases	The phasing and projected construction timing was provided by the applicant as follows: Phase 1: Construction of Building 1, Building 2, Ridge Site Cultivation Area, & four ponds. Estimated approximately 4 months (120 days) Phase 2: Construction of Buildings 1 & 2 and remaining cultivation areas. Estimated approximately 4 months (120 days). Work would occur 7 days per week, with an assumed start date of May 15th, 2024. Assumptions: The majority of grading is for the ponds and would occur in phase 1. Therefore, the majority of grading was concentrated in phase 1. Building construction was assumed to take approximately the same time across both phases. Two days were assumed for paving in each phase. This created the following construction activities per phase: Phase 1: 90 days of grading, 28 days of building construction, and 2 days of paving. Phase 2: 40 days of grading, 78 days of building construction, and 2 days of paving. The days/timing of each construction activity were combined for calculation purposes, as CalEEMod will not allow repeating phases despite phased construction, as follows: Grading: 90 + 40 = 130 days Building Construction: 106 days Paving: 4 days

	No Demolition, site preparation, or architectural coating is required for this project, per the applicant.
Construction: Off-Road Equipment	Specific equipment information not provided by applicant, default values used. No cranes needed for this project, and thus cranes were removed.
Construction: Dust From Material Movement	—
Operations: Architectural Coatings	Buildings are pre-fabricated and will not require architectural coatings, per the applicant.
Operations: Energy Use	Information for energy use provided by applicant.
Operations: Road Dust	Paved percentage adjusted to account for Humboldt's gravel roads and onsite unpaved roads.
Construction: Trips and VMT	The number of trips were provided in project materials and updated accordingly. To estimate trip length, the following calculations were used: Workers: 20 one-way trips per day from 9 individual cars and one (1) 12-person passenger van coming from Fortuna, per Project Materials. To encompass both local and county-wide employee travel, calculations assumed the remaining 9 individual employees were coming from 1/3 Garberville area (35 miles away), 1/3 Fortuna area (46 miles away), and 1/3 Blocksburg area (7 miles away). Based on these assumptions, an average worker trip length of 31 miles was calculated. Vendor & Hauling: Assumed half of vendors would be traveling from the Eureka area (62 miles away) and half from Garberville area (35 miles away). An average of 48 miles was thus used. Assumed 4 miles for daily onsite traffic. Vehicle Class values were unchanged.
Land Use	—

Attachment 3. Additional Information Supplied by Applicant and Applicant's Agent

Air Quality and Greenhouse Gas Data Needs – HumSun

Red text = Information sourced from Project Application Materials
Green text = Information from Applicant's Agent
Blue text = Information from Applicant

Construction Data needs

1. **Construction Overview**
   Please describe exactly what is being constructed: *Number, type, square footage, and materials needed for ponds, buildings, etc.:*

   Cultivation:
   - Total square footage?
     - 152,460 sq. ft. of mixed light in greenhouses
     - 370,260 sq. ft. of outdoor
     - 51,060 sq. ft. of nursery

   New roads:
   - Total square footage / mileage of new roads (if any)?
     - Approximately 3.6 miles long (source: road/driveway evaluation)
   - Materials needed (e.g., crushed gravel)?
     - Road gravel 6" will be placed at "road improvements" which would be 18 new turnouts (source: road/driveway evaluation)

   Ponds:
   - How many total? 4 ponds
   - Total square footage? 137,683 sq. ft.
   - How much grading is required for the ponds? 38,366 cubic yards

   Buildings:
   - How many buildings and what sizes?
     - Four, I believe, sized as follows: 6,000 sq. ft., 1,625 sq. ft., 7,200 sq. ft. and 9,000 sq. ft. for a total of 23,825 sq. ft. (please confirm)
       - That is correct unless you also need information on hoop houses?
   - What type of material will they be constructed from (wood, metal, etc.)?
     - I do not know- I will see if I can find this information
   - Any architectural coating?
     - I do not know- I will see if I can find this information
   - How much grading is required?
     - See the below calculations.

Project Component	Cut Amount (cubic yards)	Fill Amount (cubic yards)
Building 1	56	2,525
Building 2	1,055	336

Ridge Site Cultivation Areas	29,400	24,300
Pond A	9,399	9,399
Pond B	6,027	6,026
Pond C	17,641	17,642
Pond D	5,398	5,299
TOTALS	68,978	65,629

Other:

- Any other construction?
    - Depending on how you define construction there may be. There are numerous hoop houses, water tanks, parking spaces, etc.

2. **Construction Phases**

Describe Construction phasing and approximate timelines:

Phase One:

- Construction of Building 1, Building 2, Ridge Site Cultivation Area, & four Ponds (total earthwork: 68,978 cubic yards of cut, 65,629 cubic yards of fill)
    - Does Building construction involve paving (e.g., for ADA access)?
        - The Project Description notes ADA parking spaces, but I am unsure if and to what extent there will be paving. I will inquire with the Project manager.
            - Assuming 1,000 sq. ft. (enough for 2 paved ADA parking spaces, if required).
- Approximately 4 months
- 500 cubic yards of rock needed

Phase Two:

- Construction of remaining buildings and cultivation areas
    - Same question on paving - any paving proposed and if so, how much?
        - See above.
- 4 months

Please provide the phase names as well as the start and end dates for each phase of construction in the table below. (*Delete unnecessary phasing – demolition, architectural coating, etc., may not apply)*

Project Phase	Expected Start Date	End Date	Number of Workdays
Building Construction			Phase 1: 120 Phase 2: 120

3. **Construction Off-road Equipment**

For construction equipment, please provide the construction equipment type, fuel, horsepower, number of pieces, and operation hours/day for each piece of equipment by phase in the table below.

Some information in red, below, is sourced from project materials, please delete/add equipment if unnecessary .

Equipment Type	How Many	Fuel Type	Quantities per day	Horsepower	Hours/day
Demolition – assuming n/a					
Site Preparation – assuming n/a					
Grading					
Skids Steers					
Mini-Excavators					
Water Trucks					
Work Trucks					
Tractors					
Building Construction					
Cement Trucks					
Water Trucks					
Work Trucks					
Tractors					
Paving					
Architectural Coating					
Other Phase 1					
Other Phase 2					

4. **Construction Worker and Vendor Trips**

We have this information from the Project Description:

- Construction (Phase One): 4-6 daily trips + 2 daily trips for rock imports = total of 8 maximum daily trips (16 round-trips)
- Equipment would be mobilized to site at the beginning and end of construction.
    - How long is this phase anticipated? _____Four months_____
- Construction (Phase Two): 2-4 daily trips
- Equipment would be mobilized to site at the beginning and end of construction.
    - How long is this phase anticipated? _____Four Months_____

5. **Construction Soil Material Haul Trips**

In the tables below, please indicate if project construction will require import or export of soil or other similar materials. Please specify the type of material, total CY, and location of origin/disposal. 20-CY capacity trucks will be assumed for hauling.

Soil Import

Project Phase	Import (CY)	# of Daily Trucks	Material	Distance hauled
Site Preparation			Soil	
Grading				
Building Construction				

Soil Export

Project Phase	Export (CY)	# of Daily Trucks	Material	Distance hauled
Grading			Soil	

Unknown for soil material haul trips total. The Project Description does call for 500 cy of rock to be imported, but other than that there is no indication of offsite soil hauling.

6. **Paving**

In the table below, please indicate if paving would be required. If paving is required, please provide the number of acres to be paved with asphalt for each phase in which paving would occur.

Project Phase	Total Acres of Paving
Paving	1,000 sq. ft.

See above- need to check on paving

7. **Electricity and water**
   Please indicate if electricity will be used during construction to power mobile offices or equipment. If so, please provide the annual kilowatt hours used for this purpose. Please also describe the electricity source (e.g. size, type, brand of generator).

_____ 100,000 kWh per year
Of power
Use as much as possible off Pgne
Solars is unclear depending on strength of panels currently we have 200 panels at 250 watts
The propane would be used in generators to run 40000kwh

_____

If known, please indicate how much water will be needed for each construction phase (e.g. for dust control).

_____

Operations Data needs

8. Would any other off-road equipment be used at the project site during operations, such as a forklift or other small equipment? If so please, provide the type of equipment, hours used per day, and horsepower.

\Unknown need to check with operations team.

9. In the table below, please provide the annual energy consumption as it relates to the proposed build-out.

   What would the source be, through the years, and when could electricity come to the site?

At the Ridge Site, electricity is proposed to be provided by generators (as discussed above) for the first several years until PG&E power lines are established.

At the Lower Field Site, there is PG&E power already (200 amp PG&E drop).

Would RCEA Power+ be purchased?

As proposed currently, yes.

How many hours of run time for the generator(s) annually, until PG&E gets to the site?

Unknown.

How much solar?

16,600 sf of solar at Ridge Site providing 315 Kw of power.

Project Build-out	Electricity (kWh)	Natural Gas (therms or MMBtu)	Solid Waste (tons)
Phase 1			
Phase 2			

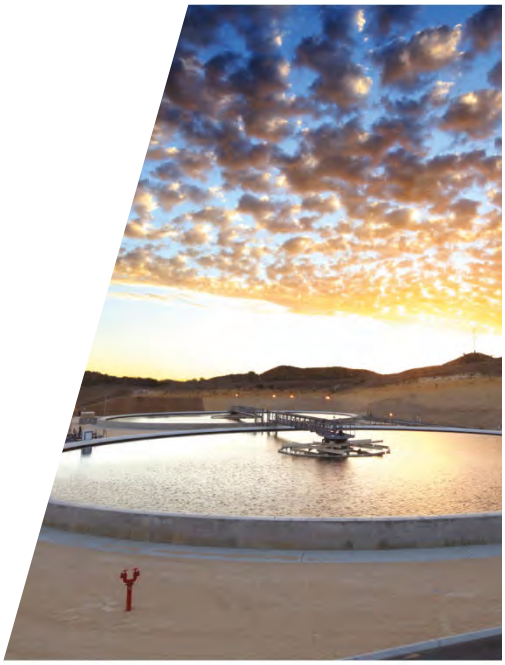
10. Please describe the energy saving or sustainability features that will be included in the project design. LED lighting and energy saving equipment are noted – please indicate if any additional features will be included. These may include exceeding the Title 24 requirements, implementing composting, using only high-efficiency appliances, using recycled water on-site, installation of solar panels, use of electric landscaping equipment, etc.

Besides those listed in the Project Description, unknown about power saving programs or devices.

11. Please describe any nightime operations.

None proposed at this time.

Appendix 2E
Botanical Resources Report



Botanical Resources Report

Hum Sun Farms Development Project
Blocksburg, California
Prepared for Hum Sun LLP









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1. Introduction

1.1 Introduction

This Report includes the results of the 2019 surveys for special status plant populations and sensitive natural communities in the area of the Hum Sun Farm Development Project in Humboldt County, CA (Appendix A; Figure 1).

1.2 Purpose

The purpose of this evaluation was to conduct seasonally appropriate surveys for state, federal, and other sensitive listed plant species, and sensitive natural communities, within the proposed project area. The surveys attempted to identify all vascular plants within the proposed project area to the taxonomic level necessary to determine rarity and listing status, and to document the presence of special status plants and sensitive natural communities within the proposed project footprint (proposed direct impact areas) and buffer areas, including the immediate access roads. The results may be used for planning, design, or to avoid or mitigate impacts associated with project construction, and to guide future management decisions.

1.3 Location

The Project Study Boundary (PSB) for the Hum Sun Farms Development Project is located within the unincorporated community of Blocksburg in southern Humboldt County (Appendix A; Figure 1). The site is accessed from Alder Point Road.

1.4 Project Description

The proposed activity is development of a cannabis growing operation within portions of a larger property currently utilized for grazing and occasional timber harvest. The proposed activity includes several components focused largely in three parts of the site. These include cultivation areas, water sources (ponds), and structures (drying sheds). Overall, the Project includes approximately 12 acres for proposed cultivation (4 acres interior; 8 acres exterior), in addition to the construction of processing buildings and ponds, and the drilling of wells.

Three proposed cultivation areas have been identified: a greenhouse complex near the Alderpoint Road entrance and two outdoor cultivation areas (“Jellybean” and “Honeyhole”), both on or near the ridgetop. The Jellybean site is near the highest point on the ridgetop and relatively centrally located. The Honeyhole site is about 0.6 mile to the northwest, at and just southwest of the ridgetop. Seven pond locations have been identified, most within reasonable proximity to cultivation sites. Four drying sheds are proposed. Two are near the greenhouse location described above, and one is near each of the interior cultivation sites. Analysis was based on the project description above as presented at the beginning of field work, and some activities may be shifted or reduced to avoid sensitive resources. An updated project description is anticipated, and the study area as presented in this report is large enough to accommodate reasonable changes.

1.5 Environmental Setting

The entire property on which the proposed development is located, includes 12 contiguous parcels and in sum covers approximately 3,200 acres. It is bisected by a central roughly northwest-southeast trending ridge, with a series of small ravines and ephemeral streams flowing east and northeast into Larabee Creek (on the eastern portion of the site), or southwest into Coleman Creek and to the Eel River (located about 0.5-mile west of the westernmost part of the site. Elevations range from approximately 600 feet in the southwest corner, to 1,300 feet along the eastern edge, up to approximately 2,300 feet at the highest part of the central ridge.

1.6 Regulatory Setting

1.6.1 State Listed Species

Special status plant species under State jurisdiction include those listed as endangered, threatened, or as candidate species by the California Department of Fish and Wildlife (CDFW) under the California Endangered Species Act (CESA). Plant species on California Native Plant Society's (CNPS) California Rare Plant Ranking (CRPR) Lists 1A, 1B and 2 are considered eligible for state listing as Endangered or Threatened pursuant to the California Fish and Game Code and CDFW has oversite of these special status plant species as a trustee agency. As part of the CEQA process, such species should be considered as they meet the definition of Threatened or Endangered under Sections 2062 and 2067 of the California Fish and Game Code. CRPR List 3 and 4 plants do not have formal protection under CEQA. CDFW publishes and periodically updates lists of special status species which include, for the most part, the above categories. Additionally, there are 64 plant species designated as "rare" which is a special designation created before plants were rolled into CESA in the 1980s (CDFW 2019a). A project is required to have a "Scientific, Educational, or Management Permit" from CDFW for activities that would result in "take," possession, import, or export of state-listed plant species including research, seed banking, reintroduction efforts, habitat restoration, and other activities relating to any plant designated SE (State endangered), ST (State threatened), SR (State rare), or SC (State candidate for listing).

1.6.2 Sensitive Natural Communities

CDFW provides oversight of habitats (i.e. plant communities) listed as Sensitive in the California Natural Diversity Database (CNDDB) and on the California Sensitive Natural Communities List, based on global and state rarity rankings. The natural communities are broken down to alliance and association levels for vegetation types affiliated with ecological sections in California. The alliances on the California Sensitive Natural Communities List coincide with A Manual of California Vegetation (Sawyer et al. 2009). CDFW considers alliances and associations with a state rank of S1 to S3 to be Sensitive (CDFW 2019b). The application of ranking for determination of Sensitive Communities is summarized as follows in Table 1 (NatureServe 2019):

Table 1.1 NatureServe Conservation Status Ranks

Name	Calculated Status Rank	Status Description
Score ≤ 1.5	G1, N1, S1	Critically Imperiled
1.5 ≤ Score ≤ 2.5	G2, N2, S2	Imperiled
2.5 ≤ Score ≤ 3.5	G3, N3, S3	Vulnerable
3.5 ≤ Score ≤ 4.5	G4, N4, S4	Apparently Secure
Score > 4.5	G5, N5, S5	Secure

1.6.3 Federal Jurisdiction

1.6.3.1 Federal Listed Species

Special status plant species under Federal jurisdiction include those listed as endangered, threatened, or as candidate species by the Fish and Wildlife Service (USFWS) under the U.S. Endangered Species Act (ESA).

1.6.3.2 Critical Habitat

Critical Habitat is defined by the ESA as a specific geographic area containing features essential for the conservation of an endangered or threatened species. The ESA requires consultation with USFWS by federal lead agencies for activities they carry out, authorize, or fund. Under Section 7 of the ESA, critical habitat federally designated for a listed or proposed species that may be present in project Action Area should be evaluated.

2. Methods

2.1 Project Study Boundary / Action Area

Prior to conducting environmental fieldwork, the project scientist worked in coordination with the project manager and the applicant to develop the limits of the project study boundary (PSB). The PSB is a terminology adopted from definitions and permit procedures promulgated by the U.S. Army Corps of Engineers (USACE). The PSB is designated on a project specific basis, and as feasible, to take into consideration potential alternate layouts of project, fill/cut slopes, temporary impact areas and/or adjacent areas if feasible, access, new or modified utilities and right of ways, and adjacent areas that may be feasibly included in the study. The PSB may be modified on a project-specific basis according to issues such as private property ownerships, access constraints, and areas excluded from project use.

The PSB for the Hum Sun Farms Project is shown in Appendix A: Figures 2 and 3. The Project Study Boundary for the special status plant surveys and vegetation community mapping was defined as the proposed project components (areas of proposed direct impact) and a buffer of 250’ around the project components (Appendix A; Figures 4.1-4.6). This buffer was truncated in upslope locations since no indirect impacts are expected upslope of project components. Project components include the three cultivation sites, seven ponds, and operations buildings which total approximately 20 acres of direct impacts. Figures 4.1-4.6 in Appendix A show the results of

vegetation community mapping. Vegetation community mapping results refer to the area inside the buffer around project components as “buffer areas” (Appendix A; Figures 4.1-4.6). The total area within the buffers is approximately 114 acres. The total acreage within the PSB is approximately 134 acres.

Access roads were also surveyed during special status plant surveys in close proximity to impact areas. Survey efforts on access roads focused on mesic areas of soil, on older rocked roads with a likelihood of increased traffic related to the development, and that contained potential habitat for Howell’s montia (*Montia howellii*), a species identified as having a high probability of occurrence on the site.

2.2 Pre-Survey Investigations

Prior to field surveys, a scoping list of CRPR plant species and habitats with recorded occurrences in the project vicinity was compiled by consulting the *California Natural Diversity Database* (CNDDB) [CDFW 2019c], the CNPS *Inventory of Rare and Endangered Vascular Plants* (CNPS 2019a), and the list of Federally listed plant species maintained by the U.S. Fish and Wildlife Service (USFWS 2019). The CNDDB database was consulted for rare plant occurrences documented in the project vicinity.

The scoping list includes special-status plants that occur in habitat similar to the project area with documented occurrences on the Blocksburg USGS quadrangle or adjacent quadrangles. CDFW and CNPS recommend the assessment area be a minimum of nine USGS quadrangles with the survey area located in the central quad. The scoping list also contains other taxa that may occur in the project area whose habitat is suitable if the project is within or near the known range of the species. The assessment area was defined as the nine USGS 7.5’ minute quadrangles centered around the Blocksburg quadrangle (Bridgeville, Larabee, Dinsmore, Myers Flat, Black Lassic, Miranda, Fort Seward, and Alder Point USGS 7.5’ quadrangles). The queries yielded 45 special status species previously documented in the assessment area. Of the 45 special status species, 20 have a CRPR rank of 1B or 2B. The other 25 species have a CRPR rank of 4. All species were reviewed prior to the field survey. For simplicity, only species with a CRPR rank of 1 or 2 are included in the scoping table presented in Appendix B. Of the 20 species with a CRPR rank of 1 or 2, eight have a high probability of occurring within the study area, and one of these species was located. Three species were determined to have a moderate probability of occurring within the study area (Appendix B). Within the assessment area, one sensitive plant community was documented according to CNDDB (2018), upland Douglas-fir forest which occurs within the study area.

2.2.1 Existing Site Information

The NRCS Web Soil Survey identifies two units within the survey area (Appendix A; Figure 5), Tannin-Wohly complex, 9 to 30% slopes and Parkland, dry-Garberville, dry complex, 2 to 9% slopes, that comprise 10.7% of the PSB. The remaining 89.3% of the PSB is listed as “Area not surveyed, access denied.”

No previous vegetation mapping data is publicly available for this part of the state. Topographic and National Wetland Inventory (NWI) information was reviewed prior to botanical studies. A wetland delineation was conducted at the site by GHD botanist Amy Livingston and GHD Certified

Professional Soils Scientist and Professional Wetlands Scientist Misha Schwarz in April and May of 2019. The results of the wetland delineation are presented in a separate report (GHD 2019).

2.3 Survey Procedures- Special Status Plants

Surveys to determine the presence of special status plant species (listed as rare, threatened, endangered, or candidate under the State or Federal Endangered Species Acts, CNPS, or species of local importance) were timed to coordinate with the blooming period for the majority of the species thought to have moderate or high potential to occur within the project area. The scoping list was reviewed to determine appropriate timing for botanical surveys. It was determined that an early season and a mid-season survey would be necessary to capture the blooming period for target species (species thought to have moderate or high potential to occur within the project area).

The surveys were floristic in nature following Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities by the California Natural Resource Agency (CDFW 2018) and General Rare Plant Survey Guidelines by the Endangered Species Recovery Program (USFWS 2002). An intuitively controlled survey was conducted that sampled and identified potential habitat(s). Plants were identified to the lowest taxonomic level (genus or species) necessary for rare plant identification. Nomenclature follows The Jepson Manual (Baldwin et al. 2012) and the Jepson eFlora (Jepson Flora Project 2019). Species surveys were conducted by walking the site looking for the presence of target species and habitats identified on the scoping list, as well as presence of any other incidental sensitive-listed plant species. A total of five field days were spent surveying the PSB specifically for special status species. The special status plant survey occurred on: 3/29/19, 4/10/19, 4/24/19, 6/5/19, and 6/6/19. Additional days were spent documenting natural communities. Special status plant surveys were performed by GHD botanist Amy Livingston who has nine seasons of experience surveying for special status plant species in northern California.

2.4 Survey Procedures- Sensitive Natural Communities

2.4.1 Approach

Surveys for identifying Sensitive Natural Communities were also conducted in accordance with the *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* by the California Natural Resource Agency (CDFW 2018). Vegetation mapping occurred throughout the floristic season over four field visits (each spanning two or three days). Sampling occurred on April 10th-12th, May 8th-10th, June 4th-6th, and June 13th-14th. Approximately 70 field hours were spent surveying vegetation communities. Vegetation community mapping was performed by GHD Botanist Joslyn Curtis, with field assistance from Amy Livingston on 4/10/19. Joslyn Curtis has seven years of experience performing vegetation community surveying for CDFW VegCamp, CNPS Vegetation Program and the University of Nevada, Las Vegas.

A two tiered approach was utilized for vegetation mapping based on the level of impact. On the ground community delineation was conducted for areas within the project footprints where direct impacts are anticipated (Appendix A; Figure 3). The currently proposed project footprints (cultivation areas, ponds and buildings) amount to a little over 20 acres. Heads-up desktop delineation, based

on National Agricultural Imagery Program (NAIP) aerial imagery was conducted for areas within the buffers (approximately 114 acres).

2.4.2 Field Sampling

Areas of direct impact were sampled intensively by walking and on the ground mapping. The CDFW/CNPS 2019 Protocol for Combined Vegetation Rapid Assessment and Relevé forms was utilized for field data collection (CDFW 2019d). Vegetation mapping followed the alliance classification system described in A Manual of California Vegetation, 2nd Edition (Sawyer et al. 2009) and updated in the current online edition (CNPS 2019b). Forest and woodland communities were generally sampled early in the floristic season and herbaceous communities were generally sampled in June, in an attempt to coincide with the blooming period of herbaceous species. Grassland communities were mapped to alliance level within the project footprints (areas of direct impact) and to the association level when possible.

Location data were collected with the Esri Collector™ application on a Samsung Galaxy S7™ smartphone. Global Positioning System (GPS) location averaging and precision constraints were used to achieve a GPS location accuracy of an average of ± 3.2 meters. Photos were taken at each of the cardinal directions at Relevé and Rapid Assessment plot locations.

2.4.3 Mapping

The CDFW VegCAMP's template ArcGIS geodatabase and NAIP aerial imagery were used to delineate vegetation polygons (CDFW 2019b). NAIP aerial imagery has inherent misalignments, and the overlay is not likely to line up perfectly with on the ground features. Therefore, natural community boundaries may not be depicted precisely in relation to pond, cultivation, and structure design layers. This may cause slivers or canopy overlap that might not occur with on the ground reality.

When appropriate, species cover data from upland and wetland vegetation plots, collected during the wetland delineation that was performed for this project were used to augment the Rapid Assessment and Relevé data. Data utilized from the wetland delineation has limitations, as wetland delineation data does not collect all data relevant to vegetation community characterization. Best judgement was used when incorporating this data, which was integrated as Recon surveys. All Rapid Assessment and Relevé field forms as well as the Recon survey data (taken from wetland sampling points) are included in Appendix E.

Minimum Mapping Units for vegetation type changes within the project footprints is 100 ft^2 for uplands, 50 ft^2 for wetlands, and one acre for cover class differences. A minimum width of one foot was allowed for linear polygons. Minimum Mapping Units for vegetation type changes within the buffers is one acre for uplands, a quarter acre for wetlands, and ten acres for cover class differences. A minimum width of ten feet was allowed for linear polygons. All tree and shrub communities were mapped to the alliance level within both project areas and buffers. Grasslands outside of direct impact areas were mostly heads-up delineated in the office based on aerial imagery. Macrogroup level names were assigned to these areas when possible.

Mapping was done within the project area footprint as defined in the original (late 2018) project description, as well as within surrounding buffer areas. This is intended to allow analysis of the project as originally proposed, to accommodate relocation of proposed activities to avoid potential

impacts, and where appropriate to allow analysis or avoidance of potential indirect impacts to surrounding areas.

3. Results

3.1 Special Status Plant Species

On 3/29/19, 4/10/91, 4/24/19, 6/5/19, and 6/6/19 the PSB was surveyed in an effort to identify if federal, state and/or CNPS listed plant species are present. No Critical Habitat for plants occurs within the project study boundary. Two hundred and thirty vascular plant species were observed within the PSB during the special status plant survey and the vegetation community mapping. A list of these species is included in Appendix C.

Three special status species were observed during the protocol level special status plant surveys, Howell's montia (*Montia howellii*), Tracy's tarplant (*Hemizonia congesta ssp. tracyi*), and heart-leaved twayblade (*Listera cordata*). The locations of these species are shown on Figure 2. A fourth special status species was identified during vegetation community mapping. Bristly leptosiphon (*Leptosiphon acicularis*) has a California Rare Plant Rank (CRPR) of 4.2, signifying limited distribution in California. This species was found throughout the PSB, but no specific location information was collected for it, and no location information is included on Figure 2.

Howell's montia has a CRPR of 2B.2. The rank of 2B signifies a species is rare or endangered in California but more common elsewhere, and the .2 rank signifies the species is fairly endangered in California (CDFW 2019b). Howell's montia was found at two locations, on two roads within the PSB (Figure 2). Occurrences details are recorded on the CNDDB Native Species Field Survey Forms included as Appendix D. Per CDFW protocols, the CNDDB forms and location information has been sent to CNDDB (CDFW 2018).

Tracy's tarplant (CRPR 4.3) and heart-leaved twayblade (CRPR 4.2) both have a CRPR of 4 signifying limited distribution in California. A large population of Tracy's tarplant was observed on a mostly open hillside with low cover of invasive rose shrubs (*Rosa* spp.), see Appendix D for occurrence details.

3.2 Vegetation Communities

Seventeen alliance types, two associations, and two macrogroups were identified within the proposed project footprints (potential direct impact areas). Table 3.1 contains a Map ID code for each community which is used to symbolize the community in the Natural Communities Mapbook (Appendix A; Figures 4.1-4.6). Table 3.1 shows the acreage of each community within the areas of potential direct impact. CDFW's current list of California Sensitive Natural Communities dated November 8, 2019 was consulted to obtain current rarity ranking (CDFW 2019b).

During the community mapping, 6 Relevé surveys and 18 Rapid Assessment surveys were performed. In addition, 23 Wetland Delineation samples were utilized as Recon surveys. All Rapid Assessment and Relevé field data, as well as Recon data is included in Appendix E. Datasheets and location information for all natural communities well be submitted to VegCAMP.

The name of one vegetation community was updated post field work when it was determined that the dominant species in the community had been misidentified. Areas that were initially mapped as the *Hordeum brachyantherum* (meadow barley) vegetation alliance during the field work effort were renamed as “Undetermined California Annual and Perennial Grassland Macrogroup.” Post field work review of specimens at the University of California, Davis revealed that the dominant species in these communities was the non-native seaside barley (*Hordeum marinum*) and not the native meadow barley. Since this community was not thought to be Sensitive after review of field data, and an alliance determination was not clear, this broad classification of “Undetermined California Annual and Perennial Grassland Macrogroup” was used for these areas.

An additional post field work change was made to two of the mapped vegetation occurrences. Two areas were initially included on the vegetation map with boundaries that were determined from the wetland delineation data forms as “Recon surveys”. These areas were originally labeled “northwest manna grass (*Glyceria* x *occidentalis*) marsh” which is a provisional alliance designated as a S3? (vulnerable) provisional community. However, a confirmed identification was never made for this species. As the species identification is uncertain, the determination of this alliance is also uncertain. This alliance was mapped within project and buffer areas in two locations. One location is entirely within a mapped wetland within the cultivation site located near Alder Point Road (Appendix A; Figure 4.6). The other location was within the buffer area near pond 6 (Appendix A; Figure 4.3). These areas are now labeled as “Undetermined *Glyceria* sp. dominated” (Tables 3.1 and 3.2).

Three macrogroups, nineteen vegetation alliances, and two associations were mapped within the project area buffers (Table 3.2). Within buffers all tree and shrub communities were mapped to the alliance level. Due to the complexities of herbaceous communities, time constraints, and imagery limitations, herbaceous communities were often mapped to the macrogroup level within buffers.

Table 3.1 Vegetation Communities Identified within Project Areas

Alliance	Association (if known)	Sensitive?	Map ID	Count in Potential Direct Impact Areas	Acreage in Potential Direct Impact Areas
Developed (No Community)		NA	8	1	0.097
Alnus rhombifolia		No	2	1	0.003
Pseudotsuga menziesii		No	18	4	1.067
Pseudotsuga menziesii - Notholithocarpus densiflorus		Yes (S3)	19	4	0.993
Quercus garryana		Yes (S3)	20	2	0.278
Umbellularia californica		Yes (S3)	24	1	0.005
Rubus armeniacus - Sesbania punicea - Ficus carica		No	21	1	0.086
Agrostis (gigantea, stolonifera) - Festuca arundinacea		No	1	2	1.353
Bromus (diandrus, hordeaceus) - Brachypodium distachyon		No	3	5	2.441
Bromus tectorum - Taeniatherum caput-medusae		No	4	7	1.773
Carex densa		Yes, Provisional Alliance (S2?)	6	2	0.098
Danthonia californica		Yes (S3)	7	10	4.860
Eleocharis macrostachya		No	9	1	0.042
Undetermined (*Glyceria* sp. dominated)		Unknown	10	1	0.010
Holcus lanatus - Anthoxanthum odoratum		No	12	2	0.224
Undetermined- California Annual and Perennial Grassland Macrogroup		No	25	12	5.575
Juncus patens		No	14	5	0.075
Lasthenia californica - Plantago erecta - Vulpia microstachys		No	15	1	0.042
Plagiobothrys nothofulvus		No	17	1	0.269
California Annual and Perennial Grassland Macrogroup		No	5	4	0.356
Lasthenia californica - Plantago erecta - Vulpia microstachys	*Micropus californicus provisional association*	Yes, Provisional at Association Level	16	2	0.287
Lasthenia californica - Plantago erecta - Vulpia microstachys	*Hemizonia congesta - Lolium perenne*	No	11	1	0.350

Table 3.2 Vegetation Communities (Alliances and Macrogroups) Identified Within Buffer Areas

Vegetation Community (Alliance or Macrogroup)	Sensitive?	Map ID	Count	Total Acres
Developed (No Community)	NA	8	1	0.870
Alnus rhombifolia	No	2	1	7.727
Pseudotsuga menziesii	No	18	10	22.432
Pseudotsuga menziesii - Notholithocarpus densiflorus	Yes (S3)	19	8	24.901
Quercus garryana (tree)	Yes (S3)	20	3	2.924
Umbellularia californica	Yes (S3)	24	3	3.536
Rubus armeniacus - Sesbania punicea - Ficus carica	No	21	2	0.425
Salix lasiolepis	No	22	1	0.088
Toxicodendron diversilobum	No	23	1	0.240
Agrostis (gigantea, stolonifera) - Festuca arundinacea	No	1	2	1.385
Bromus (diandrus, hordeaceus) - Brachypodium distachyon	No	3	5	1.990
Bromus tectorum - Taeniatherum caput-medusae	No	4	3	0.225
Carex densa	Yes Provisional Alliance (S2?)	6	2	0.089
Danthonia californica	Yes (S3)	7	11	2.469
Eleocharis macrostachya	No	9	1	0.000
Undetermined *Glyceria* sp. dominated	Unknown	10	2	0.061
Holcus lanatus - Anthoxanthum odoratum	No	12	2	0.244
Undetermined- California Annual and Perennial Grassland Macrogroup	No	25	9	7.825
Juncus effusus		13	4	0.984
Juncus patens	No	14	5	0.779
Lasthenia californica - Plantago erecta - Vulpia microstachys	No	15	1	0.067
Western Cordilleran montane moist graminoid meadow Group	No	26	3	2.465
California Annual and Perennial Grassland Macrogroup	No	5	9	30.864
Western North America Wet Meadow and Low Shrub Carr Macrogroup	No	27	1	1.518
Lasthenia californica - Plantago erecta - Vulpia microstachys (Micropus californicus provisional association)	Yes Provisional at Association Level	16	1	0.158
Lasthenia californica - Plantago erecta - Vulpia microstachys (Hemizonia congesta - Lolium perenne association)	No	11	1	0.551

State Rarity Ranks: S1= Critically Imperiled; S2= Imperiled; S3= Vulnerable; S4= Apparently Secure; S5= Secure (NatureServe 2019); NA= Not Applicable to a Macrogroup; None= Not a Natural Community; ?= denotes an inexact numeric rank because we know we have insufficient samples over the full expected range (CDFW 2019a).

3.3 Sensitive Natural Communities

Six sensitive natural communities were surveyed and mapped within project areas (areas of potential direct impact) totaling 6.52 acres (Table 3.3). One of these communities is a provisional alliance. Provisional alliance rankings are vegetation communities for which fewer than 10 stands have been sampled, but which CDFW expects will prove to be more widespread (CDFW 2019b). One provisional association was mapped. According to the November 8th, 2019 Sensitive Natural Communities list, this provisional association is considered Sensitive (CDFW 2019b). An email was sent to Diana Hickson of the CDFW Vegetation Classification and Mapping Program on January 7, 2020 requesting additional information about the provisional alliances and associations that occur within project areas and she is currently looking into this inquiry. Table 3.3 shows the number of occurrences of each Sensitive community mapped within project areas as well as the total acreage of each within direct impact areas.

As stated previously, herbaceous communities were generally not mapped to alliance level within the buffer areas. Given that the Macrogroup mapping unit was more often utilized for herbaceous communities than alliance level mapping within buffer areas, values for the sensitive herbaceous alliances within buffer areas may be underestimated in Table 3.3. This inconsistency in mapping unit would also potentially affect the percentage of the mapped community occurring within project areas. In spite of this, this data is provided to show the best available information on the distribution of the community within the PSB. As tree and shrub communities were mapped to the alliance level for both project and buffer areas the mapping unit inconsistency does not apply to these alliances.

Table 3.3 Acres of Sensitive Natural Communities potentially impacted

Sensitive Natural Community	State Rarity	Occurrences within Project Areas	Total Acres within Project Areas	Total Acres mapped within both Project and Buffer Areas	Percent of Mapped Community within Project Area	Map ID
Carex densa	S2?	2	0.10	0.19	52.3%	6
Danthonia californica	S3	10	4.86	7.33	66.3%	7
Lasthenia californica - Plantago erecta - Vulpia microstachys (Micropus californicus provisional association)	Sensitive at Provisional Association Level	2	0.29	0.45	64.4%	16
Pseudotsuga menziesii - Notholithocarpus densiflorus	S3	4	0.99	25.89	3.8%	19
Quercus garryana (tree)	S3	2	0.28	3.20	8.7%	20
Umbellularia californica	S3	1	< 0.01	3.54	0.2%	24

3.3.1 Dense sedge marshes (*Carex densa*) Provisional Herbaceous Alliance

The dense sedge marsh provisional alliance has a state rarity rank of S2?. According to NatureServe, a community ranked as a S2 is "at high risk of extirpation in the jurisdiction due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors" (NatureServe 2019). The question mark after the S2 rank denotes an inexact numeric rank because there are insufficient samples over the full expected range of this community type, but existing information points to this rank (CDFW 2019b).

The dense sedge community is found on seasonally or intermittently saturated bottomlands, flats or freshwater seeps on silty to sandy soils (Sawyer et al. 2009). The community is characterized by having dense sedge as a dominant or co-dominant species in the herbaceous layer with other herbaceous species (Sawyer et al. 2009). Dense sedge has a distribution range of southwest Washington to California, west of the Cascades and Sierra Nevada (Wilson et al. 2008). This plant community is thought to have been nearly eliminated by agricultural development (Wilson et al. 2008). The dense sedge provisional herbaceous alliance has currently only been officially sampled on Mount Tamalpais in Marin County within the Northern California Coast region, and in the southern Sierra Nevada region (CNPS 2019b).

This alliance was mapped at two locations within the PSB. Both occurrences are located entirely within mapped wetlands. One occurrence is within a proposed pond location (Appendix A; Figure 4.5) and the other occurrence is within the cultivation site located near Alder Point Road (Appendix A; Figure 4.6).

3.3.2 California oat grass prairie (*Danthonia californica*) Herbaceous Alliance

The California oat grass prairie alliance is designated as a S3 (vulnerable) community. It is found on coastal bluffs, valley bottoms, floodplains, terraces, slopes and ridge tops. The alliance is characterized by California oat grass being dominant or codominant in the herbaceous layer (Sawyer et al. 2009). The membership rules for this community are as follows: California oatgrass is either present at 50% or greater relative cover, or California oat grass is present "generally at >25% absolute cover in the herbaceous layer" (Sawyer et al. 2009).

Within the Northern California Coast Ranges ecoregion, where the Project occurs, stands are documented as "rare in the Bald Hills sections of Redwood National Park and adjacent areas in Humboldt and Mendocino Counties" (Sawyer et al. 2009). This community is also known from private ranch lands in Mendocino County (Sawyer et al. 2009). California oat grass prairies are threatened by intensive livestock grazing, non-native grass invasions, and fire suppression (Sawyer et al. 2009). However, California oatgrass is known to respond favorably to moderate grazing and dry season burning under the right conditions (Sawyer et al. 2009).

This alliance is widespread within the project area and occurs primarily on mid to upper slopes. Within the direct impact areas, the alliance was fairly well distributed across project components. Within the areas mapped as the California oat grass prairie alliance, California oat grass was the dominant or co-dominant species generally occurring with non-native species such as hairy cat's ear (*Hypochaeris radicata*) and English plantain (*Plantago lanceolata*), and also occurring with the

native, special status plant species Tracy's tarplant (*Hemizonia congesta ssp. tracyi*). Two Rapid Assessments and one Relevé were performed to document this community (Appendix E).

3.3.3 California goldfields - dwarf plantain - six weeks fescue flower fields (*Lasthenia californica - Plantago erecta - Vulpia microstachys*) *Micropus californicus* provisional association)

The California goldfields - dwarf plantain - six weeks fescue flower fields alliance is defined by having any one of these native species present at >30% relative cover in stands with other native and non-native species in the herbaceous layer, or by having one or a combination of any of the three species characteristically present in stands with > 50% relative cover of native species (Sawyer et al. 2009). Stands of this alliance occur throughout much of cismontane California. The alliance is generally abundant on infertile soils of less frequent disturbance (Sawyer et al. 2009). The California goldfields, dwarf plantain, six weeks fescue flower fields alliance is not Sensitive at the alliance level, but the q-tip (*Micropus californica*) provisional association is a Sensitive association (CDFW 2019b). This provisional association has been previously documented in Sonoma County within the Mt. St. Helena Flows and Valleys (Klein et al. 2015). This provisional association was mapped in two locations within project areas, within the proposed area of pond 4 (Appendix A; Figure 4.4), and within the proposed area of pond 7 (Appendix A; Figure 4.3).

3.3.4 Douglas-fir - tanoak forest (*Pseudotsuga menziesii - Notholithocarpus densiflorus*) Forest Alliance

The Douglas-fir - tanoak forest alliance is ranked as S3 (vulnerable). This alliance is defined by having Douglas-fir and tanoak both between 25% - 60% cover in the tree canopy with other associated tree species (Sawyer et al. 2009). The Douglas-fir – tanoak forest alliance occurs on deep, well drained soils on raised stream benches, terraces, slopes and ridges of all aspects (Sawyer et al. 2009). In the Northern California Coastal Range logging practices have eliminated much of the old growth forests of this community and logging practices have shifted community composition (Sawyer et al. 2009). The Douglas-fir – tanoak forest alliance occurs extensively within the PSB, however, no old growth forest is present within the PSB, and second growth Douglas-fir – tanoak forest is regionally common in the Northern California Coastal Range. It was mapped near areas of potential direct impacts along the ridgeline near the Jelly Bean cultivation area (Appendix A; Figure 4.2) and near proposed ponds 1, 2, and 3 (Appendix A; Figure 4.5). Overlap of this alliance with proposed project areas was calculated at 0.9 acres, although it is probable that some of this area may be a product of misalignment of aerial imagery and project components.

3.3.5 Oregon white oak woodland (*Quercus garryana*) Woodland Alliance

The Oregon white oak woodland alliance has a rank of S3 (vulnerable). This alliance was mapped within project and buffer areas surrounding proposed ponds 1, 2, and 3 (Appendix A; Figure 4.5) and near pond 4 (Appendix A; Figure 4.4). Two mapped occurrences of this alliance overlap proposed pond 4 by a total of 0.28 acres. This overlap with direct impact areas may result from aerial imagery misalignment with project components, and the applicant has stated that they do not intend to remove any oaks.

3.3.6 California bay forest (*Umbellularia californica*) Forest Alliance

The California bay forest alliance has a rank of S3 (vulnerable). This alliance was mapped within buffer areas along an ephemeral creek near ponds 6 and 7 and adjacent to Larabee Creek near the main cultivation area (Appendix A; Figures 4.3 and 4.6). The minimal overlap with proposed direct impact areas (0.005 acres) that was calculated, is within the range of potential error resulting from misalignment of aerial imagery with project components.

4. Summary

The purpose of this report was to identify special status plant species and sensitive communities within the PSB as proposed at the start of fieldwork in late 2018. The PSB was intended to guide field efforts and analysis. A considerable buffer area was included to allow some shifting, where feasible and within reason, of proposed activities to avoid at least some impacts to sensitive resources. Thus, the area estimates presented in this report likely overestimate potential impacts because some impacts can be easily avoided thorough very minor reconfiguration. For example, the applicant has agreed to relocate a shed to avoid impacts to an occurrence of Howell's montia and associated wetlands. CEQA review would be based on the most up to date available project description.

Buffer areas in particular should be evaluated carefully. Where sensitive resources occur downslope of project activities, measures may be required to avoid erosion, sedimentation, or water quality concerns and in most cases standard BMPs would suffice. Upslope of these same locations, project related impacts are much less likely to occur.

Four natural communities ranked by CDFW as "Sensitive" were identified within the PSB that have potential to be impacted (and are not likely products of imagery misalignment). As mentioned previously, the Douglas-fir – tan oak community is widespread within the region, and no old growth forest occurred within the PSB.

Much of northern California has not been classified to state mapping standards and the extent of the sensitive herbaceous communities that were identified within the PSB in the Northern California Coastal Range is not clear. Many grasslands and herbaceous stands in California are currently populated by a predominance of non-native species (CDFW 2019e), and declines in native perennial grass species such as California oatgrass and others have been well documented (Davy 1902, Bartolome 1986). However, the California oatgrass alliance was mapped fairly extensively on mid to upper slopes throughout the PSB.

Likewise the extent of the California goldfields - dwarf plantain - six weeks fescue flower fields, q-tips provisional association in the broader region outside of the PSB is unknown. The dense sedge marshes (*Carex densa*) provisional herbaceous alliance occurs entirely within mapped wetland locations. Potential impacts to these wetland areas are currently unknown.

The areas where potential direct impact areas associated with the 2018 project description includes 12 acres of a 3,200 acre property, or 3.75 percent of the property, although these impacts vary for each community type. If it is determined that mitigation is appropriate for loss of sensitive natural communities, a number of opportunities occur on the property. The applicant has indicated interest

in managing encroaching conifer forest through selective removal where appropriate, and this would result in restoration or enhancement of grassland and oak woodland communities. If any wetland impacts cannot be avoided, mitigation would be required under federal and state regulations and opportunities are present.

One special status species with a CRPR rank of 1 or 2 was identified within the PSB. As previously stated, the applicant has agreed to relocate a drying shed to avoid impacts to the larger occurrence of Howell's montia that is north of the jelly bean location where approximately 250 plants were observed. Less than 25 individuals of Howell's montia were identified at a second occurrence, on a dirt road south of ponds six and seven. Impacts to this species can be mitigated with seasonal road restrictions (avoiding driving until the plants have set seed) and by avoiding heavy rocking of the road.

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Appendix A – Figures

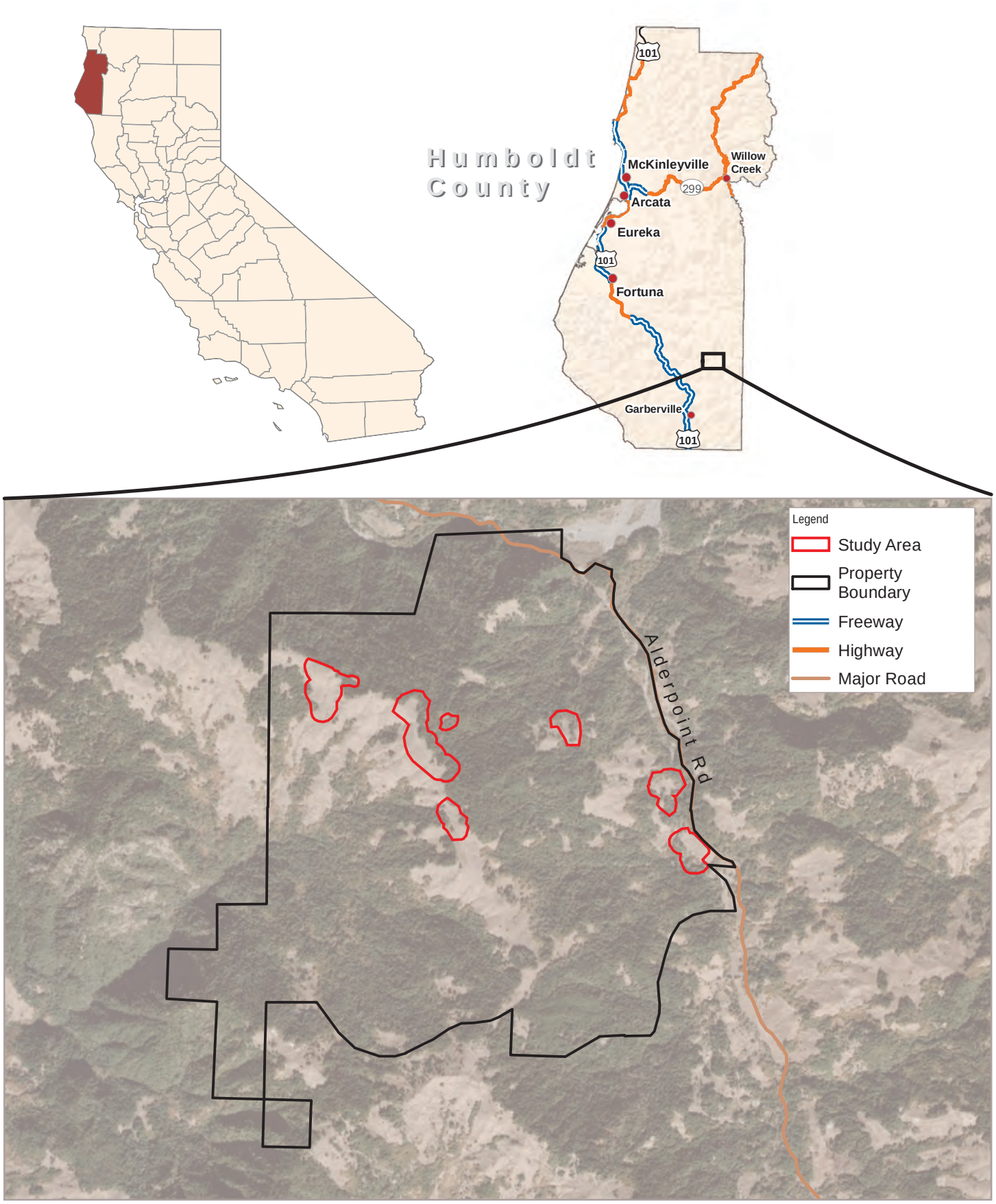
Figure 1: Regional and Location Map

Figure 2: Special Status Plant Survey Results

Figure 3: Vegetation Communities Overview

Figure 4: Vegetation Communities Mapbook

Figure 4: NRCS Soils Map



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Map Projection: Lambert Conformal Conic
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Hum Sun Farms
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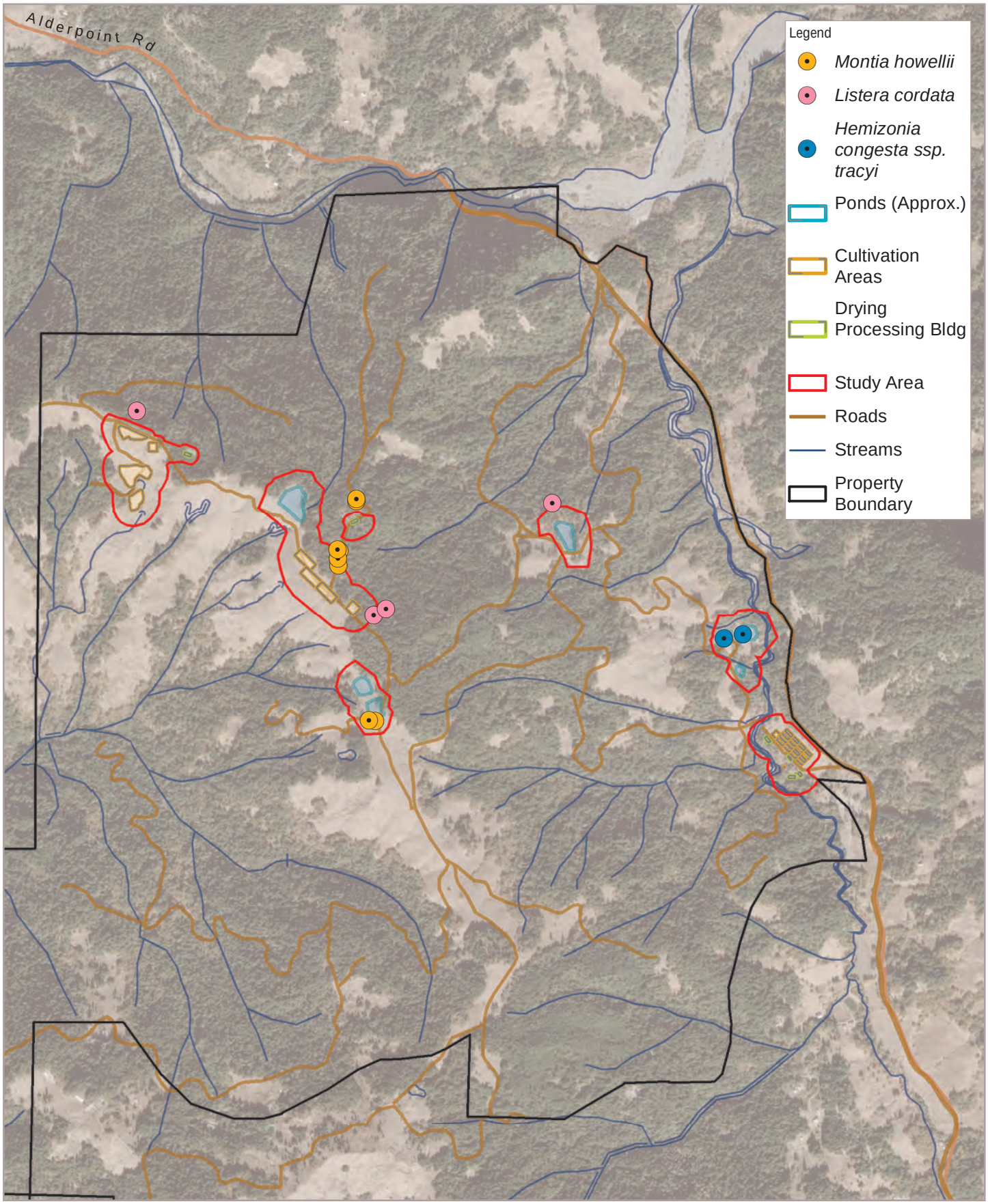
Project No. 11185843
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Date January 2020

Vicinity Map

FIGURE 1

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Data source: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Sources: Esri, USGS, NOAA. Created by: ashows



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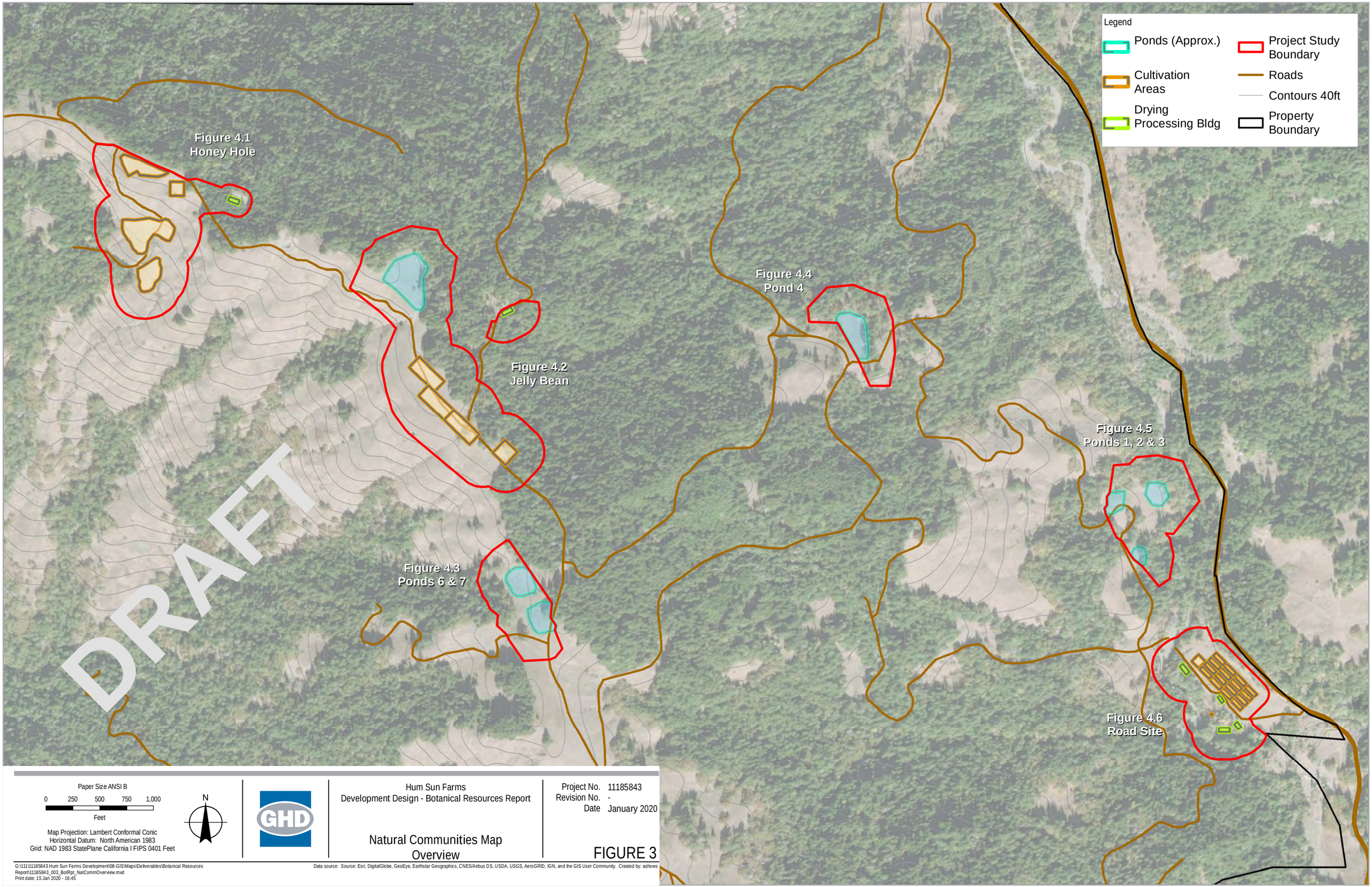
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Date January 2020

Special Status Plant Species

FIGURE 2

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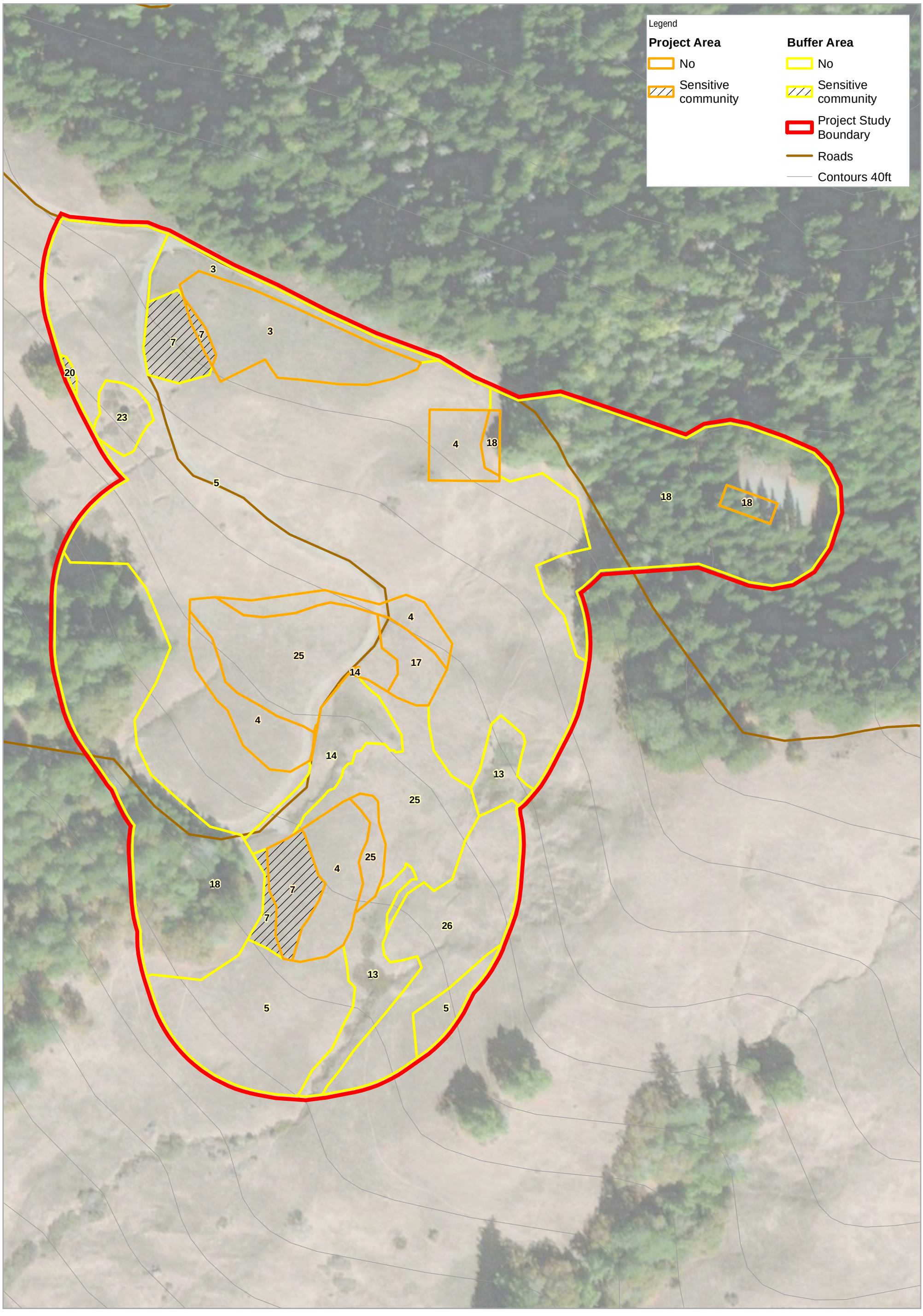
Natural Communities Map Overview

Project No. 11185843
Revision No. -
Date January 2020

FIGURE 3

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Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
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Natural Communities Map
Honey Hole

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Date January 2020

FIGURE 4.1

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Data source: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community. Created by: ashows

Legend

Project Area

- No
- Sensitive community

Buffer Area

- No
- Sensitive community
- Project Study Boundary
- Roads
- Contours 40ft

Paper Size ANSI B

0 40 80 120 160

Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

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Hum Sun Farms
Development Design - Botanical Resources Report

Natural Communities Map
Jelly Bean

Project No. 11185843
Revision No. -
Date January 2020

FIGURE 4.2

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Data source: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community. Created by: ashows

Legend

Project Area

- No
- Sensitive community
- Provisional sensitive community

Buffer Area

- No
- Undetermined
- Sensitive community
- Provisional sensitive community
- Project Study Boundary
- Roads
- Contours 40ft

Paper Size ANSI B

0 25 50 75 100

Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

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GHD

Hum Sun Farms
Development Design - Botanical Resources Report

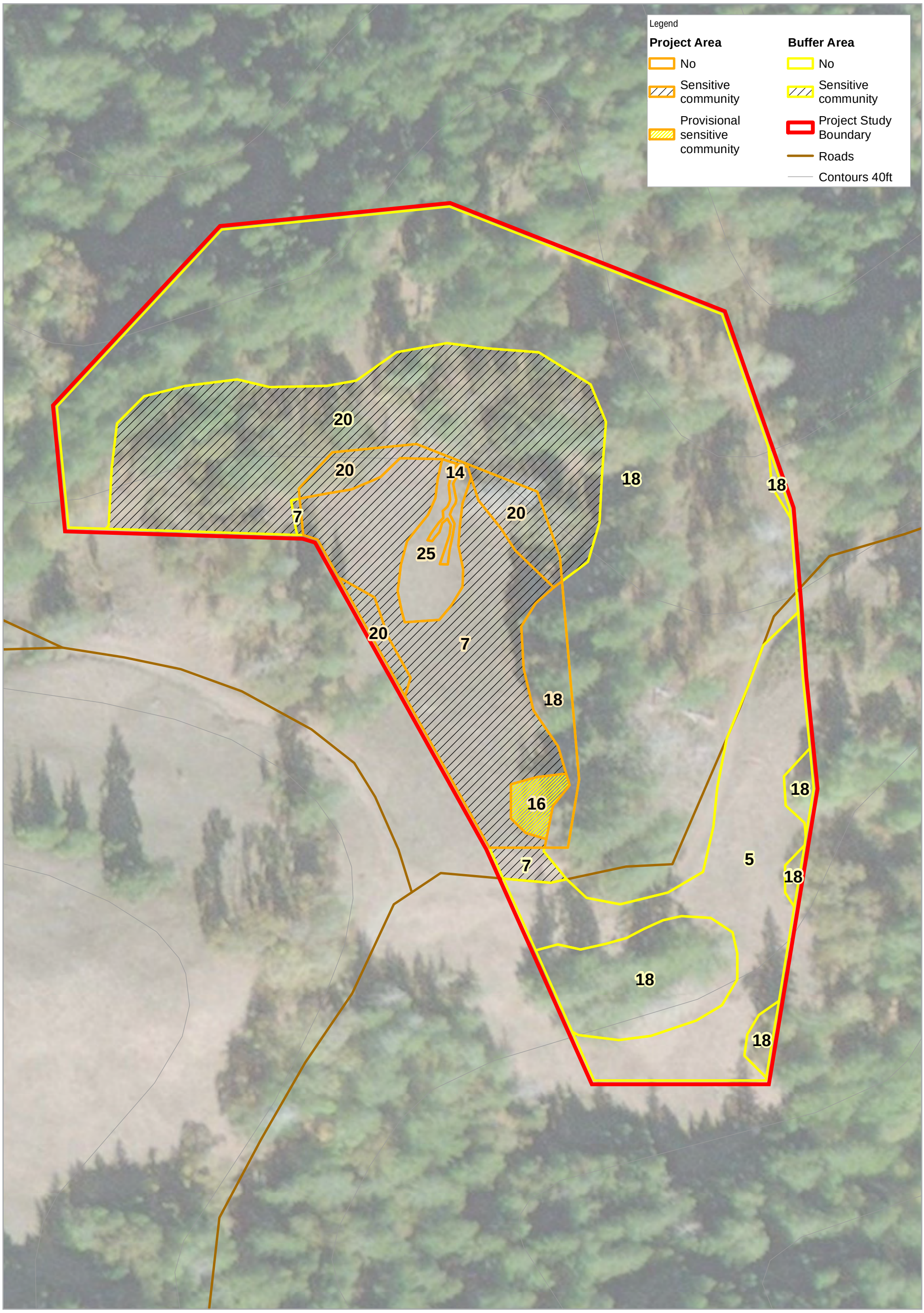
Natural Communities Map
Ponds 6 & 7

Project No. 11185843
Revision No. -
Date January 2020

FIGURE 4.3

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Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
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Hum Sun Farms
Development Design - Botanical Resources Report

Natural Communities Map
Pond 4

Project No. 11185843
Revision No. -
Date January 2020

FIGURE 4.4

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Legend

Project Area

- No
- Sensitive community
- Provisional sensitive community

Buffer Area

- No
- Sensitive community
- Provisional sensitive community

- Project Study Boundary
- Roads
- Contours 40ft

20 19 6 19 25 6 19 12 25 7 7 25 12 11 20 25 9 25 19 11 11 4 4 2 19 27 19 2 2 7 7 19 19

Paper Size ANSI B

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Feet

Map Projection: Lambert Conformal Conic
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Hum Sun Farms
Development Design - Botanical Resources Report

Natural Communities Map
Ponds 1, 2 & 3

Project No. 11185843
Revision No. -
Date January 2020

FIGURE 4.5

G:\111\11185843 Hum Sun Farms Development\08-GIS\Maps\Deliverables\Botanical Resources Report\11185843_004_BotRpt_NatCommMB.mxd
Print date: 15 Jan 2020 - 16:42

Data source: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community. Created by: ashows

Legend

Project Area

- No
- Undetermined
- Sensitive community
- Provisional sensitive community

Buffer Area

- No
- Undetermined
- Sensitive community
- Provisional sensitive community

- Project Study Boundary
- Roads
- Contours 40ft

Paper Size ANSI B

0 25 50 75 100

Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

N

GHD

Hum Sun Farms
Development Design - Botanical Resources Report

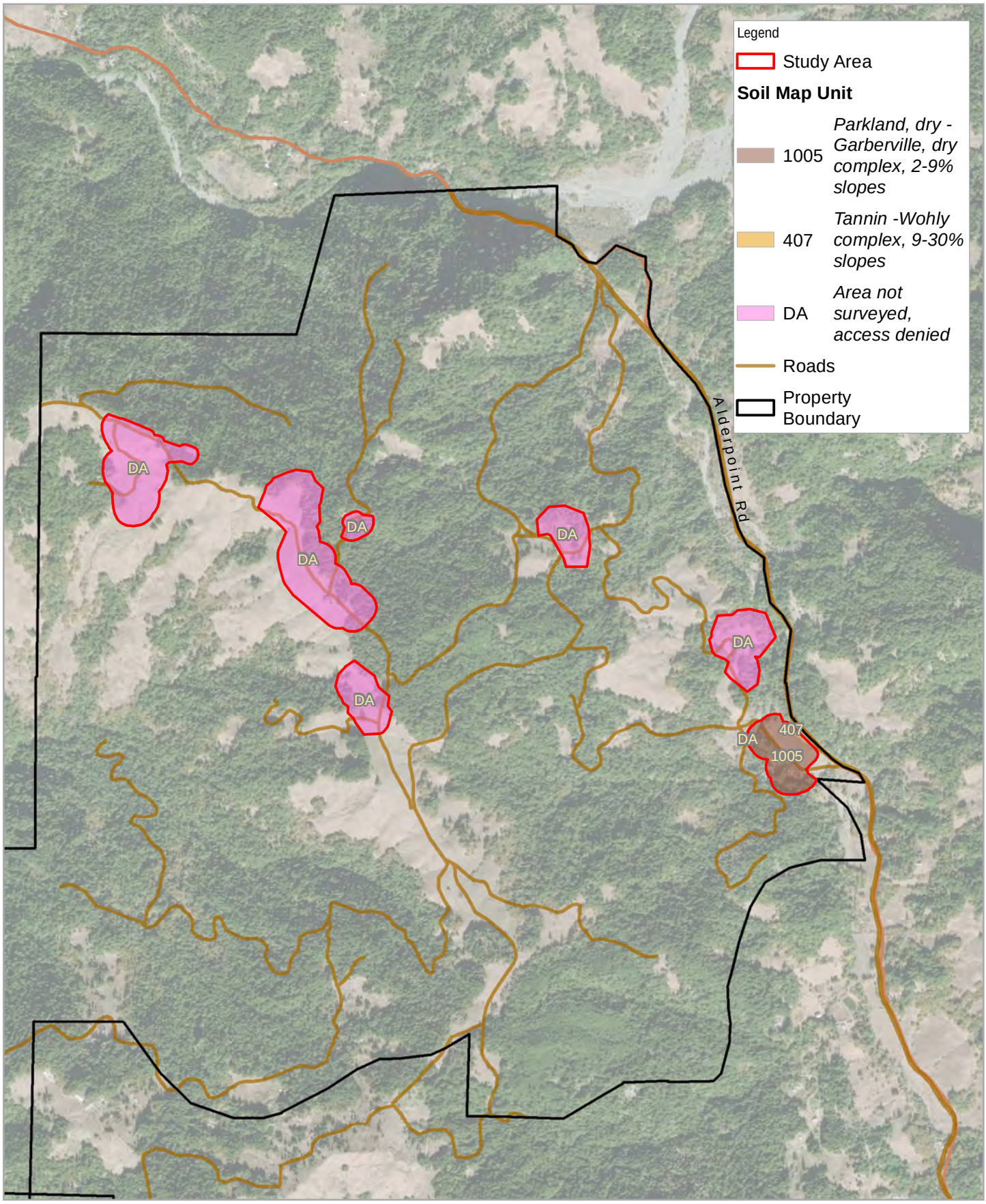
Natural Communities Map
Road Site

Project No. 11185843
Revision No. -
Date January 2020

FIGURE 4.6

G:\111\11185843 Hum Sun Farms Development\08-GIS\Maps\Deliverables\Botanical Resources Report\11185843_004_BotRpt_NatCommMB.mxd
Print date: 15 Jan 2020 - 16:42

Data source: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community. Created by: ashows



Paper Size ANSI A

0 500 1,000 1,500 2,000

Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

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GHD

Hum Sun Farms
Development Design - Botanical Resources Report

NRCS Soils

Project No. 11185843
Revision No. -
Date January 2020

FIGURE 5

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Print date: 15 Jan 2020 - 16:47

Data source: NRCS Soils 2016; Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community. Created by: ashows

Appendix B – Special Status Plant Species with Potential to Occur in the PSB

Table 1 Blocksburg 9-QUAD Database Search: USFWS IPaC, CDFW CNDDB, CNPS Rare Plant Database- 8/21/19											
SciName	**ComName**	**Fed List**	**Cal List**	**GRank**	**SRank**	**RPlantRank**	**OthrStatus**	**Habitats**	**GenHab**	**MicroHab**	**Potential to Occur***
Anisocarpus scabridus	scabrid alpine tarplant	None	None	G3	S3	1B.3	BLM_S-Sensitive | USFS_S-Sensitive	Upper montane coniferous forest	Upper montane coniferous forest.	Open stony ridges, metamorphic scree slopes of mountain peaks, and cliffs in or near red fir forest. 1550-2350 m.	**No Potential**. Upper montane coniferous forest is not present.
Arctostaphylos manzanita ssp. elegans	Konocti manzanita	None	None	G5T3	S3	1B.3		Chaparral | Cismontane woodland | Lower montane coniferous forest	Chaparral, cismontane woodland, lower montane coniferous forest.	Volcanic soils. 225-1830 m.	**Low Potential.** Cismontane woodland and lower montane coniferous forest is present. Volcanic soils are not present.
Astragalus agnicidus	Humboldt County milk-vetch	None	Endangered	G2	S2	1B.1	BLM_S-Sensitive | SB_BerrySB-Berry Seed Bank | SB_RSABG-Rancho Santa Ana Botanic Garden	Broadleaved upland forest | North coast coniferous forest	Broadleafed upland forest, north coast coniferous forest.	Disturbed openings in partially timbered forest lands; also along ridgelines; south aspects. 115-670 m.	**High Potential.** Disturbed openings in broadleaved upland and Douglas-fir dominanted lower montane coniferous forest are present.
Carex praticola	northern meadow sedge	None	None	G5	S2	2B.2		Meadow & seep | Wetland	Meadows and seeps.	Moist to wet meadows. 15-3200 m.	**High Potential.** Meadows and seeps present with native sedge species.

Table 1 Blocksburg 9-QUAD Database Search: USFWS IPaC, CDFW CNDDB, CNPS Rare Plant Database- 8/21/19											
SciName	**ComName**	**Fed List**	**Cal List**	**GRank**	**SRank**	**RPlantRank**	**OthrStatus**	**Habitats**	**GenHab**	**MicroHab**	**Potential to Occur***
Epilobium oreganum	Oregon fireweed	None	None	G2	S2	1B.2		Bogs and fens, Lower montane coniferous forest, Meadows and seeps, Upper montane coniferous forest		Mesic. 500-2240 m.	**Moderate Potential.** Lower montane coniferous forest is present. Meadows and seeps are present.
Erigeron maniopotamicus	Mad River fleabane daisy	None	None	G2?	S2?	1B.2	USFS_S-Sensitive	Lower montane coniferous forest | Meadow & seep	Meadows and seeps (open and dry), lower montane coniferous forest.	Open slopes, disturbed areas (road cuts); tan-colored, rocky soils. 1280-1505 m.	**No Potential**. Project elevation is too low for this species.
Erythronium oregonum	giant fawn lily	None	None	G4G5	S2	2B.2		Cismontane woodland | Meadow & seep | Ultramafic	Cismontane woodland, meadows and seeps.	Openings. Sometimes on serpentine; rocky sites. 300-1435 m.	**Moderate Potential.** Lower montane coniferous forset and oak woodlands are present. Openings, meadows, and seeps are present.
Erythronium revolutum	coast fawn lily	None	None	G4G5	S3	2B.2		Bog & fen | Broadleaved upland forest | North coast coniferous forest | Wetland	Bogs and fens, broadleafed upland forest, north coast coniferous forest.	Mesic sites; streambanks. 60-1405 m.	**High Potential.** Mesic streambanks and meadows in broadleaevd upland forest are present.
Gilia capitata ssp. pacifica	Pacific gilia	None	None	G5T3	S2	1B.2		Chaparral | Coastal bluff scrub | Coastal prairie | Valley & foothill grassland	Coastal bluff scrub, chaparral, coastal prairie, valley and foothill grassland.	5-1345 m.	**High Potential.** Opening and meadows near Douglas-fir forest are present.

Table 1 Blocksburg 9-QUAD Database Search: USFWS IPaC, CDFW CNDDB, CNPS Rare Plant Database- 8/21/19											
SciName	**ComName**	**Fed List**	**Cal List**	**GRank**	**SRank**	**RPlantRank**	**OthrStatus**	**Habitats**	**GenHab**	**MicroHab**	**Potential to Occur***
Hosackia yollabolliensis	Yolla Bolly Mtns. bird's-foot trefoil	None	None	G2	S2	1B.2		Meadow & seep | Upper montane coniferous forest	Upper montane coniferous forest, meadows and seeps.	1580-2135 m.	**No Potential.** Project elevation is too low for this species.
Howellia aquatilis	water howellia	Threatened	None	G3	S2	2B.2		Aquatic | Freshwater marsh | Marsh & swamp | Wetland	Freshwater marshes and swamps.	In clear ponds with other aquatics and surrounded by ponderosa pine forest and sometimes riparian associates. 1080-1375 m.	**No Potential.** Project elevation is too low for this species. Ponderosa pine forest is not present.
Kopsiopsis hookeri	small groundcone	None	None	G4?	S1S2	2B.3		North coast coniferous forest	North coast coniferous forest.	Open woods, shrubby places, generally on Gaultheria shallon. 120-1435 m.	**High Potential.** Open woods, shrubby places, and forest containing Gaultheria shallon is present.
Lathyrus biflorus	two-flowered pea	None	None	G1	S1	1B.1	USFS_S-Sensitive	Lower montane coniferous forest | Ultramafic	Lower montane coniferous forest.	Endemic to serpentine. 1370-1385 m.	**No Potential.** Project elevation is too low for this species. Serpentine is not present.
Lupinus constancei	The Lassics lupine	None	Endangered	G1	S1	1B.1	SB_BerrySB-Berry Seed Bank | USFS_S-Sensitive	Lower montane coniferous forest | Ultramafic	Lower montane coniferous forest.	Serpentine barrens. 1685-1740 m.	**No Potential.** Project elevation is too low for this species. Serpentine is not present.

Table 1 Blocksburg 9-QUAD Database Search: USFWS IPaC, CDFW CNDDB, CNPS Rare Plant Database- 8/21/19											
SciName	**ComName**	**Fed List**	**Cal List**	**GRank**	**SRank**	**RPlantRank**	**OthrStatus**	**Habitats**	**GenHab**	**MicroHab**	**Potential to Occur***
Montia howellii	Howell's montia	None	None	G3G4	S2	2B.2		Meadow & seep | North coast coniferous forest | Vernal pool | Wetland	Meadows and seeps, north coast coniferous forest, vernal pools.	Vernally wet sites; often on compacted soil. 10-1215 m.	**Present.** This species is present within the project area.
Packera bolanderi var. bolanderi	seacoast ragwort	None	None	G4T4	S2S3	2B.2		Coastal scrub | North coast coniferous forest	Coastal scrub, north coast coniferous forest.	Sometimes along roadsides. 30-915 m.	**Low Potential.** Douglas-fir forest is present with roadsides. Project area is slightly inland from known range of species.
Piperia candida	white-flowered rein orchid	None	None	G3	S3	1B.2	BLM_S-Sensitive	Broadleaved upland forest | Lower montane coniferous forest | North coast coniferous forest | Ultramafic	North Coast coniferous forest, lower montane coniferous forest, broadleafed upland forest.	Sometimes on serpentine. Forest duff, mossy banks, rock outcrops, and muskeg. 20-1615 m.	**High Potential.** Broadleaved upland and lower montane confierous forest is present.
Sabulina decumbens	The Lassics sandwort	None	None	G1	S1	1B.2	USFS_S-Sensitive	Lower montane coniferous forest | Ultramafic | Upper montane coniferous forest	Lower montane coniferous forest, upper montane coniferous forest.	Endemic to serpentine. Only known from upper, north-facing slopes under Jeffrey pines. 1580-1680 m.	**No Potential.** Project elevation is too low for this species. Serpentine is not present.

Table 1 Blocksburg 9-QUAD Database Search: USFWS IPaC, CDFW CNDDB, CNPS Rare Plant Database- 8/21/19											
SciName	**ComName**	**Fed List**	**Cal List**	**GRank**	**SRank**	**RPlantRank**	**OthrStatus**	**Habitats**	**GenHab**	**MicroHab**	**Potential to Occur***
Sidalcea malviflora ssp. patula	Siskiyou checkerbloom	None	None	G5T2	S2	1B.2	BLM_S-Sensitive	Coastal bluff scrub | Coastal prairie | North coast coniferous forest	Coastal bluff scrub, coastal prairie, north coast coniferous forest.	Open coastal forest; roadcuts. 5-1255 m.	**Moderate Potential.** Lower montane coniferous forest is present. Project area is inland from known range for this species. Roadcuts are present.
Tracyina rostrata	beaked tracyina	None	None	G2	S2	1B.2	USFS_S-Sensitive	Chaparral | Cismontane woodland | Valley & foothill grassland	Cismontane woodland, valley and foothill grassland, chaparral.	Open grassy meadows usually within oak woodland and grassland habitats. 150-795 m.	**High Potential.** Cismontane woodland is present. Open grassey meadows within and near oak woodlands are present. This species has been found within approximately five miles of the site to the south.
Habitats											
Upland Douglas-fir Forest	Upland Douglas-fir Forest	None	None	G4	S3.1			North coast coniferous forest			**Present.** This community is present within the project area.

***Potential to Occur:**

No Potential: Habitat on and adjacent to the site is clearly unsuitable for the species requirements (cover, substrate, elevation, hydrology, plant community, site history, disturbance regime).

Low Potential: Few of the habitat components meeting the species requirements are present, and/or the majority of habitat on and adjacent to the site is unsuitable or of very poor quality. The species is not likely to be found on the site.

Table 1 Blocksburg 9-QUAD Database Search: USFWS IPaC, CDFW CNDDB, CNPS Rare Plant Database- 8/21/19											
SciName	ComName	Fed List	Cal List	GRank	SRank	RPlantRank	OthrStatus	Habitats	GenHab	MicroHab	Potential to Occur*

Moderate Potential: Some of the habitat components meeting the species requirements are present, and/or only some of the habitat on or adjacent to the site is unsuitable. The species has a moderate probability of being found on the site.

High Potential: All of the habitat components meeting the species requirements are present and/or most of the habitat on or adjacent to the site is highly suitable. The species has a high probability of being found on the site.

Key:

FE = Federal Endangered

FT = Federal Threatened

FC = Federal Candidate

FD = Federal Delisted

BCC = USFWS Birds of Conservation Concern

SE = State Endangered

SD = State Delisted

ST = State Threatened

SR = State Rare

SSC = CDFG Species of Special Concern

CFP = CDFG Fully Protected Animal

1A = CRPR List 1A: Plants presumed extinct in California

1B = CRPR List 1B: Plants rare, threatened or endangered in California and elsewhere

2 = CRPR List 2: Plants rare, threatened, or endangered in California, but more common elsewhere

3 = CRPR List 3: Plants about which more information is needed (a review list)

4 = CRPR List 4: Plants of limited distribution (a watch list)

**Microhabitat details from CNDDB 2019

Appendix C – Plants Observed within the Study Area

Plants Observed within the Study Area

Scientific Name	Common Name	Family
Abies grandis	grand fir	Pinaceae
Acer macrophyllum	big-leaf maple	Sapindaceae
Achyrachaena mollis	blow wives	Asteraceae
Acmispon parviflorus		Fabaceae
Acmispon sp.	deervetch, deerweed	Fabaceae
Adenocaulon bicolor	trail plant	Asteraceae
Aesculus californica	California buckeye	Sapindaceae
Agrostis stolonifera	creeping bent	Poaceae
Aira caryophyllea	silver hair grass	Poaceae
Allium sp.		Liliaceae
Alnus rhombifolia	white alder	Betulaceae
Alopecurus geniculatus	water foxtail	Poaceae
Amsinckia sp.		Boraginaceae
Anthoxanthum odoratum	sweet vernal grass	Poaceae
Arabis sp.		Brassicaceae
Arbutus menziesii	pacific madrone	Ericaceae
Artemisia douglasiana	mugwort	Asteraceae
Athyrium filix-femina		Dryopteridaceae
Avena barbata		Poaceae
Azolla filiculoides		Azollaceae
Baccharis pilularis	coyote brush	Asteraceae
Bellis perennis	English daisy	Asteraceae
Berberis nervosa		Berberidaceae
Briza maxima	rattlesnake grass, large quaking grass	Poaceae
Briza minor	annual quaking grass, small quaking grass	Poaceae
Brodiaea elegans	harvest brodiaea	Themidaceae
Bromus carinatus	California brome	Poaceae
Bromus diandrus	ripgut grass	Poaceae
Bromus hordeaceus	soft chess	Poaceae
Bromus tectorum	cheat grass	Poaceae
Bromus sp.		Poaceae
Calandrinia menziesii	red maids	Montiaceae
Callitriche sp.	water-starwort	Plantaginaceae
Calochortus sp.	pussy ears	Liliaceae
Calypso bulbosa var. occidentalis		Orchidaceae
Calystegia sp.	morning glory	Convolvulaceae
Cardamine californica	milk maids, tooth wort	Brassicaceae
Cardamine oligosperma		Brassicaceae

Scientific Name	Common Name	Family
Carduus pycnocephalus var. pycnocephalus	Italian thistle	Asteraceae
Carex densa	dense sedge (group 9)	Cyperaceae
Carex tumulicola	split awn sedge	Cyperaceae
Carex praegracilis	black creeper or freeway sedge (group 7)	Cyperaceae
Carex sp.		Cyperaceae
Ceanothus integerrimus var. macrothyrsus	deerbrush	Rhamnaceae
Ceanothus sp.		Rhamnaceae
Cerastium glomeratum	sticky mouse-ear chickweed	Caryophyllaceae
Chlorogalum pomeridianum	soap plant	Agavaceae
Cirsium sp.	thistle	Asteraceae
Clarkia sp.		Onagraceae
Claytonia perfoliata		Montiaceae
Claytonia sibirica	candy flower	Montiaceae
Claytonia sp.		Montiaceae
Clinopodium douglasii	yerba buena	Lamiaceae
Clintonia sp.		Liliaceae
Collomia heterophylla		Polemoniaceae
Corylus cornuta ssp. californica	California hazelnut	Betulaceae
Cynoglossum grande	hounds tounge	Boraginaceae
Cynosurus echinatus	bristly dogtail grass	Poaceae
Cyperus eragrostis	tall cyperus	Cyperaceae
Danthonia californica	California oat grass	Poaceae
Dichelostemma capitatum	bluedicks	Themidaceae
Dodecatheon hendersonii	shooting stars	Primulaceae
Draba verna	spring draba	Brassicaceae
Duchesnea indica	mock strawberry	Rosaceae
Eleocharis sp.		Cyperaceae
Elymus caput-medusae	medusa head	Poaceae
Elymus glaucus	blue or western wild-rye	Poaceae
Epilobium sp.		Onagraceae
Equisetum arvense	common horsetail	Equisetaceae
Equisetum sp.		Equisetaceae
Erodium botrys	big heron bill	Geraniaceae
Erodium brachycarpum	shortfruit storksbill	Geraniaceae
Erodium cicutarium	coastal heron's bill	Geraniaceae
Erodium moschatum	whitestem filaree	Geraniaceae
Festuca bromoides	brome fescue	Poaceae
Festuca myuros	rattail sixweeks grass	Poaceae

Scientific Name	Common Name	Family
Festuca perennis	meadow fescue	Poaceae
Fragaria vesca	wood strawberry	Rosaceae
Fraxinus latifolia	Oregon ash	Oleaceae
Galium aparine	goose grass	Rubiaceae
Galium californicum	California bedstraw	Rubiaceae
Galium sp.		Rubiaceae
Gaultheria shallon	salal	Ericaceae
Geranium dissectum	wild geranium	Geraniaceae
Geranium molle	cranesbill	Geraniaceae
Glyceria sp.	western manna grass	Poaceae
Hemizonella minima	opposite leaved tarweed	Asteraceae
Hemizonia congesta ssp. tracyi	**Tracy's tarplant**	**Asteraceae**
Hieracium albiflorum	white hawkweed	Asteraceae
Hierochloe sp.		Poaceae
Holcus lanatus	common velvet grass	Poaceae
Holodiscus discolor	oceanspray	Rosaceae
Hordeum marinum subsp. *gussoneanum*	Mediterranean barley	Poaceae
Hypericum perforatum	Klamath-weed	Hypericaceae
Hypochaeris glabra	smooth cat's-ear	Asteraceae
Hypochaeris radicata	rough cat's-ear	Asteraceae
Iris sp.	iris	Iridaceae
Juncus bolanderi	Bolander's rush	Juncaceae
Juncus bufonius	toad rush (group 1)	Juncaceae
Juncus effusus	soft or lamp rush (group 2)	Juncaceae
Juncus patens	spreading rush (group 2)	Juncaceae
Juncus sp.		Juncaceae
Lathyrus sp.		Fabaceae
Lasthenia gracilis	needle goldfields	Asteraceae
Lemna minor		Araceae
Leontodon saxatilis	hairy hawkbit	Asteraceae
Leptosiphon acicularis	**bristly leptosiphon**	**Polemoniaceae**
Leptosiphon bicolor	true babystars	Polemoniaceae
Leucanthemum vulgare	ox-eye daisy	Asteraceae
Lilium sp.		Liliaceae
Linum bienne	flax	Linaceae
Listera cordata	**heart-leaved twayblade**	**Orchidaceae**
Logfia gallica	daggerleaf cottonrose	Asteraceae
Lomatium sp.		Apiaceae

Scientific Name	Common Name	Family
Lonicera hispidula		Caprifoliaceae
Lupinus bicolor	miniature lupine	Fabaceae
Lupinus nanus		Fabaceae
Lupinus sp.	lupine	Fabaceae
Luzula comosa	hairy wood rush	Juncaceae
Luzula sp.		Juncaceae
Lysimachia arvensis		Juncaceae
Lysimachia latifolia (Trientalis latifolia)		Myrsinaceae
Lythrum hyssopifolia		Lythraceae
Madia sp.		Asteraceae
Maianthemum stellatum		Ruscaceae
Matricaria discoidea	pineapple weed	Asteraceae
Medicago polymorpha	California burclover	Fabaceae
Melica sp.	oniongrass	Poaceae
Melissa officinalis	lemon balm	Lamiaceae
Mentha pulegium	pennyroyal	Lamiaceae
Mentha sp.		Lamiaceae
Micranthes fragosa	saxifrage	Saxifragaceae
Micropus californicus	q-tips	Asteraceae
Mimulus guttatus		Phrymaceae
Minuartia sp.		Caryophyllaceae
Montia fontana	water chickweed	Montiaceae
Montia howellii	**Howell's montia**	**Montiaceae**
Myosotis discolor	changing forget-me-not	Boraginaceae
Nasturtium officinale	water cress	Brassicaceae
Navarretia intertexta		Polemoniaceae
Navarretia sp.		Polemoniaceae
Nemophila sp.		Hydrophyllaceae
Notholithocarpus densiflorus var. densiflorus	tanoak	Fagaceae
Oenanthe pimpinelloides		Apiaceae
Osmorhiza berteroi	sweet cicely	Apiaceae
Oxalis oregana	redwood sorrel	Oxalidaceae
Parentucellia viscosa	yellow parentucellia	Orobanchaceae
Pedicularis densiflora	warrior's plume	Orobanchaceae
Pentagramma triangularis	gold back fern	Pteridaceae
Plagiobothrys nothofulvus	rusty popcornflower, foothill snowdrops	Boraginaceae
Plantago lanceolata	English plantain	Plantaginaceae
Plantago major	common plantain	Plantaginaceae
Platystemon californicus	cream cups	Papaveraceae
Poa annua	annual blue grass	Poaceae
Poa pratensis ssp. pratensis	Kentucky blue grass	Poaceae
Polygonum (arviculare)	Prostrate knotweed	Polygonaceae

Scientific Name	Common Name	Family
Polypodium sp.		Polypodiaceae
Polystichum munitum	western sword fern	Dryopteridaceae
Potamogeton sp.	pondweed	Potamogetonaceae
Prosartes sp.		Liliaceae
Prunella vulgaris	selfheal	Lamiaceae
Pseudotsuga menziesii var. menziesii	Douglas-fir	Pinaceae
Pteridium aquilinum var. pubescens	Western bracken fern	Dennstaedtiaceae
Quercus garryana var. garryana	Oregon oak	Fagaceae
Quercus kelloggii	California black oak	Fagaceae
Ranunculus aquatilis	whitewater crowfoot	Ranunculaceae
Ranunculus californicus	common buttercup	Ranunculaceae
Ranunculus muricatus	buttercup	Ranunculaceae
Ribes roezlii	sierran gooseberry	Grossulariaceae
Ribes sp.	gooseberry	Grossulariaceae
Romulea rosea var. australis		Iridaceae
Rosa canina	dog rose	Rosaceae
Rosa gymnocarpa var. gymnocarpa	wood rose	Rosaceae
Rosa rubiginosa	sweet-brier	Rosaceae
Rosa sp.		Rosaceae
Rubus armeniacus	Himalayan blackberry	Rosaceae
Rubus laciniatus	cut leaf blackberry	Rosaceae
Rubus leucodermis	white bark raspberry	Rosaceae
Rubus parviflorus	thimbleberry	Rosaceae
Rubus ursinus	California blackberry	Rosaceae
Rumex acetosella	sheep sorrel	Polygonaceae
Rumex crispus	curly dock	Polygonaceae
Rumex pulcher	fiddle dock	Polygonaceae
Salix lasiandra	Pacific willow	Salicaceae
Salix lasiolepis	arroyo willow	Salicaceae
Salix sp.	willow	Salicaceae
Sanicula bipinnatifida	purple sanilce	Apiaceae
Sanicula crassicaulis	Pacific sanicle	Apiaceae
Scoliopus bigelovii	Slink pod	Liliaceae
Sherardia arvensis	field madder	Rubiaceae
Sidalcea diploscypha	fringed checkerbloom	Malvaceae
Silene laciniata	Cardinal catchfly	Caryophyllaceae
Sisyrinchium bellum	western blue-eyed-grass	Iridaceae
Sonchus asper	Spiny sowthistle	Asteraceae
Spergularia rubra	red sand-spurry	Caryophyllaceae

Scientific Name	Common Name	Family
Stachys sp.		Lamiaceae
Stellaria nitens	shining chickweed	Caryophyllaceae
Symphoricarpos albus var. laevigatus	snowberry	Caprifoliaceae
Symphoricarpos mollis	creeping snowberry, trip vine	Caprifoliaceae
Synthyris reniformis	snow queen	Plantaginaceae
Taraxacum officinale	common dandelion	Asteraceae
Tellima grandiflora	fringe cups	Saxifragaceae
Tolmiea menziesii	pig a back plant	Saxifragaceae
Tonella tenella	smallflowered tenella	Plantaginaceae
Torilis arvensis	hedgeparsley	Apiaceae
Toxicodendron diversilobum	western poison oak	Anacardiaceae
Trifolium dubium	little hop clover	Fabaceae
Trifolium hirtum	rose clover	Fabaceae
Trifolium repens var. atropurpureum	white clover	Fabaceae
Trifolium striatum	knotted clover	Fabaceae
Trifolium subterraneum	subterranean clover	Fabaceae
Trifolium willdenovii	tomcat clover	Fabaceae
Trillium ovatum	white or western trillium	Melanthiaceae
Triphysaria pusilla	little owl's clover	Orobanchaceae
Triteleia hyacinthina	white brodiaea	Themidaceae
Triteleia laxa	common triteleia	Themidaceae
Typha sp.	cattail	Typhaceae
Umbellularia californica	California bay	Lauraceae
Vaccinium ovatum	California huckleberry	Ericaceae
Vaccinium parvifolium	red huckleberry	Ericaceae
Vancouveria hexandra	northern vancouveria	Berberidaceae
Verbascum sp.	mullein	Plantaginaceae
Veronica americana	American brooklime	Plantaginaceae
Vicia sativa	spring vetch	Fabaceae
Vicia sp.	vetch	Fabaceae
Viola glabella	stream violet	Violaceae
Viola ocellata	western heart's ease	Violaceae
Viola sempervirens	evergreen violet, redwood violet	Violaceae
Whipplea modesta	modesty	Hydrangeaceae

Appendix D – CNDDB Forms

Mail to:
California Natural Diversity Database
California Dept. of Fish & Wildlife
P.O. Box 944209
Sacramento, CA 94244-2090
CNDDB@wildlife.ca.gov

For Office Use Only
Source Code: _____ Quad Code: _____
Elm Code: _____ Occ No.: _____
EO Index: _____ Map Index: _____

Date of Field Work (mm/dd/yyyy): 03/29/2019

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: *Montia howellii*

Common Name: Howel's montia

Species Found? (●) Yes ( ) No _____ If not found, why?

Total No. Individuals: ~250 Subsequent Visit? ( ) Yes (●) No

Is this an existing NDDB occurrence? _____ Yes, Occ. # [X] No [ ] Unk.

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: GHD

Address: 718 3rd St , Eureka, CA 95501

E-mail Address: Amy.Livingston@ghd.com

Phone: 707-443-8326

Plant Information

Phenology:

100 % vegetative _____ % flowering _____ % fruiting

Animal Information

_____ # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown

[ ] wintering [ ] breeding [ ] nesting [ ] rookery [ ] burrow site [ ] lek [ ] other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

County: Humboldt Landowner / Mgr: Private

Quad Name: Blocksburg Elevation: _____

T___ R___ Sec___, ___¼ of ___¼, Meridian: H( ) M( ) S( ) Source of Coordinates (GPS, topo. map & type): _____

T___ R___ Sec___, ___¼ of ___¼, Meridian: H( ) M( ) S( ) GPS Make & Model: ipad

DATUM: NAD27 ( ) NAD83 ( ) WGS84 (●) Horizontal Accuracy: _____ meters/feet

Coordinate System: UTM Zone 10 ( ) UTM Zone 11 ( ) ***OR*** Geographic (Latitude & Longitude) (●)

Coordinates: Six pts collected on road: South end: 40.318353; -123.683957,40.317773, -123.684024, 40.31804; -123.684038, 40.318419; -123.684084 North end: 40.320456; -123.683109, 40.32054; -123.68311

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Plants growing on an old rocked road within a mixed Douglas-fir/hardwood forest. Plants are abundant in a drainage ditch along the road margin primarily on the west side of the road growing in ponded water. Plants are growing in fine sediment with water-starwort, pennyroyal, English daisy, and immature grass. In other locations along the roads plants grow in ponded water on both roadsides and a few plants are within the road.

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ( ) Excellent (●) Good ( ) Fair ( ) Poor

Immediate AND surrounding land use: Immediate land use is agriculture.

Visible disturbances: _____

Threats: _____

Comments: No roadwork is currently planned for this road.

Determination: *(check one or more, and fill in blanks)*

- [ ] Keyed (cite reference): _____
- [ ] Compared with specimen housed at: _____
- [ ] Compared with photo / drawing in: _____
- [ ] By another person (name): _____
- [ ] Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	[ ]	[ ]	[ ]
Habitat	[ ]	[ ]	[ ]
Diagnostic feature	[ ]	[ ]	[ ]

May we obtain duplicates at our expense? ( ) yes ( ) no

Mail to:
California Natural Diversity Database
California Dept. of Fish & Wildlife
P.O. Box 944209
Sacramento, CA 94244-2090
CNDDB@wildlife.ca.gov

For Office Use Only
Source Code: _____ Quad Code: _____
Elm Code: _____ Occ No.: _____
EO Index: _____ Map Index: _____

Date of Field Work (mm/dd/yyyy): 04/10/2019

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: *Montia howellii*

Common Name: Howell's montia

Species Found? (●) Yes ( ) No _____ If not found, why?

Total No. Individuals: <25 Subsequent Visit? ( ) Yes (●) No

Is this an existing NDDB occurrence? _____ Yes, Occ. # ☒ No ☐ Unk.

Collection? If yes: _____ Number _____ Museum / Herbarium

Reporter: GHD
Address: 718 3rd St., Eureka, CA 95501
E-mail Address: Amy.Livingston@ghd.com
Phone: 707-443-8326

Plant Information
Phenology:
100 % vegetative _____ % flowering _____ % fruiting

Animal Information
_____ # adults _____ # juveniles _____ # larvae _____ # egg masses _____ # unknown
☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description ***(please attach map AND/OR fill out your choice of coordinates, below)***

County: _____ Landowner / Mgr: _____
Quad Name: _____ Elevation: _____
T___ R___ Sec___, ___¼ of ___¼, Meridian: H( ) M( ) S( ) Source of Coordinates (GPS, topo. map & type): _____
T___ R___ Sec___, ___¼ of ___¼, Meridian: H( ) M( ) S( ) GPS Make & Model: _____
DATUM: NAD27 ( ) NAD83 ( ) WGS84 (●) Horizontal Accuracy: _____ meters/feet
Coordinate System: UTM Zone 10 ( ) UTM Zone 11 ( ) ***OR*** Geographic (Latitude & Longitude) (●)
Coordinates: 40.311262; -123.681857
40.311301; -123.682171

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Plants are growing on an old dirt road located on a grassy hillside actively grazed by cattle.

Please fill out separate form for other rare taxa seen at this site.

Site Information Overall site/occurrence quality/viability (site + population): ( ) Excellent ( ) Good (●) Fair ( ) Poor
Immediate AND surrounding land use: _____
Visible disturbances: _____
Threats: _____
Comments:

Determination: *(check one or more, and fill in blanks)*
☐ Keyed (cite reference): _____
☐ Compared with specimen housed at: _____
☐ Compared with photo / drawing in: _____
☐ By another person (name): _____
☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☐
Habitat	☐	☐	☐
Diagnostic feature	☐	☐	☐

May we obtain duplicates at our expense? ( ) yes ( ) no

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California Dept. of Fish & Wildlife
P.O. Box 944209
Sacramento, CA 94244-2090
CNDDB@wildlife.ca.gov

For Office Use Only
Source Code: _____ Quad Code: _____
Elm Code: _____ Occ No.: _____
EO Index: _____ Map Index: _____

Date of Field Work (mm/dd/yyyy): 06/13/2019

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: *Hemizonia congesta ssp. tracyi*

Common Name: Tracy's tarplant

Species Found? (●) Yes ( ) No _____ If not found, why?

Total No. Individuals: >1,000 Subsequent Visit? (●) Yes ( ) No

Is this an existing NDDB occurrence? _____ Yes, Occ. # [X] No [ ] Unk.

Collection? If yes: 1 Number; UC Davis Herbarium Museum / Herbarium

Reporter: Joslyn Curtis and Amy Livingston
Address: 718 3rd St, Eureka, CA 95501
E-mail Address: joslyn.curtis@ghd.com
Phone: 704-473-9733

Plant Information

Phenology:
1 % vegetative; 90 % flowering; 9 % fruiting

Animal Information

_____ # adults; _____ # juveniles; _____ # larvae; _____ # egg masses; _____ # unknown
[ ] wintering [ ] breeding [ ] nesting [ ] rookery [ ] burrow site [ ] lek [ ] other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

Side of hill/knoll above Larabee Creek to the west.

County: Humboldt Landowner / Mgr: Hum Sun Farms
Quad Name: Blocksburg Elevation: 1349 ft.
T 02S R 05E Sec 6 , SE 1/4 of SW 1/4, Meridian: H(●) M( ) S( )
T___ R___ Sec___ , ___ 1/4 of ___ 1/4, Meridian: H( ) M( ) S( )
DATUM: NAD27 ( ) NAD83 ( ) WGS84 (●)
Coordinate System: UTM Zone 10 ( ) UTM Zone 11 ( ) *OR*
Coordinates: Lat: 40.315182 Long: -123.661831

Source of Coordinates (GPS, topo. map & type): GPS
GPS Make & Model: Samsung Galaxy S7- Esri Collector
Horizontal Accuracy: 3.2 meters meters/feet
Geographic (Latitude & Longitude) (●)

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

This hill is dominated by forbs with relatively low cover of grasses. There are Rosa canina and Rosa rubinginosa shrubs dotting this hill- on top and on the S side of this plot. The roses are non-native and <10% cover in this broader area. This species was growing in an herb community dominated by Leontodon saxatilis, Navarretia intertexta, Festuca perennis and Plantago lanceolata. There were other populations of this species on other hillsides within and outside of the scope of this project.

Please fill out separate form for other rare taxa seen at this site.

Site Information

Overall site/occurrence quality/viability (site + population): (●) Excellent ( ) Good ( ) Fair ( ) Poor
Immediate AND surrounding land use: Grazing and nearby abandoned dirt road
Visible disturbances: Grazing
Threats: Development
Comments:

Determination: *(check one or more, and fill in blanks)*

[X] Keyed (cite reference): The Jepson Manual
[X] Compared with specimen housed at: UC Davis Herbarium
[ ] Compared with photo / drawing in: _____
[ ] By another person (name): _____
[ ] Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	[ ]	[ ]	[X]
Habitat	[ ]	[ ]	[X]
Diagnostic feature	[ ]	[ ]	[X]

May we obtain duplicates at our expense? (●) yes ( ) no

Mail to:
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California Dept. of Fish & Wildlife
P.O. Box 944209
Sacramento, CA 94244-2090
CNDDB@wildlife.ca.gov

For Office Use Only
Source Code: _____ Quad Code: _____
Elm Code: _____ Occ No.: _____
EO Index: _____ Map Index: _____

Date of Field Work (mm/dd/yyyy): 04/10/2019

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: *Listera cordata*

Common Name: Heart leaved twayblade

Species Found? (●) Yes ( ) No _____ If not found, why?

Total No. Individuals: ~10 Subsequent Visit? ( ) Yes (●) No

Is this an existing NDDB occurrence? _____ Yes, Occ. # [X] No [ ] Unk.

Collection? If yes: None Number None Museum / Herbarium

Reporter: Joslyn Curtis and Amy Livingston
Address: 718 3rd St, Eureka, CA 95501
E-mail Address: joslyn.curtis@ghd.com
Phone: 704-473-9733

Plant Information

Phenology:

100	0	0
% vegetative	% flowering	% fruiting

Animal Information

# adults	# juveniles	# larvae	# egg masses	# unknown

[ ] wintering [ ] breeding [ ] nesting [ ] rookery [ ] burrow site [ ] lek [ ] other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

NE side of ridge sloping towards Larabee Creek to the west.

County: Humboldt Landowner / Mgr: Hum Sun Farms

Quad Name: Blocksburg Elevation: 2151 ft

T 02S R 04E Sec 1, SE 1/4 of SW 1/4, Meridian: H(●) M( ) S( )

T___ R___ Sec___, ___ 1/4 of ___ 1/4, Meridian: H( ) M( ) S( )

DATUM: NAD27 ( ) NAD83 ( ) WGS84 (●)

Coordinate System: UTM Zone 10 ( ) UTM Zone 11 ( ) *OR* Geographic (Latitude & Longitude) (●)

Coordinates: Lat: 40.315924 Long: -123.681325

Source of Coordinates (GPS, topo. map & type): GPS

GPS Make & Model: Samsung Galaxy S7- Esri Collector

Horizontal Accuracy: 3.2 meters meters/feet

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

There is a thick layer of moss or liverwort covering the ground. Doesn't seem to have been disturbed recently, though there is some evidence of tree cutting/thinning many years ago. Some fallen logs on the ground. Some areas seem more cleared like they could have been old skid rds or extraction lanes while other appear denser with Vaccinium and Tan Oak growing up in dense thickets. Vegetation compositions consists of Pseudotsuga menziesii, Notholithocarpus densiflorus, Berberis nervosa, Vaccinium ovatum, Gaultheria shallon, and Polystichum munitum.

Please fill out separate form for other rare taxa seen at this site.

Site Information

Overall site/occurrence quality/viability (site + population): (●) Excellent ( ) Good ( ) Fair ( ) Poor

Immediate AND surrounding land use: Grazing and Ranch Land

Visible disturbances: None

Threats: Development, logging

Comments:

Determination: *(check one or more, and fill in blanks)*

[X] Keyed (cite reference): The Jepson Manual
[ ] Compared with specimen housed at: _____
[X] Compared with photo / drawing in: Calflora and Jepson line drawings
[ ] By another person (name): _____
[ ] Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	[ ]	[ ]	[X]
Habitat	[ ]	[ ]	[X]
Diagnostic feature	[ ]	[ ]	[X]

May we obtain duplicates at our expense? (●) yes ( ) no

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California Dept. of Fish & Wildlife
P.O. Box 944209
Sacramento, CA 94244-2090
CNDDB@wildlife.ca.gov

For Office Use Only
Source Code: _____ Quad Code: _____
Elm Code: _____ Occ No.: _____
EO Index: _____ Map Index: _____

Date of Field Work (mm/dd/yyyy): 04/11/2019

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: *Listera cordata*

Common Name: Heart leaved twayblade

Species Found? (●) Yes ( ) No _____ If not found, why?

Total No. Individuals: ~10 Subsequent Visit? ( ) Yes (●) No

Is this an existing NDDB occurrence? _____ Yes, Occ. # [X] No [ ] Unk.

Collection? If yes: None Number / None Museum / Herbarium

Reporter: Joslyn Curtis and Amy Livingston
Address: 718 3rd St, Eureka, CA 95501
E-mail Address: joslyn.curtis@ghd.com
Phone: 704-473-9733

Plant Information

Phenology:
100 % vegetative | 0 % flowering | 0 % fruiting

Animal Information

_____ # adults | _____ # juveniles | _____ # larvae | _____ # egg masses | _____ # unknown

[ ] wintering [ ] breeding [ ] nesting [ ] rookery [ ] burrow site [ ] lek [ ] other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

E-NE side of ridge sloping towards Larabee Creek to the west.

County: Humboldt Landowner / Mgr: Hum Sun Farms
Quad Name: Blocksburg Elevation: 1688 ft.
T 02S R 04E Sec 1, NW 1/4 of SE 1/4, Meridian: H(●) M( ) S( )
T___ R___ Sec___, ___1/4 of ___ 1/4, Meridian: H( ) M( ) S( )
DATUM: NAD27 ( ) NAD83 ( ) WGS84 ( )
Coordinate System: UTM Zone 10 ( ) UTM Zone 11 ( ) *OR*
Coordinates: Lat: 40.320555 Long: -123.672397

Source of Coordinates (GPS, topo. map & type): GPS
GPS Make & Model: Samsung Galaxy S7- Esri Collector
Horizontal Accuracy: 3.2 meters meters/feet
Geographic (Latitude & Longitude) (●)

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*
Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Second generation forest. Large stumps from very old logging. Some trees have uprooted recently (fresh leaves are still on the trees). Vegetatio is dominated by Pseudotsuga menziesii, with a small subcomponent association of Notholithocarpus densiflorus, Arbutus menziesii and Acer macrophyllum.

Please fill out separate form for other rare taxa seen at this site.

Site Information

Overall site/occurrence quality/viability (site + population): (●) Excellent ( ) Good ( ) Fair ( ) Poor
Immediate AND surrounding land use: Grazing and Ranch Land
Visible disturbances: None
Threats: Development, logging
Comments:

Determination: *(check one or more, and fill in blanks)*

[X] Keyed (cite reference): The Jepson Manual
[ ] Compared with specimen housed at: _____
[X] Compared with photo / drawing in: Calflora and Jepson line drawings
[ ] By another person (name): _____
[ ] Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	[ ]	[ ]	[X]
Habitat	[ ]	[ ]	[X]
Diagnostic feature	[ ]	[ ]	[X]

May we obtain duplicates at our expense? (●) yes ( ) no

Mail to:
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California Dept. of Fish & Wildlife
P.O. Box 944209
Sacramento, CA 94244-2090
CNDDB@wildlife.ca.gov

For Office Use Only
Source Code: _____ Quad Code: _____
Elm Code: _____ Occ No.: _____
EO Index: _____ Map Index: _____

Date of Field Work (mm/dd/yyyy): 05/08/2019

Clear Form

California Native Species Field Survey Form

Print Form

Scientific Name: *Listera cordata*

Common Name: Heart leaved twayblade

Species Found? (●) Yes ( ) No _____ If not found, why?

Total No. Individuals: ~10 Subsequent Visit? ( ) Yes (●) No

Is this an existing NDDB occurrence? _____ Yes, Occ. # ☒ No ☐ Unk.

Collection? If yes: None (Number) None (Museum / Herbarium)

Reporter: Joslyn Curtis and Amy Livingston

Address: 718 3rd St, Eureka, CA 95501

E-mail Address: joslyn.curtis@ghd.com

Phone: 704-473-9733

Plant Information

Phenology:

% vegetative	% flowering	% fruiting
50	50	0

Animal Information

# adults	# juveniles	# larvae	# egg masses	# unknown

☐ wintering ☐ breeding ☐ nesting ☐ rookery ☐ burrow site ☐ lek ☐ other

Location Description (please attach map AND/OR fill out your choice of coordinates, below)

NE side of ridge sloping towards Larabee Creek to the north.

County: Humboldt Landowner / Mgr: Hum Sun Farms

Quad Name: Blocksburg Elevation: 2108 ft.

T 02S R 04E Sec 2 , NW 1/4 of NE 1/4, Meridian: H(●) M( ) S( )

T___ R___ Sec___ , ___ 1/4 of ___ 1/4, Meridian: H( ) M( ) S( )

DATUM: NAD27 ( ) NAD83 ( ) WGS84 ( )

Coordinate System: UTM Zone 10 ( ) UTM Zone 11 ( ) *OR* Geographic (Latitude & Longitude) (●)

Coordinates: Lat: 40.324074 Long: -123.695194

Source of Coordinates (GPS, topo. map & type): GPS

GPS Make & Model: Samsung Galaxy S7- Esri Collector

Horizontal Accuracy: 3.2 meters meters/feet

Habitat Description (plants & animals) *plant communities, dominants, associates, substrates/soils, aspects/slope:*

Animal Behavior *(Describe observed behavior, such as territoriality, foraging, singing, calling, copulating, perching, roosting, etc., especially for avifauna):*

Mix of Pseudotsuga menziesii, Umbellularia californica, and Notholithocarpus densiflorus on the NE side of the ridge. Lots of Oxalis oregana with Polystichum munitum, Pteridium aquilinum and other herbs growing up through them. Lots of downed trees, branches and stumps. Must have been selectively harvested. Resprouting Notholithocarpus densiflorus coming up. This side of ridge doesn't seem to get much grazing. Moss under herbs, on soil and downed trees.

Please fill out separate form for other rare taxa seen at this site.

Site Information

Overall site/occurrence quality/viability (site + population): (●) Excellent ( ) Good ( ) Fair ( ) Poor

Immediate AND surrounding land use: Grazing and Ranch Land

Visible disturbances: None

Threats: Development

Comments:

Determination: *(check one or more, and fill in blanks)*

☒ Keyed (cite reference): The Jepson Manual
☐ Compared with specimen housed at: _____
☒ Compared with photo / drawing in: Calflora and Jepson line drawings
☐ By another person (name): _____
☐ Other: _____

Photographs: *(check one or more)*

	Slide	Print	Digital
Plant / animal	☐	☐	☒
Habitat	☐	☐	☒
Diagnostic feature	☐	☐	☒

May we obtain duplicates at our expense? (●) yes ( ) no

Appendix E – Sensitive Natural Community Documentation and Field Survey Forms

Entered JC

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

For Office Use:	Final database #:	Final vegetation type:	Alliance Association

I. LOCATIONAL/ENVIRONMENTAL DESCRIPTION — circle: **Relevé** or **RA**

Blocksburg 01

Date:	Name of recorder: A.L.
4-10-19	Other surveyors: J.C.
UID:	Location Name: Hum Sun Farms

GPS name: Collector — For Relevé only: **Bearing°**, ~~left axis at ID point~~ ____ **of Long / Short** side

UTME 441845 **UTMN** 4463401 **Zone:** 10 **NAD83** GPS error: **ft./ m./ PDOP** 3.2

Decimal degrees: **LAT** 40.319113 **LONG** 123.684478

GPS within stand? Yes / No If No, cite from GPS to stand: distance (m) ____ bearing ° ____ inclination ° ____

and record: ~~Base point ID~~ ____ **Projected UTMs: UTME** ____ **UTMN** ____

Camera Name: J.C. phone **Cardinal photos at ID point:** 144413 – 144440

Other photos:

Stand Size (acres): <1, 1-5, >5 | ~~**Plot Area (m²):** 100 / ____~~ | **Plot Dimensions** ____ x ____ m | **RA Radius** 20 m

Exposure, Actual °: E NE NW SE SW Flat Variable | **Steepness, Actual °:** 120 0° 1-5° > 5-25° > 25

Topography: Macro: top upper mid lower bottom | **Micro:** convex flat concave undulating

Geology code: ____ **Soil Texture code:** MFCL | Upland or **Wetland/Riparian** (circle one)

% Surface cover: (Incl. outcrops) (>60cm diam) (25-60cm) (7.5-25cm) (2mm-7.5cm) (Incl sand, mud)

H_20: 0 **BA Stems:** 3 **Litter:** 95 **Bedrock:** 0 **Boulder:** 0 **Stone:** 0 **Cobble:** 0 **Gravel:** 0 **Fines:** 2 =100%

% Current year bioturbation 1 **Past bioturbation present?** Yes / No | **% Hoof punch** 0

Fire evidence: Yes / No (circle one) If yes, describe in Site history section, including date of fire, if known.

Site history, stand age, comments:

PSME and
Selective Harvest of 1 tan oak. new sprouts tan oak < 5' tall. Older white Oaks will soon be over taken by Doug-fir. Seems an oak stand may have been encroached upon

Disturbance code / Intensity (L,M,H): 4 / L selective harvest L ____/____ ____/____ ____/____ **"Other"** ____/____

II. HABITAT DESCRIPTION

Tree DBH : T1 (<1" dbh), T2 (1-6" dbh), T3 (6-11" dbh), T4 (11-24" dbh), T5 (>24" dbh), T6 multi-layered (T3 or T4 layer under T5, >60% cover)

Shrub: S1 seedling (<3 yr. old), S2 young (<1% dead), S3 mature (1-25% dead), S4 decadent (>25% dead)

Herbaceous: H1 (<12" plant ht.), H2 (>12" ht.)

~~**Desert Riparian Tree/Shrub:** 1 (<2ft. stem ht.), 2 (2-10ft. ht.), 3 (10-20ft. ht.), 4 (>20ft. ht.)~~

Desert Palm/Joshua Tree: 1 (<1.5" base diameter), 2 (1.5-6" diam.), 3 (>6" diam.)

III. INTERPRETATION OF STAND

Field-assessed vegetation Alliance name: PSEMEN

Field-assessed Association name (optional): ____

Adjacent Alliances/direction: FA A/P grassland, West, Hardwood stand, SE

Confidence in Alliance identification: L M H **Explain:** ____

Phenology (E,P,L): Herb E **Shrub** E **Tree** E **Other identification or mapping information:**

Quercus spp not leafed out, TODI not leafed out, only early season herbs flowing

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

Database #: Block 1 25 SPECIES SHEET

IV. VEGETATION DESCRIPTION

43

% NonVasc cover: 15 **Total % Vasc Veg cover:** 75

% Cover - **Conifer tree / Hardwood tree:** 35 / 8 **Regenerating Tree:** 10 **Shrub:** 4 **Herbaceous:** 40

Height Class - Conifer tree / Hardwood tree: 9 / 7 **Regenerating Tree:** 3 **Shrub:** 2 **Herbaceous:** 1

Height classes: 1=<1/2m, 2=1/2-1m, 3=1-2m, 4=2-5m, 5=5-10m, 6=10-15m, 7=15-20m, 8=20-35m, 9=35-50m, 10=>50m

Stratum categories: T=Tree, A = SApling, E = SEedling, S = Shrub, H= Herb, N= Non-vascular

% Cover Intervals for reference: r = trace, + = <1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, >75%

Stratum	Species	% cover	C	Final species determination
T/SA	PSEMEN	35/1		
T/SA	NOTLIT	4/9		
T	ARBMEN	1		
T	QUEGAR	2		
T	UMBCAL	1		
S	TODI	2		
S	Ribes	1		
S	Ceanothus	<1		
S	Rubus leuco	1		
S	Lonicera hispidula	<1		
H	(Iris / Sisyrinchium (NIF)	7		
	Cardamine Calif	2		
	Juncus (patens)	7		
	Fragaria vesca	5		
	Osmaniza Berf	2		
	Hypochearis rad	2		
	Bellis perenis	3		
	Sanicula crass	2		
	Stachys	<1		
	Nemophila	<1		
	Pteridium aqui	1		
	Polysticum munitum	1		
	Luzula	<1		
	Vicia	<1		
	Lathyrus	<1		
	Unk grasses (NIF)	2		
↓	Prunella	<1		
	Other plants	6		

Unusual species: _____

Entered JC

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

For Office Use:	Final database #:	Final vegetation type:	Alliance Association

I. LOCATIONAL/ENVIRONMENTAL DESCRIPTION circle: Relevé or (RA)

Blocksburg 02

Date: 4-10-19	Name of recorder: JTCurtis
	Other surveyors: Amy Livingston
UID:	Location Name: Hum Sun Farms

GPS name: Collector For Relevé only: Bearing°, left axis at ID point ____ of Long / Short side

UTME 442110 UTMN 4463045 Zone: 10 NAD83 GPS error: ft./ m./ PDOP 3.2

Decimal degrees: LAT 40.315924 LONG -123.681325

GPS within stand? (Yes) / No If No, cite from GPS to stand: distance (m) ____ bearing ° ____ inclination ° ____

and record: Base point ID _____ Projected UTMs: UTME _____ UTMN _____

Camera Name: Joslyn's iPhone Cardinal photos at ID point: 20190410_170707 thru 170535

Other photos:

Stand Size (acres): <1, 1-5, (>5) | Plot Area (m²): 100 / _____ | Plot Dimensions ___ x ___ m | RA Radius 20 m

Exposure, Actual °: ____ (NE) NW SE SW Flat Variable | Steepness, Actual °: ____ 0° 1-5° (>5-25°) > 25

Topography: Macro: top (upper) mid lower bottom | Micro: (convex) flat concave undulating

Geology code: _____ Soil Texture code: MFCL | (Upland) or Wetland/Riparian (circle one)

% Surface cover: (Incl. outcrops) (>60cm diam) (25-60cm) (7.5-25cm) (2mm-7.5cm) (Incl sand, mud)

H_2O: 0 BA Stems: 3 Litter: 56 Bedrock: 0 Boulder: 0 Stone: 0 Cobble: / Gravel: 20 Fines: 20 =100%

% Current year bioturbation 0 Past bioturbation present? Yes / (No) | % Hoof punch 0

Fire evidence: Yes / (No) (circle one) If yes, describe in Site history section, including date of fire, if known.

Site history, stand age, comments: There is a thick layer of moss or Liverwort covering the ground. Doesn't seem to have been disturbed recently Some evidence of tree cutting many years ago. Some fallen logs on the ground. Some areas seem more cleared like they could have been old skid rds or extraction lanes while others appear denser w/ Vaccinium + Tan oak growing up in thickets

Disturbance code / Intensity (L,M,H): 27 / L 4 / L ___/___ ___/___ ___/___ "Other" _____/___

II. HABITAT DESCRIPTION

Tree DBH : T1 (<1" dbh), T2 (1-6" dbh), T3 (6-11" dbh), T4 (11-24" dbh), T5 (>24" dbh), (T6 multi-layered (T3 or T4 layer under T5, >60% cover)

Shrub: S1 seedling (<3 yr. old), S2 young (<1% dead), (S3 mature (1-25% dead)), S4 decadent (>25% dead)

Herbaceous: H1 (<12" plant ht.), (H2 (>12" ht.))

~~Desert Riparian Tree/Shrub: 1 (<2ft. stem ht.), 2 (2-10ft. ht.), 3 (10-20ft. ht.), 4 (>20ft. ht.)~~

~~Desert Palm/Joshua Tree:~~ 1 (<1.5" base diameter), 2 (1.5-6" diam.), 3 (>6" diam.)

III. INTERPRETATION OF STAND

Field-assessed vegetation Alliance name: PSEMEN-NOTDEN

Field-assessed Association name (optional): _____

Adjacent Alliances/direction: _____/_____, _____/_____

Confidence in Alliance identification: L M (H) Explain: _____

Phenology (E,P,L): Herb E Shrub E Tree E Other identification or mapping information:

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

Database #: Block 2 — SPECIES SHEET

IV. VEGETATION DESCRIPTION

% NonVasc cover: 50 **Total % Vasc Veg cover:** 65

% Cover - **Conifer tree / Hardwood tree:** 25 / 7 **Regenerating Tree:** 32 **Shrub:** 21 **Herbaceous:** 10

Height Class - Conifer tree / Hardwood tree: 9 / 7 **Regenerating Tree:** 6 **Shrub:** 3 **Herbaceous:** 2

Height classes: 1=<1/2m, 2=1/2-1m, 3=1-2m, 4=2-5m, 5=5-10m, 6=10-15m, 7=15-20m, 8=20-35m, 9=35-50m, 10=>50m

Stratum categories: T=Tree, A = SApling, E = SEedling, S = Shrub, H= Herb, N= Non-vascular

% Cover Intervals for reference: r = trace, + = <1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, >75%

Stratum	Species	% cover	C	Final species determination
T/SA/E	PSEMEN	25/3/2		
T/SA/E	NOTDEND	7/23/4		
T/SA	Umbellifera gal	<1/<1		
S	Berberis aqu or nervos	8		
S	Vaccinium ovatum	7		
	Lonicera hispidula	1		
	Gaultheria shallon	5		
	Rosa sp	<1		
	Rubus ursinus	<1		
H	Sanicula crass	<1		
H	Osmatiza berb	<1		
H	Scoliopus bigelovii	1		
	Polysticum munitum	7		
	Hierochloe(odorata)	<1	C	
	Cerastium	<1		
	Oxalis oreganum	1		
	Galium aparine	<1		
	Pteridium aqu.	<1		
	Viola sempery	1		
	Whipli modest	<1		
	Clintonia	<1		
	Yerba buena	<1		Clinopodium douglasii
Lich	Peltigera	<1		
M	Moss	50		

Unusual species: Listera cordata

Entered ✓

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

For Office Use:	Final database #:	Final vegetation type:	Alliance Association

I. LOCATIONAL/ENVIRONMENTAL DESCRIPTION — circle: **Relevé** or **RA**

Blocksburg 03

Date:	Name of recorder: Joslyn T Curtis
4-11-19	Other surveyors:
UID:	Location Name: Hum Sun Forms

GPS name: Collector — For Relevé only: **Bearing°**, left axis at ID point ____ of **Long / Short** side

UTME 442970 **UTMN** 4463582 **Zone:** 10 **NAD83** GPS error: **ft.** / **m** / **PDOP** 3.2

Decimal degrees: **LAT** 40.320820 **LONG** -123.671257

GPS within stand? Yes / No If No, cite from GPS to stand: distance (m) ____ bearing ° ____ inclination ° ____

and record: **Base point ID** _____ **Projected UTMs: UTME** _____ **UTMN** _____

Camera Name: J-Phone **Cardinal photos at ID point:** 20190911_154562 thru 154604

Other photos: 154654 thru 154721

Stand Size (acres): <1, 1-5, >5 | **Plot Area (m²):** 100 / ____ | **Plot Dimensions** ____ x ____ m | **RA Radius** 30 m

Exposure, Actual °: N NE NW SE SW Flat Variable | **Steepness, Actual °:** ____ 0° 1-5° >5-25° >25

Topography: Macro: top upper mid lower bottom | **Micro:** convex flat concave undulating

Geology code: _____ **Soil Texture code:** _____ | **Upland** or **Wetland/Riparian** (circle one)

% Surface cover: (Incl. outcrops) (>60cm diam) (25-60cm) (7.5-25cm) (2mm-7.5cm) (Incl sand, mud)

H_20: 0 **BA Stems:** 3 **Litter:** 81 **Bedrock:** 0 **Boulder:** 0 **Stone:** 0 **Cobble:** | **Gravel:** 5 **Fines:** 10 **=100%**

% Current year bioturbation 0 **Past bioturbation present?** Yes / No | **% Hoof punch** 0

Fire evidence: Yes / No (circle one) If yes, describe in Site history section, including date of fire, if known.

Site history, stand age, comments: This area seems to have been thinned or logged w/in the last 10yrs.. 30m N slope drops steeply down into dense PSEMEN-NOTDEN forest below

Disturbance code / Intensity (L,M,H): 27 / H ___/___ ___/___ ___/___ ___/___ **"Other"** _____/___

II. HABITAT DESCRIPTION

Tree DBH : **T1** (<1" dbh), **T2** (1-6" dbh), **T3** (6-11" dbh), **T4** (11-24" dbh), **T5** (>24" dbh), **T6** multi-layered (T3 or T4 layer under T5, >60% cover)

Shrub: **S1** seedling (<3 yr. old), **S2** young (<1% dead), **S3** mature (1-25% dead), **S4** decadent (>25% dead)

Herbaceous: **H1** (<12" plant ht.), **H2** (>12" ht.)

Desert Riparian Tree/Shrub: **1** (<2ft. stem ht.), **2** (2-10ft. ht.), **3** (10-20ft. ht.), **4** (>20ft. ht.)

Desert Palm/Joshua Tree: **1** (<1.5" base diameter), **2** (1.5-6" diam.), **3** (>6" diam.)

III. INTERPRETATION OF STAND

Field-assessed vegetation Alliance name: PSEMEN-NOTDEN

Field-assessed Association name (optional): _____

Adjacent Alliances/direction: Quercus / S-SE, PSEMEN / N-NW

Confidence in Alliance identification: L M H **Explain:** This has been thinned / logged NOTDEN will soon return + become larger component

Phenology (E,P,L): Herb E Shrub E Tree E **Other identification or mapping information:**

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

Database #: Block 3 SPECIES SHEET

IV. VEGETATION DESCRIPTION

% NonVasc cover: 1 **Total % Vasc Veg cover:** 45

% Cover - **Conifer tree / Hardwood tree:** 10 / 3 **Regenerating Tree:** 42 **Shrub:** 1 **Herbaceous:** 3

Height Class - Conifer tree / Hardwood tree: 9 / 8 **Regenerating Tree:** 6 **Shrub:** 3 **Herbaceous:** 1

Height classes: 1=<1/2m, 2=1/2-1m, 3=1-2m, 4=2-5m, 5=5-10m, 6=10-15m, 7=15-20m, 8=20-35m, 9=35-50m, 10=>50m

Stratum categories: T=Tree, A = SApling, E = SEedling, S = Shrub, H= Herb, N= Non-vascular

% Cover Intervals for reference: r = trace, + = <1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, >75%

Stratum	Species	% cover	C	Final species determination
T/SA/SE	PSEMEN	10/1/2		
T/SA/SE	NOTDEND	3/20/5		
SE	ARBMEN	20		
S	Ceanothus	1	C	
H	Hypochearis (glabrata)	1		
|	Holcus lanata	<1		
|	Cynoceus echi	<1		
|	Iris	<1		
|	Polystichum Munitum	<1		
|	Pteridium aquilinum	<1		
|	Stachys	<1		
|	Viola sempervirens	<1		
|	Sanicula Crass	<1		
|	Card Calif	<1		
|	Oxalis oregan	<1		
|	fragaria vesca	<1		
N	Moss	1		

Unusual species: _____

Entered ✓

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

For Office Use:	Final database #:	Final vegetation type:	Alliance Association

I. LOCATIONAL/ENVIRONMENTAL DESCRIPTION circle: **Relevé** or **RA**

Blocksburg 04

Date: 4-11-19	Name of recorder: Joshua T Curtis
	Other surveyors:
UID:	Location Name: Hum Sum Farm

GPS name: Collector For Relevé only: **Bearing°**, left axis at ID point ____ **of Long / Short** side

UTME 442922 UTMN 4463598 **Zone: 10 NAD83** GPS error: **ft./m.** PDOP 3.2

Decimal degrees: **LAT** 40.320960 **LONG** -123.671827

GPS within stand? **Yes** / **No** If No, cite from GPS to stand: distance (m) ____ bearing ° ____ inclination ° ____

and record: **Base point ID** ____ **Projected UTMs: UTME** ____ **UTMN** ____

Camera Name: J Phone **Cardinal photos at ID point:** 162412 → 162417

Other photos: 162423 looking up @ canopy

Stand Size (acres): <1, 1-5, >5 | **Plot Area (m²):** 100 / ____ | **Plot Dimensions** ____ x ____ m | **RA Radius** 30 m

Exposure, Actual °: ____ NE NW SE SW Flat Variable | **Steepness, Actual °:** ____ 0° 1-5° > 5-25° > 25

Topography: Macro: top upper mid lower bottom | **Micro:** convex flat concave undulating

Geology code: ____ **Soil Texture code:** ____ | **Upland** or **Wetland/Riparian** (circle one)

% Surface cover: (Incl. outcrops) (>60cm diam) (25-60cm) (7.5-25cm) (2mm-7.5cm) (Incl sand, mud)

H_2O: 0 **BA Stems:** 3 **Litter:** 89 **Bedrock:** 0 **Boulder:** 0 **Stone:** 0 **Cobble:** 0 **Gravel:** 3 **Fines:** 5 **=100%**

% Current year bioturbation 0 **Past bioturbation present?** Yes / No | **% Hoof punch** 0

Fire evidence: Yes / No (circle one) If yes, describe in Site history section, including date of fire, if known.

Site history, stand age, comments: This is a very over grown stand of PSEMEN - NOTDEN. NOTDEN is as tall as PSEMEN. Very little understory. Some Arbmen are dead in mid story. Seem to have been shaded out

Disturbance code / Intensity (L,M,H): None ___/___ ___/___ ___/___ ___/___ **"Other"** ____/___

II. HABITAT DESCRIPTION

Tree DBH : **T1** (<1" dbh), **T2** (1-6" dbh), **T3** (6-11" dbh), **T4** (11-24" dbh), **T5** (>24" dbh), **T6** multi-layered (T3 or T4 layer under T5, >60% cover)

Shrub: **S1** seedling (<3 yr. old), **S2** young (<1% dead), **S3** mature (1-25% dead), **S4** decadent (>25% dead)

Herbaceous: **H1** (<12" plant ht.), **H2** (>12" ht.)

Desert Riparian Tree/Shrub: **1** (<2ft. stem ht.), **2** (2-10ft. ht.), **3** (10-20ft. ht.), **4** (>20ft. ht.)

Desert Palm/Joshua Tree: **1** (<1.5" base diameter), **2** (1.5-6" diam.), **3** (>6" diam.)

III. INTERPRETATION OF STAND

Field-assessed vegetation Alliance name: ____

Field-assessed Association name (optional): ____

Adjacent Alliances/direction: ____/____, ____/____

Confidence in Alliance identification: L M H **Explain:** ____

Phenology (E,P,L): Herb E **Shrub** — **Tree** P **Other identification or mapping information:**

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

Database #: Block 4 SPECIES SHEET

IV. VEGETATION DESCRIPTION

% NonVasc cover: 3 **Total % Vasc Veg cover:** 85

% Cover - **Conifer tree / Hardwood tree:** 25/60 **Regenerating Tree:** 0 **Shrub:** 0 **Herbaceous:** 3

Height Class - Conifer tree / Hardwood tree: 8/8 **Regenerating Tree:** — **Shrub:** — **Herbaceous:** 1

Height classes: 1=<1/2m, 2=1/2-1m, 3=1-2m, 4=2-5m, 5=5-10m, 6=10-15m, 7=15-20m, 8=20-35m, 9=35-50m, 10=>50m

Stratum categories: T=Tree, A = SApling, E = SEedling, S = Shrub, H= Herb, N= Non-vascular

% Cover Intervals for reference: r = trace, + = <1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, >75%

Stratum	Species	% cover	C	Final species determination
T	PSEMEN	25		
T	NOTDEN	60		
T	Snags	2		
T	ARBMEN	1		
H	Polyst. Munitum	3		
N	Moss	3		

Unusual species: _____

Entered ✓C

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

For Office Use:	Final database #:	Final vegetation type:	Alliance Association

I. ENVIRONMENTAL DESCRIPTION circle: **Relevé** or **RA**

Blocksburg 05

Date: 4-11-19 | Name of recorder: Joslyn T Curtis ☑

Other surveyors: ☑

UID: | Location Name: Hum Sun Farms ☑

GPS name: Collector 1688ft:elev For Relevé only: **Bearing°**, left axis at ID point____ **of Long / Short** side ☑

UTME 442873 **UTMN** 4463553 **Zone: 10** **NAD83** GPS error: **ft./ m./ PDOP** 3.2

Decimal degrees: **LAT** 40.320555 **LONG** -123.672397

GPS within stand? **Yes** / **No** If No, cite from GPS to stand: distance (m)____ bearing °____ inclination °____ ☐

and record: **Base point ID**_____ **Projected UTMs: UTME**_____ **UTMN**_____ ☐

Camera Name: J Phone **Cardinal photos at ID point:** Starting @ 20190411-164544 thru 164634 ☐

Other photos: 2 more Panaramas 164659 & 164735

Stand Size (acres): <1, 1-5, >5 | **Plot Area (m²):** 100 / _____ | **Plot Dimensions** ___ x ___ m | **RA Radius** 30 m ☐

Exposure, Actual °: N NE NW SE SW Flat Variable | **Steepness, Actual °:** _____ 0° 1-5° >5-25° >25 ☐

Topography: Macro: top upper mid lower bottom | **Micro:** convex flat concave undulating ☐

Geology code:_____ **Soil Texture code:**_____ | **Upland** or **Wetland/Riparian** (circle one) Drainage ☐

% Surface cover: (Incl. outcrops) (>60cm diam) (25-60cm) (7.5-25cm) (2mm-7.5cm) (Incl sand, mud)

H_2O: 0 **BA Stems:** 2 **Litter:** 85 **Bedrock:** 0 **Boulder:** 0 **Stone:** 0 **Cobble:** 0 **Gravel:** 5 **Fines:** 8 **=100%** ☐

% Current year bioturbation 0 **Past bioturbation present?** **Yes** / **No** | **% Hoof punch** 0 ☐

Fire evidence: **Yes** / **No** (circle one) If yes, describe in Site history section, including date of fire, if known. ☐

Site history, stand age, comments: Second growth forest. large stumps from very old logging. Some trees have uprooted recently (fresh lives are still on the trees). ☐

Disturbance code / Intensity (L,M,H): ___/___ ___/___ ___/___ ___/___ ___/___ **"Other"**_____/___ ☐

II. HABITAT DESCRIPTION

Tree DBH : **T1** (<1" dbh), **T2** (1-6" dbh), **T3** (6-11" dbh), **T4** (11-24" dbh), **T5** (>24" dbh) **T6** multi-layered (T3 or T4 layer under T5, >60% cover) ☐

Shrub: **S1** seedling (<3 yr. old), **S2** young (<1% dead), **S3** mature (1-25% dead), **S4** decadent (>25% dead) ☐

Herbaceous: **H1** (<12" plant ht.), **H2** (>12" ht.) ☐

Desert Riparian Tree/Shrub: **1** (<2ft. stem ht.), **2** (2-10ft. ht.), **3** (10-20ft. ht.), **4** (>20ft. ht.)

Desert Palm/Joshua Tree: **1** (<1.5" base diameter), **2** (1.5-6" diam.), **3** (>6" diam.)

III. INTERPRETATION OF STAND

Field-assessed vegetation Alliance name: PSEMEN ☐

Field-assessed Association name (optional):_____ ☐

Adjacent Alliances/direction:_____/_____, _____/_____ ☐

Confidence in Alliance identification: **L** **M** **H** **Explain:**_____ ☐

Phenology (E,P,L): **Herb** E **Shrub** — **Tree** P **Other identification or mapping information:** ☐

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

Database #: Block 5 SPECIES SHEET

IV. VEGETATION DESCRIPTION

% NonVasc cover: 10 **Total % Vasc Veg cover:** 80

% Cover - **Conifer tree / Hardwood tree:** 50 / 12 **Regenerating Tree:** 3 **Shrub:** <1 **Herbaceous:** 20

Height Class - Conifer tree / Hardwood tree: 10 / 9 **Regenerating Tree:** 4 **Shrub:** 1 **Herbaceous:** 1

Height classes: 1=<1/2m, 2=1/2-1m, 3=1-2m, 4=2-5m, 5=5-10m, 6=10-15m, 7=15-20m, 8=20-35m, 9=35-50m, 10=>50m

Stratum categories: T=Tree, A = SApling, E = SEedling, S = Shrub, H= Herb, N= Non-vascular

% Cover Intervals for reference: r = trace, + = <1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, >75%

Stratum	Species	% cover	C	Final species determination
T/SE	PSEMEN	50/1		
T/SA/SE	NOTDEN	7/2/0.2		
T	ARBMEN	2		
T/SE	Acer macrophylla	3/<1		
T/E	Umbellularia cal	1/<1		
S	Lonicera hispidula	<1		
H	Pterist aqui	<1		
H	Viola sempe	<1		
H	Poly munitum	20		
A	Calypso bulbosa	<1		
|	Scoliopus bigelovii	<1		
|	Adenocaulon bicolor	<1		
|	Galium aparine	<1		
|	Ozmariza	<1		
V	Listeria cordata	<1		
N	Moss	10		

Unusual species: _____

Entered JC

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

For Office Use:	Final database #:	Final vegetation type:	Alliance Association

I. LOCATIONAL/ENVIRONMENTAL DESCRIPTION — circle: **Relevé** or **RA**

Blocksburg 06

Date: 4-11-19	Name of recorder: JTC
	Other surveyors:
UID:	Location Name: Hum Sun Farms

GPS name: Collector 1754ft Elev For Relevé only: **Bearing°**, left axis at ID point ____ of **Long / Short** side

UTME 442862 UTMN 4463465 Zone: 10 NAD83 GPS error: ft./ m/ PDOP 3.2

Decimal degrees: LAT 40.319759 LONG -123.672523

GPS within stand? Yes / No If No, cite from GPS to stand: distance (m) ____ bearing ° ____ inclination ° ____

and record: **Base point ID** _____ **Projected UTMs: UTME** _____ **UTMN** _____

Camera Name: J Phone **Cardinal photos at ID point:** 172222 – 172235

Other photos:

Stand Size (acres): <1, 1-5, >5 | **Plot Area (m²):** 100 / _____ | **Plot Dimensions** ___ x ___ m | **RA Radius** 30 m

Exposure, Actual °: N NE NW SE SW Flat Variable | **Steepness, Actual °:** _____ 0° 1-5° >5-25° > 25

Topography: Macro: top upper mid lower bottom | **Micro:** convex flat concave undulating

Geology code: _____ **Soil Texture code:** _____ | **Upland** or **Wetland/Riparian** (circle one)

% Surface cover: (Incl. outcrops) (>60cm diam) (25-60cm) (7.5-25cm) (2mm-7.5cm) (Incl sand, mud)

H20: 0 **BA Stems:** 1 **Litter:** 95 **Bedrock:** 0 **Boulder:** 0 **Stone:** 0 **Cobble:** 0 **Gravel:** 1 **Fines:** 3 **=100%**

% Current year bioturbation 0 **Past bioturbation present?** Yes / No | **% Hoof punch** 0

Fire evidence: Yes / No (circle one) If yes, describe in Site history section, including date of fire, if known.

Site history, stand age, comments: Appears to have been selectively harvested

Disturbance code / Intensity (L,M,H): ___/___ ___/___ ___/___ ___/___ ___/___ **"Other"** _____/___

II. HABITAT DESCRIPTION

Tree DBH : T1 (<1" dbh), **T2** (1-6" dbh), **T3** (6-11" dbh), **T4** (11-24" dbh), **T5** (>24" dbh), **T6** multi-layered (T3 or T4 layer under T5, >60% cover)

Shrub: S1 seedling (<3 yr. old), **S2** young (<1% dead), **S3** mature (1-25% dead), **S4** decadent (>25% dead)

Herbaceous: H1 (<12" plant ht.), **H2** (>12" ht.)

Desert Riparian Tree/Shrub: 1 (<2ft. stem ht.), **2** (2-10ft. ht.), **3** (10-20ft. ht.), **4** (>20ft. ht.)

Desert Palm/Joshua Tree: 1 (<1.5" base diameter), **2** (1.5-6" diam.), **3** (>6" diam.)

III. INTERPRETATION OF STAND

Field-assessed vegetation Alliance name: QUEGAR

Field-assessed Association name (optional): _____

Adjacent Alliances/direction: _____/_____, _____/_____

Confidence in Alliance identification: L M H Explain: _____

Phenology (E,P,L): Herb E **Shrub** E **Tree** E **Other identification or mapping information:**

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

Database #: Block 6 SPECIES SHEET

IV. VEGETATION DESCRIPTION

% NonVasc cover: 2 **Total % Vasc Veg cover:** 60

% Cover - **Conifer tree / Hardwood tree:** 5 / 23 **Regenerating Tree:** 7 **Shrub:** 11 **Herbaceous:** 45

Height Class - Conifer tree / Hardwood tree: 10 / 8 **Regenerating Tree:** 2 **Shrub:** 2 **Herbaceous:** 1

Height classes: 1=<1/2m, 2=1/2-1m, 3=1-2m, 4=2-5m, 5=5-10m, 6=10-15m, 7=15-20m, 8=20-35m, 9=35-50m, 10=>50m

Stratum categories: T=Tree, A = SApling, E = SEedling, S = Shrub, H= Herb, N= Non-vascular

% Cover Intervals for reference: r = trace, + = <1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, >75%

Stratum	Species	% cover	C	Final species determination
T	Quercus garryana	20		
T/E	PSEMEN	5/7		
SE	NOTDEND	<1		
SE	Umbel Calif	<1		
T	Arbutus men	3		
S	Ribes (NIF)	1	C	
S	TODI	10		
↓	Lonicera hispidula	<1		
↓	Rosa sp (NIF)	<1		
H	Vicia (NIF)	3		
H	POLMUN	1		
|	Sanicula crass	10		
|	Fragaria vesca	1		
|	Card calif	3		
|	Iris	1		
|	Elymus glaucus	10		
|	Cynosurus echi	2		
|	Yerba buena	3		Clinopodium douglasii
|	Juncus patens	10		
↓	Soap root	<1		Chlorogalum
|	Bellis perene	3		
↓	Galium aparine	2		
N	Moss	2		

Unusual species: _____

JC entered 1-8-19

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

For Office Use:	Final database #:	Final vegetation type:	Alliance Association

I. LOCATIONAL/ENVIRONMENTAL DESCRIPTION circle: **Relevé** or **RA**

Blocksburg 07

Date: 4-12-19	Name of recorder: JTC
	Other surveyors:
UID:	Location Name: Hum Sun Farms

GPS name: Collector 2134ft: Elev For Relevé only: **Bearing°**, left axis at ID point 60 **of Long / Short** side

UTME 442037 UTMN 4462702 Zone: 10 NAD83 GPS error: ft./ m.) PDOP 3.2

Decimal degrees: LAT 40.312832 LONG -123.682164

GPS within stand? Yes / No If No, cite from GPS to stand: distance (m) ___ bearing ° ___ inclination °

and record: **Base point ID** ___ **Projected UTMs: UTME** ___ **UTMN** ___

Camera Name: J Phone **Cardinal photos at ID point:** 20190412_112850 → ... _112903

Other photos: 112918 → across plot

Stand Size (acres): <1, 1-5, >5 | **Plot Area (m²):** 100 / ___ | **Plot Dimensions** 10 x 10 m | ~~RA Radius~~ ___ m

Exposure, Actual °: 273 NE NW SE SW Flat Variable | **Steepness, Actual °:** 22 0° 1-5° >5-25° > 25

Topography: Macro: top upper mid lower bottom | **Micro:** convex flat concave undulating

Geology code: ___ **Soil Texture code:** ___ | Upland or **Wetland/Riparian** (circle one)

% Surface cover: (Incl. outcrops) (>60cm diam) (25-60cm) (7.5-25cm) (2mm-7.5cm) (Incl sand, mud)

H_2O: 0 **BA Stems:** 1 **Litter:** 10 **Bedrock:** 40 **Boulder:** 0 **Stone:** 0 **Cobble:** 0 **Gravel:** 25 **Fines:** 25 =100%

% Current year bioturbation 0 **Past bioturbation present?** Yes / No | **% Hoof punch** 0

Fire evidence: Yes / No (circle one) If yes, describe in Site history section, including date of fire, if known.

Site history, stand age, comments: Rock outcrop in cow pasture. Grazed Tree frog in stand. Moss is growing on outcrop + ground among other herbs. Lots of overlap in herb layer

Disturbance code / Intensity (L,M,H): grazing H /___ /___ /___ /___ /___ **"Other"** ___ /___

II. HABITAT DESCRIPTION

Tree DBH: T1 (<1" dbh), T2 (1-6" dbh), T3 (6-11" dbh), T4 (11-24" dbh), T5 (>24" dbh), T6 multi-layered (T3 or T4 layer under T5, >60% cover)

Shrub: S1 seedling (<3 yr. old), S2 young (<1% dead), S3 mature (1-25% dead), S4 decadent (>25% dead)

Herbaceous: H1 (<12" plant ht.), H2 (>12" ht.)

Desert Riparian Tree/Shrub: 1 (<2ft. stem ht.), 2 (2-10ft. ht.), 3 (10-20ft. ht.), 4 (>20ft. ht.)

Desert Palm/Joshua Tree: 1 (<1.5" base diameter), 2 (1.5-6" diam.), 3 (>6" diam.)

III. INTERPRETATION OF STAND

Field-assessed vegetation Alliance name: TBD

Field-assessed Association name (optional): ___

Adjacent Alliances/direction: ___ /___, ___ /___

Confidence in Alliance identification: L M H **Explain:** ___

Phenology (E,P,L): Herb E **Shrub** ~ **Tree** ~ **Other identification or mapping information:** Some plants are in full bloom but many others are still coming up.

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

Database #: Block 7 SPECIES SHEET

IV. VEGETATION DESCRIPTION

% NonVasc cover: 40 **Total % Vasc Veg cover:** 55

% Cover - **Conifer tree / Hardwood tree:** ___/___ **Regenerating Tree:** ___ **Shrub:** ___ **Herbaceous:** 55

Height Class - Conifer tree / Hardwood tree: ___/___ **Regenerating Tree:** ___ **Shrub:** ___ **Herbaceous:** 1

Height classes: 1=<1/2m, 2=1/2-1m, 3=1-2m, 4=2-5m, 5=5-10m, 6=10-15m, 7=15-20m, 8=20-35m, 9=35-50m, 10=>50m

Stratum categories: T=Tree, A = SApling, E = SEedling, S = Shrub, H= Herb, N= Non-vascular

% Cover Intervals for reference: r = trace, + = <1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, >75%

Stratum	Species	% cover	C	Final species determination
N	Moss	30	C	
N	Lichen	10	C	
H	Erodium moschatum	15		
	Rumex acetosella	5		
	Trifolium (wildenovii) NIF	3	C	
	Erodium botrys	5		
	Draba verna	1	C	
	Holcus lanata (NIF)	see below		
	Cynoserus echinatus (NIF)	see below		
	(Allium) sp (NIF	1		
	Hypochearis glabra	3		
	Pseudognaphalium sp (NIF)	1	C	Micropus californica
	Plagiobothrys (nothofulvus)	<1	C	
	Soap root	<1		Chlorogalum sp.
	Acmispon (NIF)	<1		
	Saxifrag	5		
	Calandrinia ciliata	<1		Calandrinia ciliata
	Tiny geranium?	1	C	
	Clarkia (NIF)	<1	C	
	Unk grasses (NIF)	15		
	(Minuartia)	<1	C	
	(Arabis) (NIF)	<1		
	flat lved geophyte (NIF)	<1		
	Navarettia (NIF)	<1		

Unusual species: _____

entered JC 5x20

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

For Office Use:	Final database #:	Final vegetation type:	Alliance Association

Blocksburg 08

I. LOCATIONAL/ENVIRONMENTAL DESCRIPTION circle: Relevé or RA

Date: 5-8-19 | Name of recorder: Joslyn Curtis

Other surveyors:

UID: | Location Name: Hum Sun Farms

GPS name: JC Phone Elev: 1166.81ft For Relevé only: Bearing°, left axis at ID point 38° of Long / Short side

UTME 443756 UTMN 4796662 Zone: 10 NAD83 GPS error: ft./m./ PDOP 3.2

Decimal degrees: LAT 40.320702 LONG -123.693652

GPS within stand? Yes / No If No, cite from GPS to stand: distance (m) ____ bearing ° ____ inclination ° ____

and record: Base point ID _____ Projected UTMs: UTME _____ UTMN _____

Camera Name: Collector Cardinal photos at ID point: Attachment 1-4

Other photos: Attachment 5

Stand Size (acres): <1, 1-5, >5 | Plot Area (m²): 100 / _____ | Plot Dimensions 5 x 20 m | ~~RA Radius ____ m~~

Exposure, Actual °: 234 NE NW SE SW Flat Variable | Steepness, Actual °: ~15 0° 1-5° >5-25° > 25

Topography: Macro: top upper mid lower bottom | Micro: convex flat concave undulating

Geology code: _____ Soil Texture code: Clay loam | Upland or Wetland/Riparian (circle one)

% Surface cover: (Incl. outcrops) (>60cm diam) (25-60cm) (7.5-25cm) (2mm-7.5cm) (Incl sand, mud)

H_2O: 20 BA Stems: 5 Litter: 5 Bedrock: 0 Boulder: 0 Stone: 0 Cobble: 0 Gravel: 0 Fines: 70 =100%

% Current year bioturbation No Past bioturbation present? Yes / No | % Hoof punch 15

Fire evidence: Yes / No (circle one) If yes, describe in Site history section, including date of fire, if known.

Site history, stand age, comments: Patch J. effusus on hillslope spring. Patches repeating where hill topography allows water to run over. Relevé is at beginning of spring and overlooks patches downslope. This patch varies as in flows down. J. effus is densest @ top NE end of plot. As the water flows down hill there is more surface water in the SE area of the Relevé boundary but less JUEF and more MIMGUT, PLUER, + Eleoch +grass. JUEF is still dom in SW corner. There is also a section where the previous mentioned plants are dominant almost through the middle of plot. This segmentation seems to repeat w/ topology change among all the stands in this area

Disturbance code / Intensity (L,M,H): 04 / L ___/___ ___/___ ___/___ ___/___ "Other" _____/___

II. HABITAT DESCRIPTION

Tree DBH : T1 (<1" dbh), T2 (1-6" dbh), T3 (6-11" dbh), T4 (11-24" dbh), T5 (>24" dbh), T6 multi-layered (T3 or T4 layer under T5, >60% cover)

Shrub: S1 seedling (<3 yr. old), S2 young (<1% dead), S3 mature (1-25% dead), S4 decadent (>25% dead)

Herbaceous: H1 (<12" plant ht.), H2 (>12" ht.)

Desert Riparian Tree/Shrub: 1 (<2ft. stem ht.), 2 (2-10ft. ht.), 3 (10-20ft. ht.), 4 (>20ft. ht.)

Desert Palm/Joshua Tree: 1 (<1.5" base diameter), 2 (1.5-6" diam.), 3 (>6" diam.)

III. INTERPRETATION OF STAND

Field-assessed vegetation Alliance name: Juncus effusus

Field-assessed Association name (optional): _____

Adjacent Alliances/direction: _____/_____, _____/_____

Confidence in Alliance identification: L (M) H Explain: _____

Phenology (E,P,L): Herb P Shrub E Tree NA Other identification or mapping information:

J. effusus just blooming. Grass + Carex in bloom

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

Database #: Block 8 SPECIES SHEET

IV. VEGETATION DESCRIPTION

% NonVasc cover: <1 **Total % Vasc Veg cover:** 85

% Cover - Conifer tree / Hardwood tree: ~~___~~ / ~~___~~ Regenerating Tree: ~~___~~ Shrub: 0.5 Herbaceous: 85

Height Class - Conifer tree / Hardwood tree: ___ / ___ Regenerating Tree: ___ Shrub: 3 Herbaceous: 2

Height classes: 1=<1/2m, 2=1/2-1m, 3=1-2m, 4=2-5m, 5=5-10m, 6=10-15m, 7=15-20m, 8=20-35m, 9=35-50m, 10=>50m

Stratum categories: T=Tree, A = SApling, E = SEedling, S = Shrub, H= Herb, N= Non-vascular

% Cover Intervals for reference: r = trace, + = <1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, >75%

Stratum	Species	% cover	C	Final species determination
H	Juncus (effusus)	50	C	
	Juncus patens	18		
	Carex thick stem	1	C	Carex densa
	Carex (praegracilis)	1	C	
	Carex female segments	2	C	
	Glyceria (panicle grass)	17	C	Glyceria x occidentalis
	Mimulus guttatus	7		
	Azolla filiculoides	2	C	
	Lemna minor	2	C	
	Mentha pelugia	1		
	Veronica americana	3	C	
	Geranium dissectum	0.5		
	Boraginaceae like plagio scorpioid inf. blue-white	1	C	Myosotis discolor
	Carduus pycnocephalus	.5		
	Pteridium aquilinum	1		
	Nasturtium / Cardamine	<1	C	Cardamine oligosperma
	Sonchus asper	<1		
	Scarlet pimpernel	<1		Lysimachia arvensis
	Vicia sativa	<1	C	
	Hypericum perforatum	<1		
	Medicago polymorpha	<1		
	Epilobium	<1	C	
	Cirsium sp. NIF	<1	P	
	Galium (aparine) NIF	<1	C	
	Apiaceae (Torilis?) NIF	<1	C	
	Rumex (crispus) NIF grazed	<1		
	~~Plesiopea on catharticus~~	~~0.5~~	~~C~~	~~(var. davyi) Glyceria~~
	Eleocharis	0.5	C	
	Unk Robust Hairy grass	1	C	Anthoxanthum odoratum
	Cyperus eragrostis ? or tenuis	1	C	
S	Rubus ursinus	<1	P	
S	Toxicodendron div	<1		
S	Rosa sp	<1	P	Rosa rubiginosa
N	Moss	<1		

Unusual species: _____

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

For Office Use:	Final database #:	Final vegetation type:	Alliance Association

I. ENVIRONMENTAL DESCRIPTION circle: **Relevé** or **RA**

Blocksburg 09

Date: 5-8-19	Name of recorder: JTC
	Other surveyors:
UID:	Location Name: Hum Sun Farms

GPS name: Collector Elev: 1889 ft. For Relevé only: **Bearing°**, left axis at ID point ____ **of Long / Short** side

UTME 440807 **UTMN** 4463560 **Zone: 10** **NAD83** GPS error: **ft. / m** / **PDOP** 3.2

Decimal degrees: **LAT** 40.320475 **LONG** -123.696708

GPS within stand? Yes / No If No, cite from GPS to stand: distance (m) ____ bearing ° ____ inclination ° ____

and record: **Base point ID** ____ **Projected UTMs: UTME** ____ **UTMN** ____

Camera Name: Collector **Cardinal photos at ID point:** Attachment 1-4

Other photos: Attachment 5, 6, 7

Stand Size (acres): <1, 1-5, >5 | **Plot Area (m²):** 100 / ____ | **Plot Dimensions** ___ x ___ m | **RA Radius** 60 m

Exposure, Actual °: 220 NE NW SE SW Flat Variable | **Steepness, Actual °:** 30 0° 1-5° >5-25° ≥25

Topography: Macro: top upper mid lower bottom | **Micro:** convex flat concave undulating

Geology code: ____ **Soil Texture code:** Clay | Upland or **Wetland/Riparian** (circle one)

% Surface cover: (Incl. outcrops) (>60cm diam) (25-60cm) (7.5-25cm) (2mm-7.5cm) (Incl sand, mud)

H_2O: 0 **BA Stems:** 3 **Litter:** 43 **Bedrock:** | **Boulder:** | **Stone:** 5 **Cobble:** 7 **Gravel:** 15 **Fines:** 25 =100%

% Current year bioturbation 1 **Past bioturbation present?** Yes / No | **% Hoof punch** 2

Fire evidence: Yes / No (circle one) If yes, describe in Site history section, including date of fire, if known.

Site history, stand age, comments: There is a rocky outcrop just N-NE of pt. This rocky area has a lot of AESCAL. Just SW of pt is a concave bowl w/ a clumping of PSEMEN. To the SE there are more QUKE + QUGA, UMCA, ARME + ACEMAC (Acer big tree farther down slope S of here) Lots of downed trees. More cover of PSEMEN to the NW. + some standing snags

Disturbance code / Intensity (L,M,H): 04/L ___/___ ___/___ ___/___ ___/___ **"Other"** ____/___

II. HABITAT DESCRIPTION

Tree DBH : T1 (<1" dbh), **T2** (1-6" dbh), **T3** (6-11" dbh), **T4** (11-24" dbh), **T5** (>24" dbh), **T6** multi-layered (T3 or T4 layer under T5, >60% cover)

Shrub: S1 seedling (<3 yr. old), **S2** young (<1% dead), **S3** mature (1-25% dead), **S4** decadent (>25% dead)

Herbaceous: H1 (<12" plant ht.), **H2** (>12" ht.)

Desert Riparian Tree/Shrub: 1 (<2ft. stem ht.), **2** (2-10ft. ht.), **3** (10-20ft. ht.), **4** (>20ft. ht.)

Desert Palm/Joshua Tree: 1 (<1.5" base diameter), **2** (1.5-6" diam.), **3** (>6" diam.)

III. INTERPRETATION OF STAND

Field-assessed vegetation Alliance name: PSEMEN

Field-assessed Association name (optional): ____

Adjacent Alliances/direction: Avena fatua - Filago gallica-B. hord ____/____

Confidence in Alliance identification: L / M / H **Explain:** too many hardwoods that aren't

Phenology (E,P,L): Herb P **Shrub** P **Tree** P **Other identification or mapping information:** NOTDEN

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

Database #: Block 9 SPECIES SHEET

IV. VEGETATION DESCRIPTION

% NonVasc cover: 25 **Total % Vasc Veg cover:** 85

% Cover - **Conifer tree / Hardwood tree:** 35 / 40 **Regenerating Tree:** 20 **Shrub:** 4 **Herbaceous:** 35

Height Class - Conifer tree / Hardwood tree: 9 / 8 **Regenerating Tree:** 5 **Shrub:** 3 **Herbaceous:** 1

Height classes: 1=<1/2m, 2=1/2-1m, 3=1-2m, 4=2-5m, 5=5-10m, 6=10-15m, 7=15-20m, 8=20-35m, 9=35-50m, 10=>50m

Stratum categories: T=Tree, A = SApling, E = SEedling, S = Shrub, H= Herb, N= Non-vascular

% Cover Intervals for reference: r = trace, + = <1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, >75%

Stratum	Species	% cover	C	Final species determination
T/SA/SE	PSME	35/10/5		
T SE	QUE GAR	15/1	C	
T	ARB MEN	10		
T SE	UMB CAL	3/+		
T SE	AES CAL	6/+		
T/SA/SE	Acer (macro)	3/+/+	P	
SE	NOT DEN	+	C	
T SE	QUE KEL	6/+	C	
S	Ribes sp(NIF)	+		
S	Rosa gymnocarpa var. gymno...	+		
S	Lonicera hispidula	1		
S	Toxicodendron div	3		
H	Pteridium aquilinum	+		
H	Cardamine Californica	+		
H	Todillis (NIF)	1		
H	Claytonia	3	C	
H	Sword fern	2		Polystichum munitum
H	Sanicula crass	20	C	
H	Galium aparine	1		
H	Osmorhiza bert	5	C	
	Nemophylla	+		
	Polypodium	+		
	Pentagrama	+		
	Elymus glaucus	3	C	
	Bromus (carinatus)	2	C+P	
	Stachys (NIF	1		
	Hieracium albiflorum	1		Hieracium albiflorum
	Duchesnea indica	+		
	bulbed grass	+	C	(Melica subulata)
	Lathyrus NIF	1		
	Vicia sativa NIF	2		
	Ranunc Cal	3		
↓	Anthoxanthum odo	+	C	
N	Lichen	5		
N	moss	20		

Unusual species: _____

Combined Vegetation Rapid Assessment and Releve Field Form

(Revised March 27, 2018)

For Office Use:	Final database #:	Final vegetation type:	Alliance Association

I. ENVIRONMENTAL DESCRIPTION circle: Releve or (RA)

Blocksburg 10

Date: 5-8-19 | Name of recorder: JTC

Other surveyors:

UID: | Location Name: Hum Sun Farms

GPS name: Collector Elev: 2108ft. ~~For Releve only: Bearing°, left axis at ID point ____ of Long / Short~~ side

UTME 440940 UTMN 4463959 Zone: 10 NAD83 GPS error: ft./(m.) PDOP 3.2

Decimal degrees: LAT 40.324074 LONG 123.695194

GPS within stand? (Yes) / No If No, cite from GPS to stand: distance (m) ____ bearing ° ____ inclination ° ____

and record: Base point ID _____ Projected UTMs: UTME _____ UTMN _____

Camera Name: iPhone Cardinal photos at ID point: ..._175208 thru ..._175246

Other photos: personal

Stand Size (acres): <1, 1-5, (>5) | Plot Area (m²): 100 / _____ | Plot Dimensions ____ x ____ m | RA Radius 60 m

Exposure, Actual °: 37 (NE) NW SE SW Flat Variable | Steepness, Actual °: 22 0° 1-5° (>5-25°) > 25

Topography: Macro: top (upper) mid lower bottom | Micro: convex flat concave (undulating)

Geology code: _____ Soil Texture code: Clay | (Upland) or Wetland/Riparian (circle one)

% Surface cover: (Incl. outcrops) (>60cm diam) (25-60cm) (7.5-25cm) (2mm-7.5cm) (Incl sand, mud)

H_20: 0 BA Stems: 2 Litter: 47 Bedrock: 0 Boulder: 0 Stone: 0 Cobble: | Gravel: 15 Fines: 35 =100%

% Current year bioturbation 0 Past bioturbation present? Yes / (No) | % Hoof punch 0

Fire evidence: Yes / (No) (circle one) If yes, describe in Site history section, including date of fire, if known.

Site history, stand age, comments: Mix of PSEMEN-Bay + NOTDEN on this NE Side of ridge. Lots of sorrel w/ POLMUN + bracken + other herbs growing up through it. Lots of downed trees, branches + stumps. Must have been selectively thinned. Baby/resprout NOTDEN coming up. This side of ridge doesn't seem to get much grazing.

Moss under herbs + on soil + downed trees

Disturbance code / Intensity (L,M,H): 27 / H ___/___ ___/___ ___/___ ___/___ "Other" _____/___

II. HABITAT DESCRIPTION

Tree DBH : T1 (<1" dbh), T2 (1-6" dbh), T3 (6-11" dbh), (T4 (11-24" dbh), T5 (>24" dbh), T6 multi-layered (T3 or T4 layer under T5, >60% cover)

Shrub: S1 seedling (<3 yr. old), (S2 young (<1% dead), S3 mature (1-25% dead), S4 decadent (>25% dead)

Herbaceous: (H1 (<12" plant ht.), H2 (>12" ht.)

Desert Riparian Tree/Shrub: 1 (<2ft. stem ht.), 2 (2-10ft. ht.), 3 (10-20ft. ht.), 4 (>20ft. ht.)

Desert Palm/Joshua Tree: 1 (<1.5" base diameter), 2 (1.5-6" diam.), 3 (>6" diam.)

III. INTERPRETATION OF STAND

Field-assessed vegetation Alliance name: PSEMEN-NOTDEN

Field-assessed Association name (optional): _____

Adjacent Alliances/direction: _____/_____, _____/_____

Confidence in Alliance identification: L M (H) Explain: _____

Phenology (E,P,L): Herb P Shrub P Tree P Other identification or mapping information: _____

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

Database #: Block 10 SPECIES SHEET

IV. VEGETATION DESCRIPTION

% NonVasc cover: 32 **Total % Vasc Veg cover:** 75

% Cover - **Conifer tree / Hardwood tree:** 40/20 **Regenerating Tree:** 10 **Shrub:** + **Herbaceous:** 55

Height Class - Conifer tree / Hardwood tree: 9/8 **Regenerating Tree:** 3 **Shrub:** 3 **Herbaceous:** 1

Height classes: 1=<1/2m, 2=1/2-1m, 3=1-2m, 4=2-5m, 5=5-10m, 6=10-15m, 7=15-20m, 8=20-35m, 9=35-50m, 10=>50m

Stratum categories: T=Tree, A = SApling, E = SEedling, S = Shrub, H= Herb, N= Non-vascular

% Cover Intervals for reference: r = trace, + = <1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, >75%

Stratum	Species	% cover	C	Final species determination
T/SA/SE	PSME	40/1/1	N	Moss 30
T/SA/SE	NOTDEN	10/1/8	N	Lichen 2
T/SA/SE	UMBCAL	10/1/+		
T/ SE	ACEMAC	1/+		
H	Trillium ovatum	+	C	
S	Rubus Ursinus	+		
S	Berberis (nervosa)	+		
S	Vaccinium parvifolium	+		
S	Vaccinium ovata	+		
S	Whipplea modesta	+		
H	Unk whorled leaves	5	C	Lysimachia latifolia
	bulb grass (NIF)	2	C	(Melica subulata)
	Saxifragaceae (NIF)	+		
	Sanicula crass	0.5		
	Bracken fern	5		Pteridium aquilinum
	Unk gnaphalium	+	C	
H	Unk thin lf bunchgrass	2	C	
	Galium aparine	+	C	
	Poly Mun	20		
H	Oxalis oregana	40	C	
	Bromus (carinatus)	2	C	collected previously
	Ozmorhiza berteroii	+		
	Adenocaulon bicolor	+		
	Calypso bulbosa var. occidentalis	+		
	Nemophylla	+		
	Polypodium	+		
	Scoliopus bigelovii	+		
	Claytonia perfoliata	+		
	Galium sp. mucronate lvs	+		G. californicum
	Stachys	+		
	Lathyrus NIF	1		
	Yerba buena	+		Clinopodium douglasii
	snake berry	+		Duchesnea indica
	Iris	+		
V	Viola sempervirens	+		

Unusual species: Listera cordata +

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

For Office Use:	Final database #:	Final vegetation type:	Alliance Association

RONMENTAL DESCRIPTION circle: **Relevé or RA**

Blocksburg 11

Date: 5-9-19	**Name of recorder:** Joslyn Curtis
	Other surveyors:
UID:	**Location Name:** Hum Sun Farm

GPS name: Collector Elev: 1283 ft. For Relevé only: **Bearing°**, left axis at ID point____ **of Long / Short** side

UTME 444122 **UTMN** 4462267 **Zone:** 10 **NAD83** GPS error: **ft./m./ PDOP** 3.2

Decimal degrees: **LAT** 40.309051 **LONG** 123.657590

GPS within stand? Yes / No If ~~No, cite from GPS to stand:~~ distance (m)____ bearing °____ inclination °____

and record: ~~**Base point ID**~~ _____ ~~**Projected UTMs: UTME**~~ _____ ~~**UTMN**~~ _____

Camera Name: Collector **Cardinal photos at ID point:** Attachment 1-4

Other photos:

Stand Size (acres): <1, 1-5, >5 | ~~**Plot Area (m²): 100 /** _____~~ | ~~**Plot Dimensions** ___ x ___ **m**~~ | **RA Radius** 40 **m**

Exposure, Actual °: 247 NE NW SE SW Flat Variable | **Steepness, Actual °:** 4 0° 1-5° > 5-25° > 25

Topography: Macro: top upper mid lower bottom | **Micro:** convex flat concave undulating

Geology code: _____ **Soil Texture code:** Sand | **Upland** or **Wetland/Riparian** (circle one)

% Surface cover: (Incl. outcrops) (>60cm diam) (25-60cm) (7.5-25cm) (2mm-7.5cm) (Incl sand, mud)

H_2O: 40 **BA Stems:** | **Litter:** 7 **Bedrock:** 0 **Boulder:** 0 **Stone:** 10 **Cobble:** 10 **Gravel:** 10 **Fines:** 22 =100%

% Current year bioturbation 0 **Past bioturbation present?** Yes / No | **% Hoof punch** 0

Fire evidence: Yes / No (circle one) If yes, describe in Site history section, including date of fire, if known.

more Alders where creek curves. Cobble bars left up

Site history, stand age, comments: This stand describes the immediate creek & to top of bank. Salix, Fraxinus & Alnus don't seem to past steep top of bank. Bank is eroded & undercut in some places. This time of yr there is about 10 inches of water flowing with deeper pools & some shallower spots. Yellow legged frog & egg masses found a mile down stream near rd crossing. There are QUEKELL PSEMEN & above top of bank. This is a Cooper creek that flows into Larabee creek. Pt is located in a wide spot of the drainage where a cobble bar is. East of here the creek opens up & becomes less wooded. Some Bay is in the top of bank but more are above. Creek narrows & thickens to West

Disturbance code / Intensity (L,M,H): ___/___ ___/___ ___/___ ___/___ ___/___ **"Other"** _____/___

II. HABITAT DESCRIPTION

Tree DBH : T1 (<1" dbh), T2 (1-6" dbh), T3 (6-11" dbh), T4 (11-24" dbh), T5 (>24" dbh), T6 multi-layered (T3 or T4 layer under T5, >60% cover)

Shrub: S1 seedling (<3 yr. old), S2 young (<1% dead), S3 mature (1-25% dead), S4 decadent (>25% dead)

Herbaceous: H1 (<12" plant ht.), H2 (>12" ht.)

Desert Riparian Tree/Shrub: 1 (<2ft. stem ht.), 2 (2-10ft. ht.), 3 (10-20ft. ht.), 4 (>20ft. ht.)

~~**Desert Palm/Joshua Tree:** 1 (<1.5" base diameter), 2 (1.5-6" diam.), 3 (>6" diam.)~~

III. INTERPRETATION OF STAND

Field-assessed vegetation Alliance name: Salix

Field-assessed Association name (optional): _____

Adjacent Alliances/direction: PSEMEN / S, UMBCAL / N

Confidence in Alliance identification: L M H **Explain:** _____

Phenology (E,P,L): Herb P Shrub P Tree P **Other identification or mapping information:**

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

SPECIES SHEET

Database #: Block 11

IV. VEGETATION DESCRIPTION

% NonVasc cover: 3 **Total % Vasc Veg cover:** 50

% Cover - **Conifer tree / Hardwood tree:** 0.5 / 43 **Regenerating Tree:** 7 **Shrub:** 5 **Herbaceous:** 6

Height Class - Conifer tree / Hardwood tree: 9 / 6 **Regenerating Tree:** ____ **Shrub:** 3 **Herbaceous:** 2

Height classes: 1=<1/2m, 2=1/2-1m, 3=1-2m, 4=2-5m, 5=5-10m, 6=10-15m, 7=15-20m, 8=20-35m, 9=35-50m, 10=>50m

Stratum categories: T=Tree, A = SApling, E = SEedling, S = Shrub, H= Herb, N= Non-vascular

% Cover Intervals for reference: r = trace, + = <1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, >75%

Stratum	Species	% cover	C	Final species determination
T/SA/SE	Salix	25/1/+		
T/SA/SE	Fraxinus latifolia	10/+/1		
T/SA/SE	UMCA	7/+/+		
T/SA/SE	Alnus rhombifolia	1/2/2		
T/SA/SE	Acer macro	+/+/+		
T/SA	PSEMEN	.5/.5		
T	QUEORE	+/		
SA	ARBMEN	+		
SE	AESCAL	+		
S	Rubus armeniacus	2		
S	TODI	+		
S	R. ursinus	3		
H	Rumex Cross	+		
H	Sanicula Cross	+		
H	Unk grass NIF	2		
|	Mentha pulegium	+		
|	Slat headed grasses	+		Anthoxanthum odorata
|	Artemisia douglasiana	3		
H	Equisetum branch whorls	0.5		Equisetum arvense
|	Osmorhiza berteroi	+		
V	Stachys	0.5		
N	Moss	3		

Unusual species: _____

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

For Office Use:	Final database #:	Final vegetation type:	Alliance Association

I. LOCATIONAL/ENVIRONMENTAL DESCRIPTION — circle: **Relevé** or (**RA**)

Blocksburg 12

Date: 5-9-19 | Name of recorder: JTC

Other surveyors:

UID: | Location Name: Hum Sun Farm

GPS name: Collector Elev: 1281 ft. For Relevé only: **Bearing°**, left axis at ID point____ **of Long / Short** side

UTME 443926 **UTMN** 4462337 **Zone:** 10 **NAD83** GPS error: **ft./ m./ PDOP** 3.2

Decimal degrees: **LAT** 40.309667 **LONG** -123.659908

GPS within stand? (**Yes**) / **No** If No, cite from GPS to stand: distance (m) ____ bearing ° ____ inclination ° ____

and record: **Base point ID** _____ **Projected UTMs: UTME** _____ **UTMN** _____

Camera Name: J Phone **Cardinal photos at ID point:** ...-143200 thru ...-143245

Other photos: personal

Stand Size (acres): <1, (1-5), >5 | **Plot Area (m²):** ~~100~~ / _____ | **Plot Dimensions** ___ x ___ m | **RA Radius** 20 m

Exposure, Actual °: 320 **NE** (**NW**) **SE SW Flat Variable** | **Steepness, Actual °:** 4 **0°** (**1-5°**) **> 5-25° > 25**

Topography: Macro: top upper mid lower (bottom) | **Micro:** convex flat (concave) undulating

Geology code: _____ **Soil Texture code:** Sand | **Upland** or ~~**Wetland/Riparian**~~ (circle one)

% Surface cover: (Incl. outcrops) (>60cm diam) (25-60cm) (7.5-25cm) (2mm-7.5cm) (Incl sand, mud)

H_2O: 20 **BA Stems:** 1 **Litter:** 10 **Bedrock:** 0 **Boulder:** 0 **Stone:** 3 **Cobble:** 30 **Gravel:** 16 **Fines:** 20 **=100%**

% Current year bioturbation 0 **Past bioturbation present? Yes / (No)** | **% Hoof punch** 0

Fire evidence: Yes / (No) (circle one) If yes, describe in Site history section, including date of fire, if known.

Site history, stand age, comments: Creek @ wide bed + gravel bars Deep pool @ bend. Alnus is more consistent through creek channel Salix more cover in this open bend in Creek. to the SE is a grassy flood terrace above a gravel flood channel.

Disturbance code / Intensity (L,M,H): ___/___ ___/___ ___/___ ___/___ ___/___ **"Other"** _____/___

II. HABITAT DESCRIPTION

Tree DBH : **T1** (<1" dbh), **T2** (1-6" dbh), **T3** (6-11" dbh), **T4** (11-24" dbh), **T5** (>24" dbh), **T6** multi-layered (T3 or T4 layer under T5, >60% cover)

Shrub: **S1** seedling (<3 yr. old), **S2** young (<1% dead), **S3** mature (1-25% dead), **S4** decadent (>25% dead)

Herbaceous: **H1** (<12" plant ht.), **H2** (>12" ht.)

Desert Riparian Tree/Shrub: **1** (<2ft. stem ht.), **2** (2-10ft. ht.), **3** (10-20ft. ht.), **4** (>20ft. ht.)

Desert Palm/Joshua Tree: **1** (<1.5" base diameter), **2** (1.5-6" diam.), **3** (>6" diam.)

III. INTERPRETATION OF STAND

Field-assessed vegetation Alliance name: Alnus rhomb

Field-assessed Association name (optional): _____

Adjacent Alliances/direction: _____/_____, _____/_____

Confidence in Alliance identification: L M (H) Explain: _____

Phenology (E,P,L): Herb P **Shrub** P **Tree** P **Other identification or mapping information:**

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

Database #: Block 12 SPECIES SHEET

IV. VEGETATION DESCRIPTION

% NonVasc cover: 0 **Total % Vasc Veg cover:** 32

% Cover - **Conifer tree / Hardwood tree:** +/21 **Regenerating Tree:** 3 **Shrub:** 5 **Herbaceous:** 7

Height Class - Conifer tree / Hardwood tree: 9/6 **Regenerating Tree:** 4 **Shrub:** 4 **Herbaceous:** 2

Height classes: 1=<1/2m, 2=1/2-1m, 3=1-2m, 4=2-5m, 5=5-10m, 6=10-15m, 7=15-20m, 8=20-35m, 9=35-50m, 10=>50m

Stratum categories: T=Tree, A = SApling, E = SEedling, S = Shrub, H= Herb, N= Non-vascular

% Cover Intervals for reference: r = trace, + = <1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, >75%

Stratum	Species	% cover	C	Final species determination
T/SA/SE	Alnus rhamb	10/1/1		
T/SA/SE	Salix	7/+/+		
T/ SE	Umb cal	1/+		
T/SA/	PSEMEN	+/+/		
T/SA/SE	Fraxinus latifolia	3/+/+		
S	Rubus armen	5		
H	B. diandrus	2		
	unk grass	+		
	Mentha pulegium	1		
	Equisetum arvense	2		
	Amsinkia sp NIF	+		
H	Stout headed grass	1		Anthoxanthum odorata
	Artemisia douglasiana	1		
	Mentha	+		Melissa officinale
	Sonchus asper	+		
	Hypericum	+		
	Vicia sativa	+		
	Navarretia	+		
	Bromus carinatus	+		
	Danthonia cal	+		
	Plantago lanc	+		
	~~Cyperus erag~~ Carex sp.	+		
	Unk aster	+		Leucanthemum vulgare
	Aira caryoph	+		
↓	Rumex	+		
	Avena	+		

Unusual species: _____

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

For Office Use:	Final database #:	Final vegetation type:	Alliance Association

I. ENVIRONMENTAL DESCRIPTION — circle: **Relevé** or **RA**

Blocksburg 13

Date: 5-9-19	**Name of recorder:** JTC
	Other surveyors:
UID:	**Location Name:** Hum Sun Farm

GPS name: Collector Elev: 1263 ft. For Relevé only: **Bearing°**, left axis at ID point____ **of Long / Short** side

UTME 443886 **UTMN** 4462911 **Zone:** 10 **NAD83** GPS error: **ft./ m.** **PDOP** 3.2

Decimal degrees: **LAT** 40.314836 **LONG** -123.660425

GPS within stand? Yes / No If No, cite from GPS to stand: distance (m)____ bearing °____ inclination °____

and record: **Base point ID**_____ **Projected UTMs: UTME**_____ **UTMN**_____

Camera Name: J personal **Cardinal photos at ID point:** ..._170418 thru ..._170444

Other photos: phone

Stand Size (acres): <1, 1-5, >5 | **Plot Area (m²):** ~~100 /~~ _____ | **Plot Dimensions** ___ x ___ m | **RA Radius** 30 m

Exposure, Actual °: 359° NE NW SE SW Flat Variable | **Steepness, Actual °:** 4 0° 1-5° >5-25° >25

Topography: Macro: top upper mid lower bottom | **Micro:** convex flat concave undulating

Geology code:_____ **Soil Texture code:** Sand | **Upland** or **Wetland/Riparian** (circle one)

% Surface cover: (Incl. outcrops) (>60cm diam) (25-60cm) (7.5-25cm) (2mm-7.5cm) (Incl sand, mud)

H_2O: 35 **BA Stems:** 1 **Litter:** 7 **Bedrock:** 5 **Boulder:** 10 **Stone:** 2 **Cobble:** 10 **Gravel:** 10 **Fines:** 20 =100%

% Current year bioturbation 0 **Past bioturbation present?** Yes / No | **% Hoof punch** 0

Fire evidence: Yes / No (circle one) If yes, describe in Site history section, including date of fire, if known.

Site history, stand age, comments: Meandering creek lined w/ Alders. Willows + Fraxinus also dot the channel in fluctuating density

Disturbance code / Intensity (L,M,H): ___/___ ___/___ ___/___ ___/___ ___/___ **"Other"**_____/___

II. HABITAT DESCRIPTION

Tree DBH : **T1** (<1" dbh), **T2** (1-6" dbh), **T3** (6-11" dbh), **T4** (11-24" dbh), **T5** (>24" dbh), **T6** multi-layered (T3 or T4 layer under T5, >60% cover)

Shrub: **S1** seedling (<3 yr. old), **S2** young (<1% dead), **S3** mature (1-25% dead), **S4** decadent (>25% dead)

Herbaceous: **H1** (<12" plant ht.), **H2** (>12" ht.)

Desert Riparian Tree/Shrub: **1** (<2ft. stem ht.), **2** (2-10ft. ht.), **3** (10-20ft. ht.), **4** (>20ft. ht.)

Desert Palm/Joshua Tree: **1** (<1.5" base diameter), **2** (1.5-6" diam.), **3** (>6" diam.)

III. INTERPRETATION OF STAND

Field-assessed vegetation Alliance name: Alnus rhombifolia

Field-assessed Association name (optional):_____

Adjacent Alliances/direction:_____/_____, _____/_____

Confidence in Alliance identification: L M H **Explain:**_____

Phenology (E,P,L): Herb P Shrub P Tree P **Other identification or mapping information:**

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

Database #: Block 13 SPECIES SHEET

IV. VEGETATION DESCRIPTION

% NonVasc cover: 15 **Total % Vasc Veg cover:** 65

% Cover - **Conifer tree / Hardwood tree:** + / 63 **Regenerating Tree:** 8 **Shrub:** 13 **Herbaceous:** 14

Height Class - Conifer tree / Hardwood tree: 9 / 6 **Regenerating Tree:** 3 **Shrub:** 2 **Herbaceous:** 1

Height classes: 1=<1/2m, 2=1/2-1m, 3=1-2m, 4=2-5m, 5=5-10m, 6=10-15m, 7=15-20m, 8=20-35m, 9=35-50m, 10=>50m

Stratum categories: T=Tree, A = SApling, E = SEedling, S = Shrub, H= Herb, N= Non-vascular

% Cover Intervals for reference: r = trace, + = <1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, >75%

Stratum	Species	% cover	C	Final species determination
T/SA/SE	Alnus rhomb	40/5/1		
T/SA/SE	Salix	10/1/+		
T	QUEGAR	1		
T	PSEMEN	1		
T	ARBMEN	+		
T	UMBCAL	5		
T/ SE	Fraxinus lati	5/1		
T/ SE	Acer macrophylla	1/+		
S	Rubus armen	10		
	Ceanothus	+		
	TODI	3		
	Rosa NII	+		
	Lonicera hispidula	1		
H	Rumex	+		
	Mentha	+		
	Carex / Cyperus	+		
	Hieracleum	1		
	Stout head grass	3		
	Unk grass hairy nodes	0.5		
	Sanicula crass	+		
	Equisetum arv	4		
	Pink polemone	+		Collomia heterophylla
	Trif dubium	1		
	Danthonia cal	+		
	Unk grass glab nodes no awn panicle	1		
	trout lily	2		Scoliopus bigelovii
	Bellis perene	+		
	unk grass fine lves	3		
N	Moss	15		

Unusual species: _____

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

For Office Use:	Final database #:	Final vegetation type:	Alliance Association

RONMENTAL DESCRIPTION circle: **Relevé** or **(RA)**

Blocksburg 14

Date: 5-10-19	**Name of recorder:** JTC
	Other surveyors:
UID:	**Location Name:** Hum Sun Farms

GPS name: Collector Elev: 1997ft For Relevé only: **Bearing°**, left axis at ID point____ **of Long / Short** side

UTME 441866 **UTMN** 4462665 **Zone: 10** **NAD83** GPS error: **ft./(m.)** **PDOP** 3.2

Decimal degrees: **LAT** 40.312484 **LONG** 123.684173

GPS within stand? (Yes) / ~~No~~ If No, cite from GPS to stand: distance (m) ____ bearing ° ____ inclination ° ____

and record: **Base point ID** _____ **Projected UTMs: UTME** _____ **UTMN** _____

Camera Name: Personal **Cardinal photos at ID point:** ..._113323 thru ..._113416

Other photos: phone length to eastern tip

Stand Size (acres): <1, (1-5,) >5 | ~~**Plot Area (m²): 100 /** _____~~ | **Plot Dimensions** ___ x ___ m | **RA Radius** 30 m

Exposure, Actual °: 307 NE (NW) SE SW Flat Variable | **Steepness, Actual °:** 17 0° 1-5° (>5-25°) > 25

Topography: Macro: top upper (mid) lower bottom | **Micro:** convex flat (concave) undulating

Geology code: _____ **Soil Texture code:** Silty clay | **Upland** or **(Wetland/Riparian)** (circle one)

% Surface cover: (Incl. outcrops) (>60cm diam) (25-60cm) (7.5-25cm) (2mm-7.5cm) (Incl sand, mud)

H_20: 3 **BA Stems:** 2 **Litter:** 74 **Bedrock:** 0 **Boulder:** 0 **Stone:** 1 **Cobble:** 5 **Gravel:** 5 **Fines:** 10 **=100%**

% Current year bioturbation _____ **Past bioturbation present? Yes / No** | **% Hoof punch** 0

Fire evidence: Yes / (No) (circle one) If yes, describe in Site history section, including date of fire, if known.

Site history, stand age, comments: Deer was bedding down in creek. This drainage is domicated by UMBCAL. ACEMAC intersperse @ semi-regular intervals. PSEMEN surrounds & intergrades farther away from drainage & on the slopes leading down to drainage section. There is more herbaceous veg on the South-facing slope than on the N facing slope. Mostly POLMUN on N facing & Grasses etc on S facing

Disturbance code / Intensity (L,M,H): 04 / L ___/___ ___/___ ___/___ ___/___ **"Other"** _____/___

II. HABITAT DESCRIPTION

Tree DBH : T1 (<1" dbh), **T2** (1-6" dbh), **T3** (6-11" dbh), **T4** (11-24" dbh), **T5** (>24" dbh), **T6** multi-layered (T3 or T4 layer under T5, >60% cover)

Shrub: S1 seedling (<3 yr. old), **S2** young (<1% dead), **S3** mature (1-25% dead), **S4** decadent (>25% dead)

Herbaceous: H1 (<12" plant ht.), **H2** (>12" ht.)

Desert Riparian Tree/Shrub: 1 (<2ft. stem ht.), **2** (2-10ft. ht.), **3** (10-20ft. ht.), **4** (>20ft. ht.)

Desert Palm/Joshua Tree: 1 (<1.5" base diameter), **2** (1.5-6" diam.), **3** (>6" diam.)

III. INTERPRETATION OF STAND

Field-assessed vegetation Alliance name: Bay

Field-assessed Association name (optional): _____

Adjacent Alliances/direction: _____/_____, _____/_____

Confidence in Alliance identification: L (M) H **Explain:** _____

Phenology (E,P,L): Herb P **Shrub** P **Tree** P **Other identification or mapping information:**

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

Database #: Block 14 SPECIES SHEET

IV. VEGETATION DESCRIPTION

% NonVasc cover: 41 **Total % Vasc Veg cover:** 90

% Cover - **Conifer tree / Hardwood tree:** 2 / 85 **Regenerating Tree:** 3 **Shrub:** 10 **Herbaceous:** 20

Height Class - Conifer tree / Hardwood tree: 9 / 8 **Regenerating Tree:** 2 **Shrub:** 2 **Herbaceous:** 1

Height classes: 1=<1/2m, 2=1/2-1m, 3=1-2m, 4=2-5m, 5=5-10m, 6=10-15m, 7=15-20m, 8=20-35m, 9=35-50m, 10=>50m

Stratum categories: T=Tree, A = SApling, E = SEedling, S = Shrub, H= Herb, N= Non-vascular

% Cover Intervals for reference: r = trace, + = <1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, >75%

Stratum	Species	% cover	C	Final species determination
T/SA/SE	UMBCAL	80/+/3		
T/SA/SE	ACEMAC	7/+/+		
T/ SE	PSEMEN	2/ +		
SE	NOTDEN	+		
N	Moss	40		
N	Lichen	1		
S	Rosa sp NIF	5		
|	TODI	5		
|				
|				
|				
|				
|				
H	Epiphytic fern	1		
|	Scoliopus bigelovii	+		
|	Viola sempervirens	3		
↓	Claytonia	+	C	
H	POLMUN	10		
|	Unk whorled lvs w/pink flws	1		Lysimachia latifolia
|	Osmorhiza berteroi	1		
|	Galium aparine	1		
|	G. sp mucronate tips	.5	C	Galium californicum
|	Sanicula crassicaulis	2		
|	Lathyris	.5		
|	Iris	+		
|	G. sp elliptic hairy	+	C	Add to this
|	Bulb grass (melica subulata)	2	C	
|	Goosefoot	+		Cardamine californica
|	Allium	+		
|	Liliaceae	+		
|	Nemophylla	.5		
↓	False solomon's seal	.5	C	Maianthemum dilatatum

Unusual species: _____

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

For Office Use:	Final database #:	Final vegetation type:	Alliance Association

I. LOCATIONAL/ENVIRONMENTAL DESCRIPTION — circle: Relevé or (RA)

Blocksburg 15

Date:	Name of recorder:
5-10-19	JTC
	Other surveyors:
UID:	Location Name: Hum Sun Farm

GPS name: Collector Elev: 1719 ft. For Relevé only: Bearing°, left axis at ID point____ of Long / Short side

UTME 443965 UTMN 4463202 Zone: 10 NAD83 GPS error: ft./(m.) PDOP 3.2

Decimal degrees: LAT 40.317392 LONG -123.671282

GPS within stand? (Yes) / No If No, cite from GPS to stand: distance (m) ____ bearing ° ____ inclination ° ____

and record: Base point ID _____ Projected UTMs: UTME _____ UTMN _____

Camera Name: J Personal Cardinal photos at ID point: 140429-140503

Other photos: Phone -140514-140549

Stand Size (acres): <1, (1-5) >5 | Plot Area (m²): 100 / _____ | Plot Dimensions ___ x ___ m | RA Radius 30 m

Exposure, Actual °: 65 (NE) NW SE SW Flat Variable | Steepness, Actual °: 14 0° 1-5° (>5-25°) >25

Topography: Macro: top upper (mid) lower bottom | Micro: convex flat concave (undulating)

Geology code: _____ Soil Texture code: _____ | (Upland) or Wetland/Riparian (circle one)

% Surface cover: (Incl. outcrops) (>60cm diam) (25-60cm) (7.5-25cm) (2mm-7.5cm) (Incl sand, mud)

H_20: 5 BA Stems: 3 Litter: 72 Bedrock: 0 Boulder: 1 Stone: 2 Cobble: 5 Gravel: 5 Fines: 7 =100%

% Current year bioturbation _____ Past bioturbation present? Yes / No | % Hoof punch 5

Fire evidence: Yes / (No) (circle one) If yes, describe in Site history section, including date of fire, if known.

Site history, stand age, comments: This stand is aiming to capture douglas fir slope adjacent to Bay drainage strings. ACER + Oaks are on the edge of stand N-NW Bays intersperse throughout but concentrate in drainage seeps, NOTDEN popping up SE of point on SE facing slope

Disturbance code / Intensity (L,M,H): 04/L 27/L ___/___ ___/___ ___/___ "Other" _____/___

II. HABITAT DESCRIPTION

Tree DBH : T1 (<1" dbh), T2 (1-6" dbh), T3 (6-11" dbh), T4 (11-24" dbh), T5 (>24" dbh), T6 multi-layered (T3 or T4 layer under T5, >60% cover)

Shrub: S1 seedling (<3 yr. old), S2 young (<1% dead), S3 mature (1-25% dead), S4 decadent (>25% dead)

Herbaceous: H1 (<12" plant ht.), H2 (>12" ht.)

Desert Riparian Tree/Shrub: 1 (<2ft. stem ht.), 2 (2-10ft. ht.), 3 (10-20ft. ht.), 4 (>20ft. ht.)

Desert Palm/Joshua Tree: 1 (<1.5" base diameter), 2 (1.5-6" diam.), 3 (>6" diam.)

III. INTERPRETATION OF STAND

Field-assessed vegetation Alliance name: PSEMEN

Field-assessed Association name (optional): _____

Adjacent Alliances/direction: Bay / SE , _____ / _____

Confidence in Alliance identification: L (M) H Explain: _____

Phenology (E,P,L): Herb P Shrub P Tree P Other identification or mapping information:

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

Database #: Block 15 SPECIES SHEET

IV. VEGETATION DESCRIPTION

% NonVasc cover: 30 **Total % Vasc Veg cover:** 90

% Cover - **Conifer tree / Hardwood tree:** 50/16 **Regenerating Tree:** 6 **Shrub:** 15 **Herbaceous:** 23

Height Class - Conifer tree / Hardwood tree: 9/8 **Regenerating Tree:** 3 **Shrub:** 3 **Herbaceous:** 2

Height classes: 1=<1/2m, 2=1/2-1m, 3=1-2m, 4=2-5m, 5=5-10m, 6=10-15m, 7=15-20m, 8=20-35m, 9=35-50m, 10=>50m

Stratum categories: T=Tree, A = SApling, E = SEedling, S = Shrub, H= Herb, N= Non-vascular

% Cover Intervals for reference: r = trace, + = <1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, >75%

Stratum	Species	% cover	C	Final species determination
T/SA/SE	PSEMEN	50/2/+		
T/SA/SE	UMBCAL	10/5/1		
T/—	ACEMAC	3/—		
T/- SE	QUE KEL	1/+		
T/SA/SE	NOTDEN	2/1/+		
S	(Symphoro carpus) ?NIF	+	C	
S	Rosa sp	4		
S	TODI	7		
S	Lonicera hisp	4		
H	Oxalis oregana	1		
|	Lysimachia latifolia	1		
|	Trium ovatum	+		
|	Alium sp NIF	1		
|	Galium (Cal)?	1		
H	Duchesnea indica	1		
H	POLMUN	7		
|	Scoliopus bigelovii	1		
|	Sanicula Crass	2		
|	(Melica subulata)	6		
|	Osmorhiza bertolii	3		
|	Pteridium aquilinum	1		
|	Viola beckwithii	2	C	
|	Lady fern?	+	C	
|	Liliaceae	1		
|	Nemophylla	+	C	
|	five sided lf Army shield	+	C	Vancouveria hexandra
|	Unk fuzzy thing Pic from the trace plot	+	P	Hieracium albiflorum
↓	Lathyrus	+		
N	Moss	30		
N	Liken	+		

Unusual species: _____

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

For Office Use:	Final database #:	Final vegetation type:	Alliance Association

I. ENVIRONMENTAL DESCRIPTION circle: Relevé or RA

Blocksburg 16

Date: 6-4-19 | Name of recorder: Joslyn Curtis

Other surveyors:

UID: | Location Name: Hum Sun Farm

GPS name: Collector Elev: 2124 ft For Relevé only: Bearing°, left axis at ID point 360 of Long / Short side

UTME 440856 UTMN 4463845 Zone: 10 NAD83 GPS error: ft./m. PDOP ~3.2m

Decimal degrees: LAT 40.323040 LONG -123.696167

GPS within stand? Yes / No If No, cite from GPS to stand: distance (m) ____ bearing ° ____ inclination ° ____

and record: Base point ID _____ ~~Projected UTMs: UTME~~ _____ UTMN _____

Camera Name: Iphone Cardinal photos at ID point:

Other photos:

Stand Size (acres): <1, 1-5, >5 | Plot Area (m²): 100 / _____ | Plot Dimensions 10 x 10 m | ~~RA Radius~~ ___ m

Exposure, Actual °: 250 NE NW SE SW Flat Variable | Steepness, Actual °: 20 0° 1-5° >5-25° > 25

Topography: Macro: top upper mid lower bottom | Micro: convex flat concave undulating

Geology code: Unk. Soil Texture code: Silty Clay | Upland or Wetland/Riparian (circle one)

% Surface cover: (Incl. outcrops) (>60cm diam) (25-60cm) (7.5-25cm) (2mm-7.5cm) (Incl sand, mud)

H_2O: 0 BA Stems: 2 Litter: 63 Bedrock: 0 Boulder: 0 Stone: 0 Cobble: 0 Gravel: <1 Fines: 35 =100%

% Current year bioturbation 2 Past bioturbation present? Yes / No | % Hoof punch 0

Fire evidence: Yes / No (circle one) If yes, describe in Site history section, including date of fire, if known.

Site history, stand age, comments: On the upper SW slope of ridge. Top/flat area of ridge seems to transition into higher cover of non-natives & DANCAL becomes a smaller component. The community is a mosaic w/ some patches being almost solid AGRSTO w/ other areas having none w/ very high cover of DANCAL. Lots of overlap especially over HYPRAD leaves & TRISUB

Disturbance code / Intensity (L,M,H): 04 / L ___/___ ___/___ ___/___ ___/___ "Other" _____/___

II. HABITAT DESCRIPTION

~~Tree DBH~~: T1 (<1" dbh), T2 (1-6" dbh), T3 (6-11" dbh), T4 (11-24" dbh), T5 (>24" dbh), T6 multi-layered (T3 or T4 layer under T5, >60% cover)

Shrub: S1 seedling (<3 yr. old), S2 young (<1% dead), S3 mature (1-25% dead), S4 decadent (>25% dead)

Herbaceous: H1 (<12" plant ht.), H2 (>12" ht.)

~~Desert Riparian Tree/Shrub: 1 (<2ft. stem ht.), 2 (2-10ft. ht.), 3 (10-20ft. ht.), 4 (>20ft. ht.)~~

~~Desert Palm/Joshua Tree: 1 (<1.5" base diameter), 2 (1.5-6" diam.), 3 (>6" diam.)~~

III. INTERPRETATION OF STAND

Field-assessed vegetation Alliance name: Danthonia Cal

Field-assessed Association name (optional): _____

Adjacent Alliances/direction: Bromus hordeaceous top of ridge / Briza-maduse grass NE BROHOR E in square poly

Confidence in Alliance identification: L M H Explain: _____

Phenology (E,P,L): Herb P Shrub — Tree — Other identification or mapping information:

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

Database #: Block 16 SPECIES SHEET

IV. VEGETATION DESCRIPTION

% NonVasc cover: 0 **Total % Vasc Veg cover:** 80

% Cover - **Conifer tree / Hardwood tree:** 0 / 0 **Regenerating Tree:** 0 **Shrub:** 0 **Herbaceous:** 80

Height Class - Conifer tree / Hardwood tree: — / — **Regenerating Tree:** — **Shrub:** — **Herbaceous:** 2

Height classes: 1=<1/2m, 2=1/2-1m, 3=1-2m, 4=2-5m, 5=5-10m, 6=10-15m, 7=15-20m, 8=20-35m, 9=35-50m, 10=>50m

Stratum categories: T=Tree, A = SApling, E = SEedling, S = Shrub, H= Herb, N= Non-vascular

% Cover Intervals for reference: r = trace, + = <1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, >75%

Stratum	Species	% cover	C	Final species determination
H	Danthonia californica	20	C	
	Avena barbata	5		
	Briza maxima	3		
	Rumex acetocella	7		
	Aira caryophylla	5		
	Cynosurus echinoides	<1		
	Bromus hordeaceous	7	C	
	Erodium cicutarium	<1		
	Briza minor	<1		
	Linum bienne	1		
	Anthoxanthum odorata	8		
	Lolium perene	<1		
	Hypochoeris radicata	25		
	H. glabra	<1		
	Sherardia arvensis	<1	C	
	B. diandrus	<1		
	Trifolium dubium	4		
	Unk grass (Agrostis sp.)	5	C	
	Trifolium subter	9		
	Festuca bromoides	1		
	Logfia gallica	<1		
	Plantago lanceolata	4		
	Trifolium	2	C	Trifolium striatum
	Hypericum perfoliata	<1		

Unusual species: _____

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

For Office Use:	Final database #:	Final vegetation type:	Alliance Association

I. ENVIRONMENTAL DESCRIPTION circle: Relevé or RA

Blocksburg 17

Date: June 13, 2019 | Name of recorder: Joslyn Curtis

Other surveyors:

UID: | Location Name: Hum Sun Farms

GPS name: Collector JTC Elev: 1280ft For Relevé only: Bearing°, left axis at ID point 300 of Long / Short side

UTME 443998 UTMN 4462420 Zone: 10 NAD83 GPS error: ft./ m./ PDOP 3.2

Decimal degrees: LAT 40.310421 LONG -123.659061

GPS within stand? Yes / No If No, cite from GPS to stand: distance (m) ____ bearing ° ____ inclination ° ____

and record: Base point ID _____ Projected UTMs: UTME _____ UTMN _____

Camera Name: Jphone Cardinal photos at ID point: Attachment 1-4

Other photos: Att. 5

Stand Size (acres): <1, 1-5, >5 | Plot Area (m²): 100 / _____ | Plot Dimensions 10 x 10 m | RA Radius ____ m

Exposure, Actual °: 304 NE NW SE SW Flat Variable | Steepness, Actual °: 3 0° 1-5° >5-25° >25

Topography: Macro: top upper mid lower bottom | Micro: convex flat concave undulating

Geology code: _____ Soil Texture code: loam | Upland or Wetland/Riparian (circle one)

% Surface cover: (Incl. outcrops) (>60cm diam) (25-60cm) (7.5-25cm) (2mm-7.5cm) (Incl sand, mud)

H_2O: 0 BA Stems: 4 Litter: 85 Bedrock: 0 Boulder: 0 Stone: 0 Cobble: 0 Gravel: | Fines: 10 =100%

% Current year bioturbation 0 Past bioturbation present? Yes / No | % Hoof punch 0

Fire evidence: Yes / No (circle one) If yes, describe in Site history section, including date of fire, if known.

Site history, stand age, comments: This an open meadow that is grazed. HORBRA is consistent throughout this meadow. There is a mosaic of interspersing low growing AGRSTO patches. In the middle of the meadow Oenanthe pimpinelloides is in full bloom w/ patches of Ranunculus, mentha & PARVIS. Lots of overlap. almost completely covered ground layer w/ many more plants growing up between.

Disturbance code / Intensity (L,M,H): 04 / L ___/___ ___/___ ___/___ ___/___ "Other" _____/___

II. HABITAT DESCRIPTION

Tree DBH : T1 (<1" dbh), T2 (1-6" dbh), T3 (6-11" dbh), T4 (11-24" dbh), T5 (>24" dbh), T6 multi-layered (T3 or T4 layer under T5, >60% cover)

Shrub: S1 seedling (<3 yr. old), S2 young (<1% dead), S3 mature (1-25% dead), S4 decadent (>25% dead)

Herbaceous: H1 (<12" plant ht.), H2 (>12" ht.)

Desert Riparian Tree/Shrub: 1 (<2ft. stem ht.), 2 (2-10ft. ht.), 3 (10-20ft. ht.), 4 (>20ft. ht.)

Desert Palm/Joshua Tree: 1 (<1.5" base diameter), 2 (1.5-6" diam.), 3 (>6" diam.)

III. INTERPRETATION OF STAND

Field-assessed vegetation Alliance name: HORBRA

Field-assessed Association name (optional): _____

Adjacent Alliances/direction: _____/_____, _____/_____

Confidence in Alliance identification: L M H Explain: _____

Phenology (E,P,L): Herb P Shrub — Tree — Other identification or mapping information:

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

Database #: Block 17 SPECIES SHEET

IV. VEGETATION DESCRIPTION

% NonVasc cover: 0 **Total % Vasc Veg cover:** 97

% Cover - **Conifer tree / Hardwood tree:** ___/___ **Regenerating Tree:** ___ **Shrub:** ___ **Herbaceous:** 97

Height Class - Conifer tree / Hardwood tree: ___/___ **Regenerating Tree:** ___ **Shrub:** ___ **Herbaceous:** 2

Height classes: 1=<1/2m, 2=1/2-1m, 3=1-2m, 4=2-5m, 5=5-10m, 6=10-15m, 7=15-20m, 8=20-35m, 9=35-50m, 10=>50m

Stratum categories: T=Tree, A = SApling, E = SEedling, S = Shrub, H= Herb, N= Non-vascular

% Cover Intervals for reference: r = trace, + = <1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, >75%

Stratum	Species	% cover	C	Final species determination
H	HORBRA	45	C	
	~~Periderida~~	5	CC	Oenanthe pimpinelloides
	Parentochella viscosa	13	C	
	BROTOR	15		
	Rumex crispus	0.5	C	
	Ranunculus cal.f	7		
	Juncus	3	C	
	Lolium perene	10		
	Mentha pelugia	3		
	Trifolium repens	1		
	Lythrum hyssopifolia	0.2		
	Vulpia myuros	0.5		
	Agrostis stolonifera	20	C	
	Vulpia bromoides	0.5		
	Linum biene	2		
	Briza minor	1		
	Plantago lanceolata	3		
	Alopecharis (gen)	1	C	
	Bellis perene	0.5		
	Juncus bufonis	0.2		
	Trifolium dubium	7		
	Cynocerus echinatus	0.5		
	Geranium dissectum	0.5		
	Trifolium subterranum	7		
	Leontodon sax	0.2		
	~~Scarlet pimpernel~~	0.2		Lysimachia arvensis
	HYPRAD	0.2		
	Navarettia intertexta	0.2		
	Carex (densa)	0.2	C	
	Aira Cariophylla	0.2		
	Orobanchaceae	0.2	C	
	Unk grass (Festuca?) about done	2	C	
	Rumex pulcher	0.5	C	

Unusual species: _____

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

For Office Use:	Final database #:	Final vegetation type:	Alliance Association

I. LOCATIONAL/ENVIRONMENTAL DESCRIPTION — circle: Relevé or RA

Blocksburg 18

Date: 6-13-19 | Name of recorder: JTC

Other surveyors:

UID: | Location Name: Hum Sun Farms

GPS name: Collector Elev: 1349 For Relevé only: Bearing°, left axis at ID point 10 of Long / Short side

UTME 443767 UTMN 4462950 Zone: 10 NAD83 GPS error: ft. / m. / PDOP 3.2

Decimal degrees: LAT 40.315182 LONG -123.661831

GPS within stand? Yes / No If No, cite from GPS to stand: distance (m) ____ bearing ° ____ inclination ° ____

and record: Base point ID ____ Projected UTMs: UTME ____ UTMN ____

Camera Name: Iphone Cardinal photos at ID point: Attachment 1-4

Other photos: Att. 5

Stand Size (acres): <1, 1-5, >5 | Plot Area (m²): 100 / ____ | Plot Dimensions 10 x 10 m | RA Radius ____ m

Exposure, Actual °: 74 NE NW SE SW Flat Variable | Steepness, Actual °: 11 0° 1-5° >5-25° >25

Topography: Macro: top upper mid lower bottom | Micro: convex flat concave undulating

Geology code: ____ Soil Texture code: Sandy Clay loam | Upland or Wetland/Riparian (circle one)

% Surface cover: (Incl. outcrops) (>60cm diam) (25-60cm) (7.5-25cm) (2mm-7.5cm) (Incl sand, mud)

H_2O: 0 BA Stems: 2 Litter: 40 Bedrock: 0 Boulder: 0 Stone: 0 Cobble: 0 Gravel: 0 Fines: 58 =100%

% Current year bioturbation 1 Past bioturbation present? Yes / No | % Hoof punch 2

Fire evidence: Yes / No (circle one) If yes, describe in Site history section, including date of fire, if known.

Site history, stand age, comments: Side of hill above creek. This hill is dominated by forbs with relatively low cover of grasses. There are rose shrubs dotting this hill, on top and on the S side of this plot. Roses are non-native an <10% cover in this broader area

Disturbance code / Intensity (L,M,H): 04 / L ___/___ ___/___ ___/___ ___/___ "Other" ____/___

II. HABITAT DESCRIPTION

Tree DBH : T1 (<1" dbh), T2 (1-6" dbh), T3 (6-11" dbh), T4 (11-24" dbh), T5 (>24" dbh), T6 multi-layered (T3 or T4 layer under T5, >60% cover)

Shrub: S1 seedling (<3 yr. old), S2 young (<1% dead), S3 mature (1-25% dead), S4 decadent (>25% dead)

Herbaceous: H1 (<12" plant ht.), H2 (>12" ht.)

Desert Riparian Tree/Shrub: 1 (<2ft. stem ht.), 2 (2-10ft. ht.), 3 (10-20ft. ht.), 4 (>20ft. ht.)

Desert Palm/Joshua Tree: 1 (<1.5" base diameter), 2 (1.5-6" diam.), 3 (>6" diam.)

III. INTERPRETATION OF STAND

Field-assessed vegetation Alliance name: Lolium perene

Field-assessed Association name (optional): ____

Adjacent Alliances/direction: Hordeum brach / N, ____ / ____

Confidence in Alliance identification: L M H Explain: Doesn't fit anywhere else

Phenology (E,P,L): Herb P Shrub — Tree — Other identification or mapping information:

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

Database #: Block 18 SPECIES SHEET

IV. VEGETATION DESCRIPTION

% NonVasc cover: 0 **Total % Vasc Veg cover:** 80

% Cover - **Conifer tree / Hardwood tree:** ____/____ **Regenerating Tree:** ____ **Shrub:** 1 **Herbaceous:** 80

Height Class - Conifer tree / Hardwood tree: ____/____ **Regenerating Tree:** ____ **Shrub:** 3 **Herbaceous:** 1

Height classes: 1=<1/2m, 2=1/2-1m, 3=1-2m, 4=2-5m, 5=5-10m, 6=10-15m, 7=15-20m, 8=20-35m, 9=35-50m, 10=>50m

Stratum categories: T=Tree, A = SApling, E = SEedling, S = Shrub, H= Herb, N= Non-vascular

% Cover Intervals for reference: r = trace, + = <1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, >75%

Stratum	Species	% cover	C	Final species determination
S	Rosa canina	1		
H	Leontodon saxatilis	65	C	
	Hemizonia congesta ssp. fragi	10		
	Navarettia intertexta	5		
	Lolium perene	5		
	Linum bienne	0.5		
	Bromus hordeaceous	3		
	Anthoxanthum odorata	2		
	Plantago lanceolata	5		
	Aira caryophylla	0.2		
	Lythrum hyssopifolia	0.2		
	Cynosurus echinatus	0.5		
	Juncus sp.	0.2	C	
	(Brodia sp.)	0.2	C	
	Sidalcea diplosycpha	1	BC	✓
	Clarkia	0.2	C	
	Unk lotus/acmispon	0.2	C	
	Sisyrenchium bellum blue	1		
	Erodium botrys	0.2		
	Briza minor	0.2		
	Juncus bufonis	0.2		
	Trifolium dubium	1		
	Orobancaceae	0.2		
	Leptosiphon bicolor	0.2	P	
	Hypericum perforata	0.2		
	Unk trifolium	0.2		Trifolium striatum
	Galium / sherardia	0.5	C	
	Trifolium hirtum	0.2		
	Danthonia californica	0.2		
	Vulpia bromoides	0.2		
	Microgus	1		
	Hypochaeris radicata	0.5		

Unusual species: _____

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

For Office Use:	Final database #:	Final vegetation type:	Alliance Association

I. LOCATIONAL/ENVIRONMENTAL DESCRIPTION — circle: **Relevé** or **RA**

Blocksburg 19

Date: 6-14-19	Name of recorder: Joslyn Curtis
	Other surveyors:
UID:	Location Name: Hum Sun Farms

GPS name: Collector Elev: 2212ft. For Relevé only: Bearing°, left axis at ID point 360° of **Long** / **Short** side

UTME 441739 UTMN 4463196 Zone: 10 NAD83 GPS error: ft./m./ PDOP 3.2

Decimal degrees: LAT 40.317264 LONG -123.685716

GPS within stand? **Yes** / **No** If No, cite from GPS to stand: distance (m) ____ bearing ° ____ inclination ° ____

and record: ~~Base point ID~~ ____ Projected UTMs: ~~UTME~~ ____ ~~UTMN~~ ____

Camera Name: Collector Cardinal photos at ID point: Attachment 1-4

Other photos: Attachment 5 → NE across stand

Stand Size (acres): <1, **1-5**, >5 | Plot Area (m²): **100**/ ____ | Plot Dimensions 10 x 10 m | ~~RA Radius~~ ____ m

Exposure, Actual °: ____ NE NW SE **SW** Flat Variable | Steepness, Actual °: 7 0° 1-5° **> 5-25°** > 25

Topography: Macro: top **upper** mid lower bottom | Micro: **convex** flat concave undulating

Geology code: ____ Soil Texture code: ____ | **Upland** or **Wetland/Riparian** (circle one)

% Surface cover: (Incl. outcrops) (>60cm diam) (25-60cm) (7.5-25cm) (2mm-7.5cm) (Incl sand, mud)

H_20: 0 BA Stems: 2 Litter: 58 Bedrock: 0 Boulder: 0 Stone: 0 Cobble: 0 Gravel: 0 Fines: 40 =100%

% Current year bioturbation 20 **Past bioturbation present?** **Yes** / **No** | **% Hoof punch** ____

Fire evidence: Yes / **No** (circle one) If yes, describe in Site history section, including date of fire, if known.

Site history, stand age, comments:

Disturbance code / Intensity (L,M,H): 4 / L ___/___ ___/___ ___/___ ___/___ **"Other"** ____/___

II. HABITAT DESCRIPTION

Tree DBH : **T1** (~~<1" dbh~~), **T2** (1-6" dbh), **T3** (6-11" dbh), **T4** (11-24" dbh), **T5** (>24" dbh), **T6** multi-layered (T3 or T4 layer under T5, >60% cover)

Shrub: ~~**S1** seedling (<3 yr. old)~~, **S2** young (<1% dead), **S3** mature (1-25% dead), **S4** decadent (>25% dead)

Herbaceous: **H1** (<12" plant ht.), **H2** (>12" ht.)

Desert Riparian Tree/Shrub: **1** (<2ft. stem ht.), **2** (2-10ft. ht.), **3** (10-20ft. ht.), **4** (>20ft. ht.)

Desert Palm/Joshua Tree: **1** (~~<1.5" base diameter~~), **2** (1.5-6" diam.), **3** (>6" diam.)

III. INTERPRETATION OF STAND

Field-assessed vegetation Alliance name: ____

Field-assessed Association name (optional): ____

Adjacent Alliances/direction: ____/____, ____/____

Confidence in Alliance identification: L M H **Explain:** ____

Phenology (E,P,L): Herb P Shrub N/A Tree N/A **Other identification or mapping information:**

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

Database #: Block 19 SPECIES SHEET

IV. VEGETATION DESCRIPTION

% NonVasc cover: ____ **Total % Vasc Veg cover:** 80

% Cover - **Conifer tree / Hardwood tree:** 0 / 0 **Regenerating Tree:** 0 **Shrub:** 0 **Herbaceous:** ____

Height Class - Conifer tree / Hardwood tree: — / — **Regenerating Tree:** — **Shrub:** — **Herbaceous:** 2

Height classes: 1=<1/2m, 2=1/2-1m, 3=1-2m, 4=2-5m, 5=5-10m, 6=10-15m, 7=15-20m, 8=20-35m, 9=35-50m, 10=>50m

Stratum categories: T=Tree, A = SApling, E = SEedling, S = Shrub, H= Herb, N= Non-vascular

% Cover Intervals for reference: r = trace, + = <1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, >75%

Stratum	Species	% cover	C	Final species determination

Unusual species: _____

Blocksburg 19

6-14-19 JTC HumSun Farms

Releve 360° 10x10m 100m² Exposure

0 water 2 stem 58 Her 0-0-0-0 0 40 upland 1-5 acres SW

gravel mid-upper slope convex 5-25° slope 7°

20 bioturb | YES past | none fire evi | L 04 | ≤1 ft Herb | Plagen Peak

Total 80

Species	height 1/2-1 m
BROHOR	10
ANTODO	5
Rumex aceto	10
LEOSAX	15
~~striatum~~	
Unk trifolium	10
HOLLAN	0.5
CYNECH	0.5
Polygonum (aviculare)	0.2
Unk grass (Poa annua?)	0.2
Aira caryophylla	0.2
Trifolium subterranium	0.5
Erodium cicutarium	0.5
Hyp rad	15
TRI DUB	1
Sherardia arv	0.2
Linum bien	0.2
Plantago lanc	5
Danthonia cal	2
Lupinus nana	0.5
Agrostis stolonifera	20
Lolium perene	1
Vulpia myuros	0.5
Bromus diandrus	0.2
Erodium mosch	0.5
Cerastium glom	0.2
Briza maxima	0.2
Logfia galica	0.2
HYPGLA	0.5
Vicia sativa	6.2

H

Lat: 40.317264

Long: -123.685716

Jelly Bean grow site

	HORBRA	
Bro Dia	HORBRA	
DAN CAL	Unk grass pond 5 (Nasella? stipa?)	20
iris (white)	Aira cary	
Avena	Antho odo	
Corduus pycno	Leontodon sax	15
Vicia sativa	Briza minor	
BRO HOR	Unk Juncus grass lf.	7
RUM ACE	bellis perene	
Ant Odo	DANCAL	54
Trif unk	Navaretia tagentina	
Trif subt	N. intertexta	
Plant lanc	Agro stol	
Linum biene	Tri dub	
Lolium	Tri ~~HAIR~~ barb	
scherardia	Junc buf	
Cynoc ech	Mer pelg	
Tri dubium		
Ran Ca/		
Cirsium		
Belis Perene		
Tan oak		
Doug fir		
Elym Caput	unk grass dominates middle of wet drain	
Hord mar/mur even spiklets	Horbra on edges	

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

For Office Use:	Final database #:	Final vegetation type:	Alliance Association

I. LOCATIONAL/ENVIRONMENTAL DESCRIPTION — circle: Relevé or RA

Blocksburg 20

Date: 6-6-19	Name of recorder: JTC
	Other surveyors:
UID:	Location Name: Hum Sun Farm

GPS name: Collector Elevation: 2283ft For Relevé only: Bearing°, left axis at ID point ____ of Long / Short side

UTME 441644 UTMN 4463587 Zone: 10 NAD83 GPS error: ft./ m. PDOP 3.2

Decimal degrees: LAT 40.320777 LONG -123.686863

GPS within stand? Yes / No If No, cite from GPS to stand: distance (m) ____ bearing ° ____ inclination ° ____

and record: Base point ID _____ Projected UTMs: UTME _____ UTMN _____

Camera Name: Collector Cardinal photos at ID point: Attachment 1-5

Other photos:

Stand Size (acres): <1, 1-5, >5 | Plot Area (m²): 100 / ____ | Plot Dimensions ___ x ___ m | RA Radius 30 m

Exposure, Actual °: ____ NE NW SE SW Flat Variable | Steepness, Actual °: ____ 0° 1-5° >5-25° >25

Topography: Macro: top upper mid lower bottom | Micro: convex flat concave undulating

Geology code: _____ Soil Texture code: _____ | Upland or Wetland/Riparian (circle one)

% Surface cover: (Incl. outcrops) (>60cm diam) (25-60cm) (7.5-25cm) (2mm-7.5cm) (Incl sand, mud)

H20: 0 BA Stems: Litter: Bedrock: 0 Boulder: 0 Stone: Cobble: Gravel: Fines: =100%

% Current year bioturbation <1 Past bioturbation present? Yes / No | % Hoof punch 0

Fire evidence: Yes / No (circle one) If yes, describe in Site history section, including date of fire, if known.

Site history, stand age, comments: Near Pond Site 5. On the upper, SE-facing slope of the main ridge. There seems to be a non-native grass land transition West of this point near the ridge crest (W-SW-facing) A decent amount of overlap in this stand. There are large clumps of Irises periodically dotting the stand. There are a couple PSEMEN seedlings popping up (they seem heavily browsed). The shrub species seem to only be around tall nursery structures (a slightly bigger tree seedling or a downed log etc.)

Disturbance code / Intensity (L,M,H): 04 / M ___/___ ___/___ ___/___ ___/___ "Other" _____/___

II. HABITAT DESCRIPTION

Tree DBH: T1 (<1" dbh), T2 (1-6" dbh), T3 (6-11" dbh), T4 (11-24" dbh), T5 (>24" dbh), T6 multi-layered (T3 or T4 layer under T5, >60% cover)

Shrub: S1 seedling (<3 yr. old), S2 young (<1% dead), S3 mature (1-25% dead), S4 decadent (>25% dead)

Herbaceous: H1 (<12" plant ht.), H2 (>12" ht.)

Desert Riparian Tree/Shrub: 1 (<2ft. stem ht.), 2 (2-10ft. ht.), 3 (10-20ft. ht.), 4 (>20ft. ht.)

Desert Palm/Joshua Tree: 1 (<1.5" base diameter), 2 (1.5-6" diam.), 3 (>6" diam.)

III. INTERPRETATION OF STAND

Field-assessed vegetation Alliance name: Danthonia Californica

Field-assessed Association name (optional): _____

Adjacent Alliances/direction: Agrostis stolonifera / → S+W, _____ / _____

Confidence in Alliance identification: L M H Explain: _____

Phenology (E,P,L): Herb P Shrub P Tree P Other identification or mapping information:

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

Database #: Blocksburg 20 SPECIES SHEET

IV. VEGETATION DESCRIPTION

% NonVasc cover: 0 **Total % Vasc Veg cover:** 93

% Cover - **Conifer tree / Hardwood tree:** ~~1~~ **Regenerating Tree:** <1 **Shrub:** 3 **Herbaceous:** 90

Height Class - Conifer tree / Hardwood tree: ____/____ **Regenerating Tree:** ____ **Shrub:** ____ **Herbaceous:** ____

Height classes: 1=<1/2m, 2=1/2-1m, 3=1-2m, 4=2-5m, 5=5-10m, 6=10-15m, 7=15-20m, 8=20-35m, 9=35-50m, 10=>50m

Stratum categories: T=Tree, A = SApling, E = SEedling, S = Shrub, H= Herb, N= Non-vascular

% Cover Intervals for reference: r = trace, + = <1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, >75%

Stratum	Species	% cover	C	Final species determination
H	Hypochaeris radicata	15		
|	Plantago lanceolata	10		
|	Lolium perene	2		
|	Bromus hordeaceous	5		
|	Rumex acetosella	1		
|	Trifolium dubium	1		
|	Danthonia californica	25		
|	Festuca myuros	1		
|	Agrostis stolonifera	3		
|	Bromus diandrus	1		
|	~~Trifolium striate bulbous calyx~~	5	CC	infl subtended by two lves no involT. Striatum
|	Aira caryophylla	2		
|	~~Orobanchaceae~~	1		Triphysaria pusilla
|	Linum bienne	3		
|	Briza minor	<1		
|	~~Red maids~~	<1		Calandrinia ciliata
|	Cerastium glomeratum	<1		
|	~~Navarettia~~	<1		N. intertexta
|	Unk aster skinny lobed lf.	<1	C	
|	Hordeum murinum	1		awnedes
|	Polemoniaceae white f lyr not aloud	<1	C	(Navarretia tagetina)
|	Juncus dense head	<1	C	amongst grasses
|	Juncus [illegible] loose head blue	<1	C	
|	Hordeum brachyantherum	1		
|	Erodium moschatum	2		
|	Cynosurus echinatus	1		
|	Anthoxanthum odor	7		
↓	Luzula comosa	<1		
↓	Iris sp	3		
SE	Pseudotsuga men	<1		
S	Baccharis pilularis	<1		
S	Toxicodendron diversiloba	<1		
S	Ribes sp.	<1		

Unusual species: _____

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

For Office Use:	Final database #:	Final vegetation type:	Alliance Association

LOCATIONAL/ENVIRONMENTAL DESCRIPTION circle: **Relevé** or **RA**

Blocksburg 21

Date: 6-6-19	Name of recorder: Joslyn Curtis
	Other surveyors:
UID:	Location Name: Hum Sun Ranch

GPS name: Collector Elevation: 1771 ft. For Relevé only: **Bearing°**, ~~left axis at ID point~~ ____ **of** ~~**Long / Short**~~ side

UTME 442914 **UTMN** 4463431 **Zone: 10** **WGS84** GPS error: **ft.** / **m.** **PDOP** 3.2

Decimal degrees: **LAT** 40.319457 **LONG** -123.671908

GPS within stand? Yes / No If No, cite from GPS to stand: distance (m) ____ bearing ° ____ inclination ° ____

and record: **Base point ID** _____ **Projected UTMs: UTME** _____ **UTMN** _____

Camera Name: Collector **Cardinal photos at ID point:** Attachment 1-5

Other photos:

Stand Size (acres): <1, 1-5, >5 | ~~**Plot Area (m²): 100 /** _____~~ | ~~**Plot Dimensions** ___ x ___ **m**~~ | **RA Radius** 8 **m**

Exposure, Actual °: _____ NE NW SE SW Flat Variable | **Steepness, Actual °:** _____ 0° 1-5° >5-25° >25

Topography: Macro: top upper mid lower bottom | **Micro:** convex flat concave undulating

Geology code: _____ **Soil Texture code:** _____ | Upland or **Wetland/Riparian** (circle one)

% Surface cover:		(Incl. outcrops)	(>60cm diam)	(25-60cm)	(7.5-25cm)	(2mm-7.5cm)	(Incl sand, mud)	
H_20:	BA Stems:	Litter:	Bedrock:	Boulder:	Stone:	Cobble:	Gravel:	Fines:	=100%

% Current year bioturbation 0 **Past bioturbation present?** Yes / No | **% Hoof punch** 0

Fire evidence: Yes / No (circle one) If yes, describe in Site history section, including date of fire, if known.

Site history, stand age, comments: On NE-facing slope near Pond Site 4. This area of the meadow is drier than surrounding grasslands. The on this slope seems more shallow and is supporting a different composition of plants.

Disturbance code / Intensity (L,M,H): 04 / M ___/___ ___/___ ___/___ ___/___ **"Other"** _____/___

II. HABITAT DESCRIPTION

Tree DBH : **T1** (≤1" dbh), **T2** (1-6" dbh), **T3** (6-11" dbh), **T4** (11-24" dbh), **T5** (>24" dbh), **T6** multi-layered (T3 or T4 layer under T5, >60% cover)

Shrub: **S1** seedling (~~<3 yr. old~~), **S2** young (~~<1% dead~~), **S3** mature (1-25% dead), **S4** decadent (>25% dead)

Herbaceous: **H1** (<12" plant ht.), **H2** (>12" ht.)

Desert Riparian Tree/Shrub: **1** (~~<2ft. stem ht.~~), **2** (~~2-10ft. ht.~~), **3** (~~10-20ft. ht.~~), **4** (>20ft. ht.)

Desert Palm/Joshua Tree: **1** (~~<1.5" base diameter~~), **2** (~~1.5-6" diam.~~), **3** (~~>6" diam.~~)

III. INTERPRETATION OF STAND

Field-assessed vegetation Alliance name: Lastheria Californica - Plantago erecta - Vulpia m Grastack

Field-assessed Association name (optional): Micropus californica

Adjacent Alliances/direction: _____/_____, _____/_____

Confidence in Alliance identification: L M H **Explain:** _____

Phenology (E,P,L): Herb P **Shrub** / **Tree** / **Other identification or mapping information:**

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

Database #: Block 21 SPECIES SHEET

IV. VEGETATION DESCRIPTION

% NonVasc cover: 0 **Total % Vasc Veg cover:** 85

% Cover - **Conifer tree / Hardwood tree:** 0 / 0 **Regenerating Tree:** 0 **Shrub:** 0 **Herbaceous:** 85

Height Class - Conifer tree / Hardwood tree: — / — **Regenerating Tree:** — **Shrub:** — **Herbaceous:** 1

Height classes: 1=<1/2m, 2=1/2-1m, 3=1-2m, 4=2-5m, 5=5-10m, 6=10-15m, 7=15-20m, 8=20-35m, 9=35-50m, 10=>50m

Stratum categories: T=Tree, A = SApling, E = SEedling, S = Shrub, H= Herb, N= Non-vascular

% Cover Intervals for reference: r = trace, + = <1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, >75%

Stratum	Species	% cover	C	Final species determination
H	Micropus californica	15		
	Danthonia californica	15		
	Plantago lanceolata	10		
	Bromus hordeaceous	15		
	~~Tiny farweed~~	7		Hemizonella minima
	Hypochearis radicata	5		
	Briza major	2		
	Elymus glaucus	2		
	Navarretia intertexta	1		
	Anthoxanthum odorata	2		
	Agrostis stolonifera	3		
	Cynosurus echinatus	5		
	Juncus	1		
	Rumex acetosella	1		
	Iris	1		
	Clarkia	0.5		

Unusual species: _____

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

For Office Use:	Final database #:	Final vegetation type:	Alliance Association

Blocksburg 22

I. LOCATIONAL/ENVIRONMENTAL DESCRIPTION circle: Relevé or (RA)

Date: 6-6-19 | Name of recorder: JTC

Other surveyors:

UID: | Location Name: Hum Sun Ranch

GPS name: Collector Elevation: 1776 ft ~~For Relevé only: Bearing°, left axis at ID point ____ of Long / Short side~~

UTME 442920 UTMN 4463398 Zone: 10 WGS84 GPS error: ft./(m.) PDOP 3.2

Decimal degrees: LAT 40.319163 LONG -123.671830

GPS within stand? Yes / (No) If No, cite from GPS to stand: distance (m) 15 bearing ° 25° inclination ° 2

and record: Base point ID _____ Projected UTMs: UTME 442926 UTMN 4463412

Camera Name: Collector Cardinal photos at ID point: Attachment 1-4

Other photos:

Stand Size (acres): (<1,) 1-5, >5 | ~~Plot Area (m²): 100 / _____~~ | ~~Plot Dimensions ____ x ____ m~~ | RA Radius 8 m

Exposure, Actual °: _____ (NE) NW SE SW Flat Variable | Steepness, Actual °: _____ 0° (1-5°) >5-25° >25

Topography: Macro: top upper mid (lower) bottom | Micro: convex flat (concave) undulating

Geology code: _____ Soil Texture code: _____ | Upland or (Wetland/Riparian) (circle one)

% Surface cover:	(Incl. outcrops)	(>60cm diam)	(25-60cm)	(7.5-25cm)	(2mm-7.5cm)	(Incl sand, mud)	
H_20:	BA Stems:	Litter:	Bedrock:	Boulder:	Stone:	Cobble:	Gravel:	Fines:	=100%

% Current year bioturbation 0 Past bioturbation present? Yes / (No) | % Hoof punch 0

Fire evidence: Yes / (No) (circle one) If yes, describe in Site history section, including date of fire, if known.

Site history, stand age, comments: In bowl drainage near Pond Site 41. Base Pt was located at the transition edge between DANCAL & HORBRA stands. Further down slope a channel develops w/ a stand of Juncus patens populating it.

Projected DD's: 40.319270, -123.671799

Disturbance code / Intensity (L,M,H): 04 / M ___/___ ___/___ ___/___ ___/___ "Other" _____/___

II. HABITAT DESCRIPTION

Tree DBH : T1 (<1" dbh), T2 (1-6" dbh), T3 (6-11" dbh), T4 (11-24" dbh), T5 (>24" dbh), T6 multi-layered (T3 or T4 layer under T5, >60% cover)

Shrub: S1 seedling (<3 yr. old), S2 young (<1% dead), S3 mature (1-25% dead), S4 decadent (>25% dead)

Herbaceous: H1 (<12" plant ht.), H2 (>12" ht.)

Desert Riparian Tree/Shrub: 1 (<2ft. stem ht.), 2 (2-10ft. ht.), 3 (10-20ft. ht.), 4 (>20ft. ht.)

Desert Palm/Joshua Tree: 1 (<1.5" base diameter), 2 (1.5-6" diam.), 3 (>6" diam.)

III. INTERPRETATION OF STAND

Field-assessed vegetation Alliance name: Hordeum brachyantherum

Field-assessed Association name (optional): _____

Adjacent Alliances/direction: _____/_____, _____/_____

Confidence in Alliance identification: L M (H) Explain: _____

Phenology (E,P,L): Herb P Shrub / Tree / Other identification or mapping information:

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

Database #: Blocksburg 22 SPECIES SHEET

IV. VEGETATION DESCRIPTION

% NonVasc cover: 0 **Total % Vasc Veg cover:** 95

% Cover - **Conifer tree / Hardwood tree:** 0 / 0 **Regenerating Tree:** 0 **Shrub:** 0 **Herbaceous:** 95

Height Class - Conifer tree / Hardwood tree: — / — **Regenerating Tree:** — **Shrub:** — **Herbaceous:** 1

Height classes: 1=<1/2m, 2=1/2-1m, 3=1-2m, 4=2-5m, 5=5-10m, 6=10-15m, 7=15-20m, 8=20-35m, 9=35-50m, 10=>50m

Stratum categories: T=Tree, A = SApling, E = SEedling, S = Shrub, H= Herb, N= Non-vascular

% Cover Intervals for reference: r = trace, + = <1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, >75%

Stratum	Species	% cover	C	Final species determination
H	Hordeum brachyantherum	35		
|	Juncus patens	2		
|	Juncus grassl ved	15		
|	Ranunculus californica	1		
|	Mentha pulegium	3		
|	Agrostis stolonifera	7		
|	Lolium perene	3		
|	Leontedon saxatilis	10		
|	Bellis perennis	5		
|	Holcus lanata	2		
|	Carex densa	1		
|	Cynosurus echinatus	7		
|	Danthonia Californica	5		
↓	Trifolium dubium	1		

Unusual species: _____

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

For Office Use:	Final database #:	Final vegetation type:	Alliance Association

I. ENVIRONMENTAL DESCRIPTION circle: **Relevé or (RA)**

Blocksburg 23

Date: 6-6-19	Name of recorder: Joslyn Curtis
	Other surveyors:
UID:	Location Name: Hum Sun Ranch

GPS name: Collector For Relevé only: **Bearing°**, left axis at ID point ____ of **Long / Short** side

UTME ____ **UTMN** ____ **Zone: 10 WGS84** GPS error: **ft./(m.)/ PDOP** 3.2m

Decimal degrees: **LAT** ____ . ____ **LONG** ____ . ____

GPS within stand? Yes / No If No, cite from GPS to stand: distance (m) ____ bearing ° ____ inclination ° ____

and record: **Base point ID** ____ **Projected UTMs: UTME** ____ **UTMN** ____

Camera Name: **Cardinal photos at ID point:**

Other photos:

Stand Size (acres): (<1, 1-5, >5 | **Plot Area (m^2): 100 /** ____ | **Plot Dimensions** ____ x ____ **m** | **RA Radius** ____ **m**

Exposure, Actual °: ____ (NE) NW SE SW Flat Variable | **Steepness, Actual °:** ____ 0° (1-5°) > 5-25° > 25

Topography: Macro: top upper mid (lower) bottom | **Micro:** convex flat (concave) undulating

Geology code: ____ **Soil Texture code:** ____ | **Upland** or (**Wetland/Riparian**) (circle one)

% Surface cover: (Incl. outcrops) (>60cm diam) (25-60cm) (7.5-25cm) (2mm-7.5cm) (Incl sand, mud)

H_20: **BA Stems:** **Litter:** **Bedrock:** **Boulder:** **Stone:** **Cobble:** **Gravel:** **Fines:** **=100%**

% Current year bioturbation 0 **Past bioturbation present? Yes / (No)** | **% Hoof punch** 0

Fire evidence: Yes / (No) (circle one) If yes, describe in Site history section, including date of fire, if known.

Site history, stand age, comments: Near Pond Site 3

Disturbance code / Intensity (L,M,H): 4 / M ___/___ ___/___ ___/___ ___/___ **"Other"** ____ / ___

II. HABITAT DESCRIPTION

Tree DBH : T1 (<1" dbh), **T2** (1-6" dbh), **T3** (6-11" dbh), **T4** (11-24" dbh), **T5** (>24" dbh), **T6** multi-layered (T3 or T4 layer under T5, >60% cover)

Shrub: S1 seedling (<3 yr. old), **S2** young (<1% dead), **S3** mature (1-25% dead), **S4** decadent (>25% dead)

Herbaceous: H1 (<12" plant ht.), **H2** (>12" ht.)

Desert Riparian Tree/Shrub: 1 (<2ft. stem ht.), **2** (2-10ft. ht.), **3** (10-20ft. ht.), **4** (>20ft. ht.)

Desert Palm/Joshua Tree: 1 (<1.5" base diameter), **2** (1.5-6" diam.), **3** (>6" diam.)

III. INTERPRETATION OF STAND

Field-assessed vegetation Alliance name: Hordeum brachyantherum

Field-assessed Association name (optional): ____

Adjacent Alliances/direction: ____ / ____, ____ / ____

Confidence in Alliance identification: L (M) H **Explain:** ____

Phenology (E,P,L): Herb P **Shrub** / **Tree** / **Other identification or mapping information:**

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

Database #: Blocksburg 23 SPECIES SHEET

IV. VEGETATION DESCRIPTION

% NonVasc cover: 0 **Total % Vasc Veg cover:** 83

% Cover - **Conifer tree / Hardwood tree:** 0 / 0 **Regenerating Tree:** 0 **Shrub:** 0 **Herbaceous:** 83

Height Class - Conifer tree / Hardwood tree: — / — **Regenerating Tree:** — **Shrub:** — **Herbaceous:** 1

Height classes: 1=<1/2m, 2=1/2-1m, 3=1-2m, 4=2-5m, 5=5-10m, 6=10-15m, 7=15-20m, 8=20-35m, 9=35-50m, 10=>50m

Stratum categories: T=Tree, A = SApling, E = SEedling, S = Shrub, H= Herb, N= Non-vascular

% Cover Intervals for reference: r = trace, + = <1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, >75%

Stratum	Species	% cover	C	Final species determination
H	Hordeum brachyantherum	20		
|	Leontedon saxatilis	40		
|	Juncus sp.	5		
|	Navarretia intertexta	3		
|	Plantago lanceolata	3		
|	Oenanthe pimpinelloides	<1		
|	Ranunculus californicus	7		
|	Trifolium dubium	2		
|	Mentha pulegium	1		
|	Juncus bufonis	1		
|	Brodiaea elegans	<1		
|	Bellis perennis	<1		
|	Briza minor	<1		
↓	Anthoxanthum odoratum	<1		

Unusual species: _____

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

For Office Use:	Final database #:	Final vegetation type:	Alliance Association

I. LOCATIONAL/ENVIRONMENTAL DESCRIPTION — circle: Relevé or (RA)

Blocksburg 24

Date: 6-6-19 | Name of recorder: JTC

Other surveyors: —

UID: | Location Name: Hum Sun Ranch

GPS name: Collector Elevation: 1381 ft. For Relevé only: Bearing°, left axis at ID point ____ of Long / Short side

UTME 443680 UTMN 4462935 Zone: 10 WGS84 GPS error: ft./ (m.) PDOP 3.2 m

Decimal degrees: LAT 40.315037 LONG -123.662851

GPS within stand? (Yes) / No If No, cite from GPS to stand: distance (m) ____ bearing ° ____ inclination ° ____

and record: Base point ID _____ Projected UTMs: UTME _____ UTMN _____

Camera Name: Collector Cardinal photos at ID point: Attachments 1-6

Other photos:

Stand Size (acres): (<1,) 1-5, >5 | Plot Area (m²): 100 / ____ | Plot Dimensions ___ x ___ m | RA Radius ___ m

Exposure, Actual °: ____ (NE) NW SE SW Flat Variable | Steepness, Actual °: ____ 0° (1-5°) >5-25° >25

Topography: Macro: top upper (mid) lower bottom | Micro: convex flat (concave) undulating

Geology code: _____ Soil Texture code: _____ | (Upland) or Wetland/Riparian (circle one)

% Surface cover:	(Incl. outcrops)	(>60cm diam)	(25-60cm)	(7.5-25cm)	(2mm-7.5cm)	(Incl sand, mud)	
H_20:	BA Stems:	Litter:	Bedrock:	Boulder:	Stone:	Cobble:	Gravel:	Fines:	=100%

% Current year bioturbation 1 Past bioturbation present? (Yes) / No | % Hoof punch 0

Fire evidence: Yes / (No) (circle one) If yes, describe in Site history section, including date of fire, if known.

Site history, stand age, comments: Lots of species overlap. Forbs almost completely covering ground and tall grasses between and laying over.

Disturbance code / Intensity (L,M,H): 4 / M ___ / ___ ___ / ___ ___ / ___ ___ / ___ "Other" _____ / ___

II. HABITAT DESCRIPTION

Tree DBH : T1 (<1" dbh), T2 (1-6" dbh), T3 (6-11" dbh), T4 (11-24" dbh), T5 (>24" dbh), T6 multi-layered (T3 or T4 layer under T5, >60% cover)

Shrub: S1 seedling (<3 yr. old), S2 young (<1% dead), S3 mature (1-25% dead), S4 decadent (>25% dead)

Herbaceous: H1 (<12" plant ht.), H2 (>12" ht.)

Desert Riparian Tree/Shrub: 1 (<2ft. stem ht.), 2 (2-10ft. ht.), 3 (10-20ft. ht.), 4 (>20ft. ht.)

Desert Palm/Joshua Tree: 1 (<1.5" base diameter), 2 (1.5-6" diam.), 3 (>6" diam.)

III. INTERPRETATION OF STAND

Field-assessed vegetation Alliance name: Danthonia californica

Field-assessed Association name (optional): _____

Adjacent Alliances/direction: _____ / _____, _____ / _____

Confidence in Alliance identification: L (M) H Explain: _____

Phenology (E,P,L): Herb P Shrub P Tree ___ Other identification or mapping information: _____

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

Database #: Blacksburg 24 SPECIES SHEET

IV. VEGETATION DESCRIPTION

% NonVasc cover: 0 **Total % Vasc Veg cover:** 98

% Cover - **Conifer tree / Hardwood tree:** 0 / 0 **Regenerating Tree:** 0 **Shrub:** 7 **Herbaceous:** 98

Height Class - Conifer tree / Hardwood tree: — / — **Regenerating Tree:** — **Shrub:** 3 **Herbaceous:** 1

Height classes: 1=<1/2m, 2=1/2-1m, 3=1-2m, 4=2-5m, 5=5-10m, 6=10-15m, 7=15-20m, 8=20-35m, 9=35-50m, 10=>50m

Stratum categories: T=Tree, A = SApling, E = SEedling, S = Shrub, H= Herb, N= Non-vascular

% Cover Intervals for reference: r = trace, + = <1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, >75%

Stratum	Species	% cover	C	Final species determination
S	Rosa rubiginosa	2		
S	Rosa canina	5		
H	Plantago lanceolata	35		
|	Leontedon saxatilis	10		
|	Hemizonia congesta ssp tracy	7		
|	Danthonia californica	25		
|	Bromus hordeaceous	10		
|	Lolium perene	2		
|	Rumex crispus	.5		
|	Aira caryophylla	<1		
|	Leptosiphon bicolor	<1		
|	Juncus sp.	5		
|	Navarretia intertexta	1		
↓	Avena barbata	1		

Unusual species: _____

RECON FIELD FORM – Hum Sun Farms Development Project (February 2019)

Date: 4-11-19	**Surveyors (circle recorder):** Amy Livingston **Return?** ☐
Waypoint ID: W1 T1	**Projected? Yes / No / Base / Digitized** If yes, enter **Base Waypoint ID:** **Bearing:** _____ **(degrees)** **Distance:** _____ **(meters)** **Inclination:** _____ **(degrees)** Base UTMs / projected UTMs (circle one) UTME 40.319535 UTMN -123.671658 PDOP: +/- <1m
Camera/Photos: None	
Field alliance name: Juncus patens	Radius of obs.(m) 1mx2m
Notes: include information about the extent and homogeneity of the vegetation reconned and if possible corresponding signature on imagery	silt loam / silty clay loam soil

Strata	Species	% cover	Strata	Species	% cover	Strata	Species	% cover
H	Juncus patens	30	H	Veronica americana	5	H	Immature grass	7
↓	Mentha pulegium	15	↓	Rumex crispus	3			
↓	Montia fontana	2	↓	Glyceria x occid	2			

Date: 4-11-19	**Surveyors (circle recorder):** Joslyn Curtis **Return?** ☐
Waypoint ID: W2T1	**Projected? Yes / No / Base / Digitized** If yes, enter **Base Waypoint ID:** **Bearing:** _____ **(degrees)** **Distance:** _____ **(meters)** **Inclination:** _____ **(degrees)** Base UTMs / projected UTMs (circle one) UTME 40.318721 UTMN -123.671944 PDOP: +/- <1m
Camera/Photos: None	
Field alliance name: Juncus patens	Radius of obs.(m) 3x7m
Notes: include information about the extent and homogeneity of the vegetation reconned and if possible corresponding signature on imagery	Clay loam soil

Strata	Species	% cover	Strata	Species	% cover	Strata	Species	% cover
H	Callitriche sp.	20	H	Ranunculus calif.	<1	H	Juncus patens	5
↓	Ranunculus aquatilis	30	↓	Leontidon saxatilis	1	↓	Trifolium subt	2
↓	Mentha pulegium	5	↓	Glyceria x occid	1	↓	Luzula comosa	5

RECON FIELD FORM – Hum Sun Farms Development Project (February 2019)

Date: 4-12-19	**Surveyors (circle recorder):** Amy Livingston **Return?** ☐
Waypoint ID: W4T1	**Projected? Yes / (No) / Base / Digitized** If yes, enter **Base Waypoint ID**: **Bearing:** _____(degrees) **Distance:** _____(meters) **Inclination:** _____(degrees) Base UTMs / projected UTMs (circle one) UTME 40.321255 UTMN -123.694818 PDOP: +/- <1m
Camera/Photos: None	
Field alliance name: Hordeum brachyantherum	Radius of obs.(m) 1m
Notes: include information about the extent and homogeneity of the vegetation reconned and if possible corresponding signature on imagery	Loam soil

Strata	Species	% cover	Strata	Species	% cover	Strata	Species	% cover
H	Poa annua	15	H	immature grass	15			
|	Hordeum	25	|	Rumex crispus	3			
↓	Geranium molle	20	↓	Festuca perennis	20			

Date: 4-12-19	**Surveyors (circle recorder):** Amy Livingston **Return?** ☐
Waypoint ID: W4T2	**Projected? Yes / (No) / Base / Digitized** If yes, enter **Base Waypoint ID**: **Bearing:** _____(degrees) **Distance:** _____(meters) **Inclination:** _____(degrees) Base UTMs / projected UTMs (circle one) UTME 40.321162 UTMN -123.695130 PDOP: +/- <1m
Camera/Photos: None	
Field alliance name: Juncus patens	Radius of obs.(m) 2m x 1.5m
Notes: include information about the extent and homogeneity of the vegetation reconned and if possible corresponding signature on imagery	Loam

Strata	Species	% cover	Strata	Species	% cover	Strata	Species	% cover
H	Juncus patens	40	H	Mentha pulegium	3	H	Glyceria x occ	2
|	Geranium molle	15	|	immature grass	10			
↓	Callitriche sp.	7	↓	Poa annua	15			

RECON FIELD FORM – Hum Sun Farms Development Project (February 2019)

Date: 4-12-19	**Surveyors (circle recorder):** Amy Livingston **Return?** ☐
Waypoint ID: W5T1	**Projected? Yes / (No) / Base / Digitized** If yes, ~~enter **Base Waypoint ID**~~: **Bearing:** _____(degrees) **Distance:** _____(meters) **Inclination:** _____(degrees) Base UTMs / projected UTMs (circle one) UTME 40.321113 UTMN -123.695205 PDOP: +/- <1m
Camera/Photos: None	
Field alliance name: Juncus patens	Radius of obs.(m) 2m x 1m
Notes: include information about the extent and homogeneity of the vegetation reconned and if possible corresponding signature on imagery	Loam soil

Strata	Species	% cover	Strata	Species	% cover	Strata	Species	% cover
H	Juncus patens	35	H	Rumex crispus	5	H	Anthoxan. odor	10
↓	Hordeum murin.	10	↓	Callitriche sp.	3	↓	Holcus lanatus	5
↓	Mentha pulegium	15	↓	immature grass	10	↓		

Date: 4-12-19	**Surveyors (circle recorder):** Amy Livingston **Return?** ☐
Waypoint ID: W7T1	**Projected? Yes / (No) / Base / Digitized** If yes, enter **Base Waypoint ID**: **Bearing:** _____(degrees) **Distance:** _____(meters) **Inclination:** _____(degrees) Base UTMs / projected UTMs (circle one) UTME 40.320163 UTMN -123.694747 PDOP: +/- <1m
Camera/Photos: None	
Field alliance name: Juncus effusus	Radius of obs.(m) 2m x 1m
Notes: include information about the extent and homogeneity of the vegetation reconned and if possible corresponding signature on imagery	Gravely Loam

Strata	Species	% cover	Strata	Species	% cover	Strata	Species	% cover
H	Juncus effusus	5	H	Glyceria x occ.	10	H	immature grass	3
↓	J. patens	5	↓	Carex sp.	5	↓	Plantago lanceolat	3
↓	Mentha pulegium	5	↓	Trifolium sp.	5	↓		

RECON FIELD FORM – Hum Sun Farms Development Project (February 2019)

Date: 4-12-19	**Surveyors (circle recorder):** Amy Livingston **Return?** ☐
Waypoint ID: W7T2	**Projected? Yes / (No) / Base / ~~Digitized~~** ~~If yes, enter Base Waypoint ID:~~ **Bearing:** _____ **(degrees)** ~~**Distance:** _____ **(meters)** **Inclination:** _____ **(degrees)~~** ~~Base UTMs / projected UTMs (circle one)~~ UTME 40.319682 UTMN -123.694926 PDOP: +/- <1m
Camera/Photos: None	
Field alliance name: Juncus effusus	Radius of obs.(m) 2mx1m
Notes: include information about the extent and homogeneity of the vegetation reconned and if possible corresponding signature on imagery	Silty loam soil

Strata	Species	% cover	Strata	Species	% cover	Strata	Species	% cover
H	Juncus effusus	80						
↓	Mentha pulegium	5						
↓	Nasturium officinale	5						

Date: 4-25-19	**Surveyors (circle recorder):** Amy Livingston **Return?** ☐
Waypoint ID: W8T1	**Projected? Yes / (No) / Base / Digitized** ~~If yes, enter Base Waypoint ID:~~ **Bearing:** _____ **(degrees)** **Distance:** _____ **(meters)** **Inclination:** _____ **(degrees)** ~~Base UTMs / projected UTMs (circle one)~~ UTME 40.316720 UTMN -123.684464 PDOP: +/- <1m
Camera/Photos: None	
Field alliance name: Juncus patens	Radius of obs.(m) 1mx1m
Notes: include information about the extent and homogeneity of the vegetation reconned and if possible corresponding signature on imagery	Silt Loam Soil

Strata	Species	% cover	Strata	Species	% cover	Strata	Species	% cover
H	Mentha pulegium	5	H	Bellis perennis	3			
↓	Juncus patens	25	↓	Ranunculus calif.	5			
↓	Anthoxan. odorat.	30	↓					

RECON FIELD FORM – Hum Sun Farms Development Project (February 2019)

Date: 4-25-19	**Surveyors (circle recorder):** Amy Livingston **Return?** ☐
Waypoint ID: W9T1	**Projected? Yes / (No) / Base / Digitized** ~~If yes, enter Base Waypoint ID:~~ **Bearing:** _____(degrees) **Distance:** _____(meters) **Inclination:** _____(degrees) Base UTMs / projected UTMs (circle one) UTME 40.315812 UTMN -123.683214 PDOP: +/- < 1m
Camera/Photos: Collector: Attachments 1-8	
Field alliance name: Juncus patens	Radius of obs.(m) 1m x 2m
Notes: include information about the extent and homogeneity of the vegetation reconned and if possible corresponding signature on imagery	Gravely Loam soil

Strata	Species	% cover	Strata	Species	% cover	Strata	Species	% cover
H	Mentha pulegium	65	H	Rumex crispus	3			
↓	Anthoxanthum odo	10	↓					
	Juncus patens	10						

Date: 4-25-19	**Surveyors (circle recorder):** Amy Livingston **Return?** ☐
Waypoint ID: W10T1	**Projected? Yes / (No) / Base / Digitized** If yes, enter **Base Waypoint ID:** **Bearing:** _____(degrees) **Distance:** _____(meters) **Inclination:** _____(degrees) Base UTMs / projected UTMs (circle one) UTME 40.315507 UTMN -123.683643 PDOP: +/- < 1m
Camera/Photos: None	
Field alliance name: CA Annual + Perenial grassland	Radius of obs.(m) 2m x 1m
Notes: include information about the extent and homogeneity of the vegetation reconned and if possible corresponding signature on imagery	Silt loam soil

Strata	Species	% cover	Strata	Species	% cover	Strata	Species	% cover
H	Mentha pulegium	50	H	Ranunculus calif	3	H	Juncus patens	5
↓	Anthoxan. odorat	10	↓	Cynosurus echin	5			
	Hypochaeris glab	3		Trifolium subter	5			

RECON FIELD FORM – Hum Sun Farms Development Project (February 2019)

Date: 4-25-19	**Surveyors (circle recorder):** Amy Livingston **Return?** ☐
Waypoint ID: W11 T1	**Projected? Yes / (No) / Base / Digitized** ~~If yes, enter **Base Waypoint ID:**~~ **Bearing:** _____ **(degrees)** **Distance:** _____ **(meters)** **Inclination:** _____ **(degrees)** Base UTMs / projected UTMs (circle one) UTME 40.313140 UTMN -123.683564 PDOP: +/- <1m
Camera/Photos: None	
Field alliance name: Juncus effusus	Radius of obs.(m) 1m
Notes: include information about the extent and homogeneity of the vegetation reconned and if possible corresponding signature on imagery	Gravely Loam soil

Strata	Species	% cover	Strata	Species	% cover	Strata	Species	% cover
H	Glyceria x occiden	15	H	Callitriche sp.	2			
↓	Juncus effusus	15						
↓	Bellis perennis	2						

Date: 4-25-19	**Surveyors (circle recorder):** Amy Livingston **Return?** ☐
Waypoint ID: W12T1	**Projected? Yes / (No) / Base / Digitized** ~~If yes, enter **Base Waypoint ID:**~~ **Bearing:** _____ **(degrees)** **Distance:** _____ **(meters)** **Inclination:** _____ **(degrees)** ~~Base UTMs / projected UTMs (circle one)~~ UTME 40.312734 UTMN -123.682834 PDOP: +/- <1m
Camera/Photos: Collector: Attachments 1-4	
Field alliance name: Juncus patens	Radius of obs.(m) 1m
Notes: include information about the extent and homogeneity of the vegetation reconned and if possible corresponding signature on imagery	silt loam soil

Strata	Species	% cover	Strata	Species	% cover	Strata	Species	% cover
H	Mentha pulegium	45	H	Anthoxan. odorat	15			
↓	Juncus patens	15	↓	Hordeum murinum	10			
↓	Rumex crispus	5	↓	Carex sp.	5			

RECON FIELD FORM – Hum Sun Farms Development Project (February 2019)

Date: 4-25-19	**Surveyors (circle recorder):** Amy Livingston **Return?** ☐
Waypoint ID: W12T2	**Projected? Yes / No / Base / Digitized** If yes, enter **Base Waypoint ID**: **Bearing:** _____(degrees) **Distance:** _____(meters) **Inclination:** _____(degrees) Base UTMs / projected UTMs (circle one) UTME 40.312757 UTMN -123.682961 PDOP: +/- <1m
Camera/Photos: None	
Field alliance name:	Radius of obs.(m) 2m x 1m
Notes: include information about the extent and homogeneity of the vegetation reconned and if possible corresponding signature on imagery	Silt loam soil

Strata	Species	% cover	Strata	Species	% cover	Strata	Species	% cover
H	Mentha pulegium	30	H	Bulboschoenus/	7	H	Ranunculus mur	3
↓	Carex sp.	5		or Schoenoplectus		↓	Callitriche	7
↓	Anthoxan. odorat	15	H	Montia fontana	3	↓	immature grasses	10

Date: 4-25-19	**Surveyors (circle recorder):** Amy Livingston **Return?** ☐
Waypoint ID: W13T1	**Projected? Yes / No / Base / Digitized** If yes, enter **Base Waypoint ID**: **Bearing:** _____(degrees) **Distance:** _____(meters) **Inclination:** _____(degrees) Base UTMs / projected UTMs (circle one) UTME 40.312461 UTMN -123.682932 PDOP: +/- <1m
Camera/Photos: None	
Field alliance name: Glyceria x occidentalis	Radius of obs.(m) 2m x 1m
Notes: include information about the extent and homogeneity of the vegetation reconned and if possible corresponding signature on imagery	Gravely loam soil

Strata	Species	% cover	Strata	Species	% cover	Strata	Species	% cover
H	Mentha pulegium	50	H	Glyceria x occid	5			
↓	Ranunculus mur	5	↓	Carex sp.	5			
↓	Callitriche sp.	10	↓	Anthoxan. odorat	15			

RECON FIELD FORM – Hum Sun Farms Development Project (February 2019)

Date: 4-25-19	**Surveyors (circle recorder):** Amy Livingston **Return?** ☐
Waypoint ID: W14T1	**Projected? Yes / (No) / Base / Digitized** If yes, enter **Base Waypoint ID:** **Bearing:** _____(degrees) **Distance:** _____(meters) **Inclination:** _____(degrees) Base UTMs / projected UTMs (circle one) UTME 40.312184 UTMN -123.682437 PDOP: +/- <1m
Camera/Photos: None	
Field alliance name: Juncus effusus	Radius of obs.(m) _____
Notes: include information about the extent and homogeneity of the vegetation reconned and if possible corresponding signature on imagery	Loam Soil

Strata	Species	% cover	Strata	Species	% cover	Strata	Species	% cover
H	Glyceria x occid	3	H	Anthoxan. odorat.	20	H	Carex sp.	3
↓	Mentha pulegium	15	↓	Bellis perennis	3	↓	Ranunculus calif	5
↓	Callitriche sp	15	↓	Juncus effusus	10	↓		

Date: 4-25-19	**Surveyors (circle recorder):** Amy Livingston **Return?** ☐
Waypoint ID: W16T1	**Projected? Yes / (No) / Base / Digitized** If yes, enter **Base Waypoint ID:** **Bearing:** _____(degrees) **Distance:** _____(meters) **Inclination:** _____(degrees) Base UTMs / projected UTMs (circle one) UTME 40.311252 UTMN -123.681623 PDOP: +/- <1m
Camera/Photos: None	
Field alliance name: Juncus patens	Radius of obs.(m) 2m x 1m
Notes: include information about the extent and homogeneity of the vegetation reconned and if possible corresponding signature on imagery	Loam soil

Strata	Species	% cover	Strata	Species	% cover	Strata	Species	% cover
H	Mentha pulegium	25	H	Juncus patens	13			
↓	Anthoxan. odorat	10	↓	immature grasses	7			
↓	Montia fontana	7	↓	Ranunculus calif	5			

RECON FIELD FORM – Hum Sun Farms Development Project (February 2019)

Date: 4-25-19	**Surveyors (circle recorder):** Amy Livingston **Return?** ☐
Waypoint ID: W17 T1	**Projected? Yes / (No) / Base / Digitized** If yes, enter **Base Waypoint ID**: **Bearing:** _____**(degrees)** **Distance:** _____**(meters)** **Inclination:** _____**(degrees)** Base UTMs / projected UTMs (circle one) UTME 40.309500 UTMN -123.659113 PDOP: +/- < 1m
Camera/Photos: None	
Field alliance name: Juncus patens	Radius of obs.(m) 2m x 1m
Notes: include information about the extent and homogeneity of the vegetation reconned and if possible corresponding signature on imagery	silt loam soil

Strata	Species	% cover	Strata	Species	% cover	Strata	Species	% cover
H	Poa pratensis	30	H	Rumex crispus	5			
↓	Juncus patens	25						
↓	Ranunculus californ	25						

Date: 4-26-19	**Surveyors (circle recorder):** **Return?** ☐
Waypoint ID: W17 T2	**Projected? Yes / No / Base / Digitized** If yes, enter **Base Waypoint ID**: **Bearing:** _____**(degrees)** **Distance:** _____**(meters)** **Inclination:** _____**(degrees)** Base UTMs / projected UTMs (circle one) UTME _____ UTMN _____ PDOP: +/-
Camera/Photos:	
Field alliance name:	Radius of obs.(m) _____
Notes: include information about the extent and homogeneity of the vegetation reconned and if possible corresponding signature on imagery	

Strata	Species	% cover	Strata	Species	% cover	Strata	Species	% cover

RECON FIELD FORM – Hum Sun Farms Development Project (February 2019)

Date: 4-26-19	**Surveyors (circle recorder):** Amy Livingston **Return?** ☐
Waypoint ID: W18 T1	**Projected? Yes / (No) / Base / Digitized** If yes, enter Base Waypoint ID: **Bearing:** _____(degrees) **Distance:** _____(meters) **Inclination:** _____(degrees) Base UTMs / projected UTMs (circle one) UTME 40.309874 UTMN -123.658882 PDOP: +/- <1m
Camera/Photos: None	
Field alliance name: Glyceria x Occidentale	Radius of obs.(m) 1m x 1m
Notes: include information about the extent and homogeneity of the vegetation reconned and if possible corresponding signature on imagery	Silt loam soil

Strata	Species	% cover	Strata	Species	% cover	Strata	Species	% cover
H	Glyceria x occiden	40	H	Poa pratensis	25			
↓	Trifolium sp.	15	↓	Alopecurus geni c	5			
↓	Ranunculus muc	5	↓	Poa annua	5			

Date: 4-26-19	**Surveyors (circle recorder):** Amy Livingston **Return?** ☐
Waypoint ID: W19 T1	**Projected? Yes / (No) / Base / Digitized** If yes, enter Base Waypoint ID: **Bearing:** _____(degrees) **Distance:** _____(meters) **Inclination:** _____(degrees) Base UTMs / projected UTMs (circle one) UTME 40.310209 UTMN -123.658900 PDOP: +/- <1m
Camera/Photos: None	
Field alliance name: Carex densa	Radius of obs.(m) 2' x 3'
Notes: include information about the extent and homogeneity of the vegetation reconned and if possible corresponding signature on imagery	Silt loam soil

Strata	Species	% cover	Strata	Species	% cover	Strata	Species	% cover
H	Carex densa	50	H	Poa pratensis	15			
↓	Mentha pulegium	7	↓	Other immature grass	10			
↓	Ranunculus muc	7	↓					

RECON FIELD FORM – Hum Sun Farms Development Project (February 2019)

Date: 4-26-19	**Surveyors (circle recorder):** Amy Livingston **Return?** ☐
Waypoint ID: W19 T2	**Projected? Yes / (No) / Base / Digitized** If yes, enter ~~Base Waypoint ID~~: **Bearing:** _____ **(degrees)** **Distance:** _____ **(meters)** **Inclination:** _____ **(degrees)** ~~Base UTMs / projected UTMs (circle one)~~ UTME 40.310568 UTMN -123.659392 PDOP: +/- <1m
Camera/Photos: None	
Field alliance name: Carex densa	Radius of obs.(m) 3'x1'
Notes: include information about the extent and homogeneity of the vegetation reconned and if possible corresponding signature on imagery	Loam soil

Strata	Species	% cover	Strata	Species	% cover	Strata	Species	% cover
H	Ranunculus muric	20	H	Anthoxanthum odo	15	H	Rumex (pulchra)	5
↓	Carex densa	20	↓	Poa pratensis	15			
↓	Mentha pulegium	7	↓	immature grasses	10			

Date: 5-9-19	**Surveyors (circle recorder):** Amy Livingston **Return?** ☐
Waypoint ID: W22 T1	**Projected? Yes / (No) / Base / Digitized** If yes, enter ~~Base Waypoint ID~~: **Bearing:** _____ **(degrees)** **Distance:** _____ **(meters)** **Inclination:** _____ **(degrees)** Base UTMs / projected UTMs (circle one) ~~UTME~~ Lat 40.313213 ~~UTMN~~ Long -123.662093 PDOP: +/- <1m
Camera/Photos: 20190509_181232	
Field alliance name: Juncus patens	Radius of obs.(m) 1m x 1m
Notes: include information about the extent and homogeneity of the vegetation reconned and if possible corresponding signature on imagery	Wetland plot is ~10' from mapped wetland boundary Loam soil

Strata	Species	% cover	Strata	Species	% cover	Strata	Species	% cover
H	Poa pratensis	10	H	Ranunculus calif	15	H	Bromus diandrus	15
↓	Mentha pulegium	20	↓	Anthoxanthum odo.	15			
↓	Juncus patens	7	↓	Danthonia californ	7			

RECON FIELD FORM – Hum Sun Farms Development Project (February 2019)

Date: 5-9-19	**Surveyors (circle recorder):** Amy Livingston **Return?** ☐
Waypoint ID: W24 T1	**Projected? Yes / (No) / Base / Digitized** If yes, enter ~~Base Waypoint ID:~~ **Bearing:** _____ **(degrees) Distance:** _____ **(meters) Inclination:** _____ **(degrees)** ~~Base UTMs / projected UTMs (circle one)~~ Lat ~~UTME~~ 40.315303 Long ~~UTMN~~ -123.661592 PDOP: +/- < 1m
Camera/Photos: None	
Field alliance name: Eleocharis macrostachys	Radius of obs.(m) 1.5 m x 1.5 m
Notes: include information about the extent and homogeneity of the vegetation reconned and if possible corresponding signature on imagery	The eleocharis is not flowering and can't be identified to species Clay loam soil

Strata	Species	% cover	Strata	Species	% cover	Strata	Species	% cover
H	Ranunc. calif.	7	H	Hypericum anag	7	H	Juncus sp.	5
↓	Eleocharis sp.	15	↓	Plantago lanceolata	15	↓	Cyperus eragr	3
↓	Trifol. barbiger	15	↓	Hypochr radi	25	↓		

Date: 5-9-19	**Surveyors (circle recorder):** Amy Livingston **Return?** ☐
Waypoint ID: W25 T1	**Projected? Yes / (No) / Base / Digitized** If yes, enter ~~Base Waypoint ID~~: **Bearing:** _____ **(degrees) Distance:** _____ **(meters) Inclination:** _____ **(degrees)** Base UTMs / projected UTMs (circle one) Lat ~~UTME~~ 40.314872 Long ~~UTMN~~ -123.663199 PDOP: +/- < 1m
Camera/Photos: None	
Field alliance name: Carex densa	Radius of obs.(m) 3' x 1'
Notes: include information about the extent and homogeneity of the vegetation reconned and if possible corresponding signature on imagery	Wetland plot is about 1 ft. from mapped wetland boundary. Loam soil

Strata	Species	% cover	Strata	Species	% cover	Strata	Species	% cover
H	Carex densa	20	H	Glyceria xocciden	10	H	Poa pratensis	5
↓	Mentha pulegium	30	↓	Poa annua	5	↓	Trifolium subter	5
↓	Callitriche sp.	15	↓	Ranunculus cal	5	↓		



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Appendix 2F

ICF Review of Final 2019 Botanical Resources Survey Report

Memorandum

To: Prairie Moore, NRM, agent of Hum Sun, LLC

From: Jordan Mayor, Botanist/Project Manager, ICF
Margaret Widdowson, Botanist, ICF

Date: March 18, 2021

Re: Review of final 2019 Botanical Resources Survey Report

Introduction and Background

Floristic and vegetation type surveys were conducted by GHD in the project area in 2019, during which, vegetation types were identified and mapped and vegetation types assigned based on 6 relevé plots, 18 rapid assessment forms and 23 reconnaissance forms sampled across the Hum Sun, LLC project area to collect floristic data on the vegetation types adjacent to proposed project elements.

ICF Botanists reviewed the final Botanical Resources Report conducted by GHD for the Hum Sun Farms Development Project. The aim of the review was to:

1. update the vegetation types to align with recent classification updates that were not available when the survey and report were prepared,
2. to revise vegetation type assignments using the membership rules, and
3. revise the report findings with new information on the identification of a genus of grasses, the wild barleys (*Hordeum* spp.).

The review took into account the relevé data forms collected in the field in 2019, conversations with the field survey crew, and input from state vegetation ecology staff on recent developments in the classification of coastal grasslands. The review will provide more accurate baseline conditions to develop an assessment of impacts and mitigation plan can for the purposes of environmental analysis under CEQA.

1. Align Vegetation Types with Recent Classification Updates

Since the project area was surveyed in 2019, additional vegetation surveys and classification have been conducted in coastal northwestern California, resulting in the description of a new vegetation alliance for coastal grasslands dominated by native grasses: Idaho fescue - California oatgrass grassland, *Festuca idahoensis* - *Danthonia californica* Herbaceous Alliance (Buck-Diaz, personal communication on February 24, 2021; California Native Plant Society 2021; https://vegetation.cnps.org/alliance/580). For one of the vegetation alliances previously assigned for some native grass dominated grasslands in the project area, this new category replaces the former alliance: California oat grass prairie, *Danthonia californica* Herbaceous Alliance, as published in *A Manual of California Vegetation, second edition* (Sawyer et al. 2009).

Revision: Grasslands in the project area assigned to the California oat grass prairie category are now assigned to the Idaho fescue - California oatgrass grassland, *Festuca idahoensis* - *Danthonia californica* Herbaceous Alliance.

2. Align Vegetation Types with Current Membership Rules

Grasslands with a relatively high cover of q-tips (*Micropus californicus*) were assigned in 2019 to a provisional association within the California goldfields – dwarf plantain – six weeks fescue flower field alliance. However, these areas do not meet the membership rules for this category because none of the required characteristic and dominant species are present in the sample, and therefore do not meet the membership rules for the alliance – this assignment is not supported by the data and ecological setting. These areas contain 15% cover of California oatgrass, and based on that, are assigned to the recent Idaho fescue - California oatgrass grassland, *Festuca idahoensis* - *Danthonia californica* Herbaceous Alliance.

Revision: Grassland areas previously assigned to the q-tips provisional association of the California goldfields – dwarf plantain – six weeks fescue flower fields alliance are now placed in the Idaho fescue - California oatgrass grassland, *Festuca idahoensis* - *Danthonia californica* Herbaceous Alliance

3. **Revise the report findings with new information on the identification wild barleys (*Hordeum* spp.)**

The 2019 report describes that the dominant barley species in some grassland areas had initially been identified as meadow barley (*Hordeum brachyantherum*) was later found to be a non-native annual barley seaside barley (*Hordeum marinum*) and/or hybrids between the two species (GHD Botanist Joslyn Curtis, personal communication in March 2021). These areas were sampled by relevé numbers 22 and 23. Because they are dominated by non-native

grasses these areas are not considered sensitive natural communities, and the data forms would state *Hordeum marinum* instead of *Hordeum brachyantherum*.

Revision: Relevé numbers 22 and 23 are dominated by a non-native barley, *Hordeum marinum*; the data forms in the 2019 report appendix have not been revised.

References

Sawyer, J. O., T. Keeler-Wolf, and J. M. Evens. 2009. *A Manual of California Vegetation*. Second edition. Sacramento, CA: California Native Plant Society.

California Native Plant Society (CNPS). 2021. *A Manual of California Vegetation, Online Edition.* California Native Plant Society, Sacramento, CA. Available: http://www.cnps.org/cnps/vegetation/. Accessed: March 2021.

Personal Communications

Buck-Diaz, Jennifer, Vegetation Ecologist, California Native Plant Society. Email regarding recent vegetation classification updates to Jordan Mayor, ICF on February 24, 2021.

Curtis, Joslyn, Botanist and Kerry McNamee, Environmental Planter, GHD. Email regarding *Hordeum* identification on March 5, 2021.

Appendix 2G

Supplemental Botanical Survey Report

Supplemental Botanical Survey Report

Humboldt County, Hum Sun Farms, LLC

Prepared for:
Hum Sun Farms, LLC

Prepared by:
Claire Brown
Botanist
Natural Resources Management Corporation
1434 Third Street
Eureka, CA 95501

July 2021

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I. Introduction

This Report is supplemental to the Botanical Resources Report prepared in 2020 by GHD of Eureka CA, pertaining to proposed cannabis cultivation infrastructure development in Humboldt County (GHD 2020). The project proponent, Hum Sun Farm, LLC, is applying for a cannabis cultivation permit under Humboldt County Ordinance No. 2599 (Cannabis Ordinance 2.0) (Humboldt County 2018a). Please refer to the Botanical Resources Report by GHD for background environmental information, project background and understanding.

This Report reviews potential impacts to any plant species that are listed, candidates for listing, or proposed for listing under the ESA, CESA and the California Native Plant Protection Act and or meet the definition of rare or endangered under the California Environmental Quality Act (CEQA), hereinafter referred to as special status plants. Special status species known to occur near the project area are listed in Table 1.

Furthermore, this report reviews existing or potential impacts to sensitive natural communities (CDFW 2020).

I. Summary of Findings and Conclusions

One (1) special status plant species with a CRPR of 4.3 was found within the Study Area, distributed among multiple sub-populations:

- Tracy's tarplant (*Hemizonia congesta ssp. tracy*i) CRPR 4.3

Additionally, we identified several populations of two (2) plant species that could be considered locally rare and therefore special status, as considered in Article 9 of the California Environmental Quality Act (CEQA). These are:

- Howell's yampah (*Perideridia howellii*)
- Needle goldfields, (*Lasthenia gracilis*)

The occurrence data for these special status plant populations are included in Table 2, and sub-population locations are displayed in Figures 6-8. The overall survey results are summarized in Table 3. No special status species with California Rare Plant Ranks 1, 2, or 3 were identified within the Study Area. A floristic list of all species encountered during the surveys can be found in Appendix A.

One sub-population (Map-ID 8, Figure 7) of Tracy's tarplant (*Hemizonia congesta ssp. tracy*i) would be impacted by proposed development. However, Tracy's tarplant is widely distributed over the ownership, and impacts to the Map-ID 8 subpopulation will not represent a significant decrease in the distribution or abundance of this species over the local land ownership (proposed development site). Therefore, we do not believe that avoidance or other mitigation measures are needed or warranted for this CNPS Rare Plant rank 4.3 species.

One of the sub- populations of needle goldfields (*Lasthenia gracilis*) (Map ID 12, Figure 8) is completely within the footprint of a proposed cannabis cultivation site and would be fully impacted by development. Sub-populations Map ID 10 and Map ID 11 are near the site of a proposed nursery structure and road Turnout #13, but are but outside of actual proposed development footprint. See Figures X and Table 2.

The needle goldfields (*Lasthenia gracilis*) population identified here as Map ID 12 is comprised ofapproximately 300 plants over an approximately 12,000 square foot area. Map ID 10 and Map ID 11 are comprised of approximately 200 and 50 plants, respectively, over an approximately 1000 square foot area.

Given the locally rare status of this plant, impacting this these population**s** could be considered significant. Therefore, we outline mitigation measures to reduce impacts to less than significant (see Section VII).

II. Environmental Setting

Please see the 2020 Botanical Resources Report by GHD for environmental descriptions of the Project Area.

III. Project Summary and Study Area

The proposed project will require the development of "turnouts" along the existing road alignment accessing all proposed development sites. Eighteen (18) of these turnouts are proposed, as depicted in Figures 1-3. These turnout locations will undergo some degree of ground disturbance and were not included within the study area of the GHD Botanical Resources Report. In addition to the turnouts, an additional segment of seasonal road (not included in the GHD study area) is proposed for improvements under a LSAA application with the California Department of Fish and Wildlife (CDFW), prepared by Mother Earth Engineering of Arcata, CA. Finally, there is a low-lying area adjacent to an intermittent stream which may be proposed as a wetland mitigation receiver site, which was also not included in the scope of the GHD study. Therefore, the scope of this study is limited to the 18 turnouts, the additional seasonal road reach, and the potential mitigation site. These areas comprise the Study Area reviewed here. See Figures 1-3.



Figure 1. Study Area Map 1 of 3: Overview



Figure 2. Study Area Map 2 of 3: Eastern Zoom

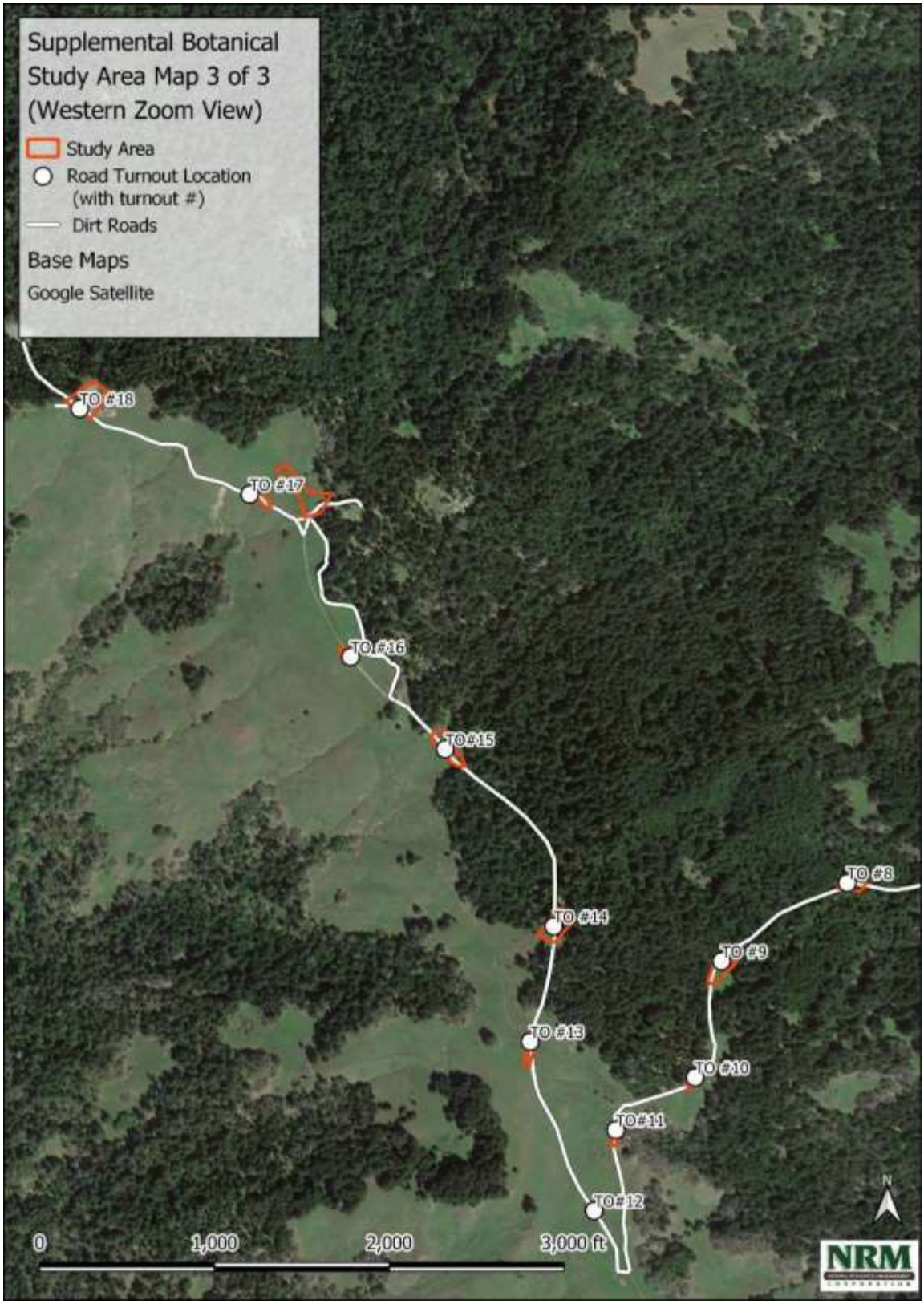


Figure 3. Study Area Map 3 of 3: Western Zoom

IV. Methods

Pre-field Review

the current inventories of the California Native Plant Society's (CNPS) Inventory of Rare and Endangered Plants of California (CNPS 2021a), and the CNDDB Quickview tool (CNDDB 2021) were consulted to determine which special status plant species may occur within the project area and to compile a target species list. A nine-quad query of CNDDB and CNPS Inventory records resulted in 57 listed vascular and nonvascular plant species (Table 2). These scoping strategies are consisted with California Department of Fish and Wildlife protocols (CDFW 2018d) and the California Environmental Quality Act (State of California 2001). The following resources were consulted:

- California Natural Communities List (CDFW 2020a)
- State and Federally Listed Endangered, Threatened, and Rare Plants of California (CDFW 2021a)
- Special Vascular Plants, Bryophytes, Lichens List (CDFW 2021b)
- California Natural Diversity Database: Quickview Tool (CNDDB 2021)
- The Jepson Manual, 2nd Edition (Baldwin et al. 2012)
- Jepson eFlora (Jepson Flora Project 2021)
- The California Native Plant Society's Online Inventory of Rare and Endangered Plants of California (CNPS 2021a)
- A Manual of California Vegetation, Online Edition (CNPS 2021b)
- Consortium of California Herbaria (CCH 2021)
- Calflora online database (Calflora 2021)

Botanical taxonomy and nomenclature conform to The Jepson Manual, 2nd Edition (Baldwin et al. 2012) and the recent circumscriptions in the Jepson eFlora (Jepson Flora Project 2021). Common names of plant species are derived from the The Calflora Database (Calflora 2021). Nomenclature for special-status plants species conforms to the Inventory of Rare and Endangered Plants of California (CNPS 2021a). And Special Vascular Plants, Bryophytes and Lichens List (CDFW 2018c). Vegetation communities described herein conform to California Vegetation (Holland and Keil 1995), the Preliminary Descriptions of the Terrestrial Natural Communities of California (Holland 1986), and/or A Manual of California Vegetation, Online edition CNPS 2021b).

Reference Populations

The following reference populations were visited preceding surveys:

Howell's Montia (Montia howellii): Korbel Quad, at logger's palace; 150 ft elevation; visited 2021-04-05 less than 100 plants, 40% in flower.

Howell's Montia (Montia howellii): Blocksburg Quad, on private property; 2100 ft elevation; visited 2021-04-14, approximately 50 individuals in vegetative state.

Siskiyou checkerbloom (Sidalcea malviflora ssp. patula): Capetown Quad, on Mattole Rd; elevation 1300 ft; visited 2021-06-09; population of several hundred plants, 60% in flower.

Pacific gilia (*Gilia capitata ssp. pacifica*): Lord Ellis Summit Quad, on Snow Camp Rd; elevation 2800 ft; visited 2021-06-02. Population of over 1000 plants 80% in bloom.

Humboldt milk vetch (*Astragalus agnicidus*): Humboldt Redwood Company land holdings. Elevation ~2000 ft; reported to be blooming by HRC botanist James Reagan on 2021-06-03

Table 1. Special Status Plant Species known to Occur in the 9-Quad Area surrounding USGS 7.5' Blocksburg Quad(Table Data CNDDB 2021, CNPS 2021).

Scientific Name	Common Name	CRPR	GRank	SRank	CESA	FESA	Blooming Period	Habitat	Elevation Low (ft)	Elevation High (ft)
Allium hoffmanii	Beegum onion	4.3	G4	S4	None	None	Jun-Jul	Lower montane coniferous forest (serpentinite)	3605	5905
Anisocarpus scabridus	scabrid alpine tarplant	1B.3	G3	S3	None	None	(Jun)Jul-Aug(Sep)	Upper montane coniferous forest (metamorphic, rocky)	5410	7545
Arctostaphylos hispidula	Howell's manzanita	4.2	G4	S3	None	None	Mar-Apr	Chaparral (serpentinite or sandstone)	390	4100
Arctostaphylos manzanita ssp. elegans	Konocti manzanita	1B.3	G5T3	S3	None	None	(Jan)Mar-May(Jul)	Chaparral, Cismontane woodland, Lower montane coniferous forest	1295	5300
Arnica spathulata	Klamath arnica	4.3	G3?	S3	None	None	May-Aug	Lower montane coniferous forest (serpentinite)	2095	5905
Astragalus agnicidus	Humboldt County milk-vetch	1B.1	G2	S2	CE	None	Apr-Sep	Broadleafed upland forest, North Coast coniferous forest	390	2625
Astragalus rattanii var. rattanii	Rattan's milk-vetch	4.3	G4T4	S4	None	None	Apr-Jul	Chaparral, Cismontane woodland, Lower montane coniferous forest	95	2705
Carex praticola	northern meadow sedge	2B.2	G5	S2	None	None	May-Jul	Meadows and seeps (mesic)	0	10500

Carex scabriuscula	Siskiyou sedge	4.3	G4G5	S4	None	None	May-Jul	Lower montane coniferous forest, Meadows and seeps, Upper montane coniferous forest	2325	7695
Claytonia serpenticola	Serpentine spring beauty	4.3	?	?	None	None	?	restricted to ultramafic soils in the Klamath Region of northern California*	?	?
Collomia tracyi	Tracy's collomia	4.3	G4	S4	None	None	Jun-Jul	Broadleafed upland forest, Lower montane coniferous forest	980	6890
Coptis laciniata	Oregon goldthread	4.2	G4?	S3?	None	None	(Feb)Mar-May(Sep-Nov)	Meadows and seeps, North Coast coniferous forest (streambanks)	0	3280
Cryptantha rostellata	red-stemmed cryptantha	4.2	G4	S3	None	None	Apr-Jun	Cismontane woodland, Valley and foothill grassland	130	2625
Cypripedium fasciculatum	clustered lady's-slipper	4.2	G4	S4	None	None	Mar-Aug	Lower montane coniferous forest, North Coast coniferous forest	325	7990
Cypripedium montanum	mountain lady's-slipper	4.2	G4	S4	None	None	Mar-Aug	Broadleafed upland forest, Cismontane woodland, Lower montane coniferous forest, North Coast coniferous forest	605	7300
Epilobium oreganum	Oregon fireweed	1B.2	G2	S2	None	None	Jun-Sep	Bogs and fens, Lower montane coniferous forest, Meadows and seeps, Upper montane coniferous forest	1640	7350

Epilobium septentrionale	Humboldt County fuchsia	4.3	G4	S4	None	None	Jul-Sep	Broadleafed upland forest, North Coast coniferous forest	145	5905
Erigeron biolettii	streamside daisy	3	G3?	S3?	None	None	Jun-Oct	Broadleafed upland forest, Cismontane woodland, North Coast coniferous forest	95	3610
Erigeron maniopotamicus	Mad River fleabane daisy	1B.2	G2?	S2?	None	None	May-Aug	Lower montane coniferous forest, Meadows and seeps (open, dry)	4180	4920
Erigeron robustior	robust daisy	4.3	G3	S3	None	None	Jun-Jul	Lower montane coniferous forest, Meadows and seeps	655	2000
Erythronium oregonum	giant fawn lily	2B.2	G4G5	S2	None	None	Mar-Jun(Jul)	Cismontane woodland, Meadows and seeps	325	3775
Erythronium revolutum	coast fawn lily	2B.2	G4G5	S3	None	None	Mar-Jul(Aug)	Bogs and fens, Broadleafed upland forest, North Coast coniferous forest	0	5250
Eucephalus glabratus	Siskiyou aster	4.3	G4	S3	None	None	Jul-Sep	Lower montane coniferous forest, Upper montane coniferous forest	390	8875
Fritillaria glauca	Siskiyou fritillaria	4.2	G3G4	S3	None	None	(Apr-May)Jun-Jul	Alpine boulder and rock field, Subalpine coniferous forest, Upper montane coniferous forest	5690	8005

Fritillaria purdyi	Purdy's fritillary	4.3	G4	S4	None	None	Mar-Jun	Chaparral, Cismontane woodland, Lower montane coniferous forest	570	7400
Gilia capitata ssp. pacifica	Pacific gilia	1B.2	G5T3	S2	None	None	Apr-Aug	Coastal bluff scrub, Chaparral (openings), Coastal prairie, Valley and foothill grassland	15	5465
Hemizonia congesta ssp. tracyi	Tracy's tarplant	4.3	G5T4	S4	None	None	May-Oct	Coastal prairie, Lower montane coniferous forest, North Coast coniferous forest	390	3935
Hosackia yollabolliensis	Yolla Bolly Mtns. bird's-foot trefoil	1B.2	G2	S2	None	None	Jun-Aug	Meadows and seeps, Upper montane coniferous forest (openings)	5395	7005
Howellia aquatilis	water howellia	2B.2	G3	S2	None	FT	Jun	Marshes and swamps (freshwater)	3555	4230
Kopsiopsis hookeri	small groundcone	2B.3	G4?	S1S2	None	None	Apr-Aug	North Coast coniferous forest	295	2905
Lathyrus biflorus	two-flowered pea	1B.1	G1	S1	None	None	Jun-Aug	Lower montane coniferous forest (serpentinite)	4490	4545
Lathyrus glandulosus	sticky pea	4.3	G3	S3	None	None	Apr-Jun	Cismontane woodland	980	2625
Leptosiphon acicularis	bristly leptosiphon	4.2	G4?	S4?	None	None	Apr-Jul	Chaparral, Cismontane woodland, Coastal prairie, Valley and foothill grassland	180	4920

Leptosiphon latisectus	broad-lobed leptosiphon	4.3	G4	S4	None	None	Apr-Jun	Broadleafed upland forest, Cismontane woodland	555	4920
Lilium rubescens	redwood lily	4.2	G3	S3	None	None	Apr-Aug(Sep)	Broadleafed upland forest, Chaparral, Lower montane coniferous forest, North Coast coniferous forest, Upper montane coniferous forest	95	6265
Listera cordata	heart-leaved twayblade	4.2	G5	S4	None	None	Feb-Jul	Bogs and fens, Lower montane coniferous forest, North Coast coniferous forest	15	4495
Lupinus constancei	The Lassics lupine	1B.1	G1	S1	None	None	Jul	Lower montane coniferous forest (serpentinite)	4920	6560
Lycopodium clavatum	running-pine	4.1	G5	S3	None	None	Jun-Aug(Sep)	Lower montane coniferous forest (mesic), Marshes and swamps, North Coast coniferous forest (mesic)	145	4020
Lycopus uniflorus	northern bugleweed	4.3	G5	S4	None	None	Jul-Sep	Bogs and fens, Marshes and swamps	15	6560
Meesia triquetra	three-ranked hump moss	4.2	G5	S4	None	None	Jul	Bogs and fens, Meadows and seeps, Subalpine coniferous forest, Upper montane coniferous forest (mesic)	4265	9690
Mitellastra caulescens	leafy-stemmed mitrewort	4.2	G5	S4	None	None	(Mar)Apr-Oct	Broadleafed upland forest, Lower montane coniferous forest, Meadows and seeps, North Coast coniferous forest	15	5575

Montia howellii	Howell's montia	2B.2	G3G4	S2	None	None	(Jan-Feb)Mar-May	Meadows and seeps, North Coast coniferous forest, Vernal pools	0	2740
Navarretia leucocephala ssp. bakeri	Baker's navarretia	1B.1	G4T2	S2	None	None	Apr-Jul	Cismontane woodland, Lower montane coniferous forest, Meadows and seeps, Valley and foothill grassland, Vernal pools	15	5710
Packera bolanderi var. bolanderi	seacoast ragwort	2B.2	G4T4	S2S3	None	None	(Jan-Apr)May-Jul(Aug)	Coastal scrub, North Coast coniferous forest	95	2135
Piperia candida	white-flowered rein orchid	1B.2	G3	S3	None	None	(Mar)May-Sep	Broadleafed upland forest, Lower montane coniferous forest, North Coast coniferous forest	95	4300
Pityopus californicus	California pinefoot	4.2	G4G5	S4	None	None	(Mar-Apr)May-Aug	Broadleafed upland forest, Lower montane coniferous forest, North Coast coniferous forest, Upper montane coniferous forest	45	7300
Pleuropogon refractus	nodding semaphore grass	4.2	G4	S4	None	None	(Mar)Apr-Aug	Lower montane coniferous forest, Meadows and seeps, North Coast coniferous forest, Riparian forest	0	5250
Ptilidium californicum	Pacific fuzz wort	4.3	G4G5	S3S4	None	None	May-Aug	Lower montane coniferous forest, Upper montane coniferous forest	3740	5905

Sabulina decumbens	The Lassics sandwort	1B.2	G1	S1	None	None	Jul	Lower montane coniferous forest, Upper montane coniferous forest	4920	5495
Sanicula tracyi	Tracy's sanicle	4.2	G4	S4	None	None	Apr-Jul	Cismontane woodland, Lower montane coniferous forest, Upper montane coniferous forest	325	5200
Sedum laxum ssp. flavidum	pale yellow stonecrop	4.3	G5T3Q	S3	None	None	May-Jul	Broadleafed upland forest, Chaparral, Cismontane woodland, Lower montane coniferous forest, Upper montane coniferous forest	1490	6560
Sidalcea malachroides	maple-leaved checkerbloom	4.2	G3	S3	None	None	(Mar)Apr-Aug	Broadleafed upland forest, Coastal prairie, Coastal scrub, North Coast coniferous forest, Riparian woodland	0	2395
Sidalcea malviflora ssp. patula	Siskiyou checkerbloom	1B.2	G5T2	S2	None	None	(Apr)May-Aug	Coastal bluff scrub, Coastal prairie, North Coast coniferous forest	45	2885
Tracyina rostrata	beaked tracyina	1B.2	G2	S2	None	None	May-Jun	Chaparral, Cismontane woodland, Valley and foothill grassland	295	2590

Usnea longissima	Methuselah's beard lichen	4.2	G4	S4	None	None		Broadleafed upland forest, North Coast coniferous forest	160	4790
Veratrum insolitum	Siskiyou false-hellebore	4.3	G4	S4	None	None	Jun-Aug	Chaparral, Lower montane coniferous forest	145	5365
Wyethia longicaulis	Humboldt County wyethia	4.3	G4	S4	None	None	May-Jul	Broadleafed upland forest, Coastal prairie, Lower montane coniferous forest	2460	5005

***Listing codes are as follows (CNPS 2018a):California Rare Plant Rank (CRPR**) 1B = rare, threatened, or endangered in CA and elsewhere; 2B = rare, threatened, or endangered in CA, but more common elsewhere; 3 = plants about which more information is needed; a review list; 4 = of limited distribution or infrequent throughout a broader area in California. Ranks at each level also include a threat rank and are determined as follows: 0.1-Seriously threatened in California; 0.2-Moderately threatened in California; 0.3-Not very threatened in California**. Global Ranking (GRank)** - The global rank (G-rank) is a reflection of the overall condition of an element throughout its global range: G1 = Less than 6 viable element occurrences (EOs) OR less than 1,000 individuals OR less than 2,000 acres; G2 = 6-20 EOs OR 1,000-3,000 individuals OR 2,000-10,000 acres; G3 = 21-80 EOs OR 3,000-10,000 individuals OR 10,000-50,000 acres; G4 = Apparently secure; this rank is clearly lower than G3 but factors exist to cause some concern; i.e., there is some threat, or somewhat narrow habitat; G5 = Population or stand demonstrably secure to ineradicable due to being commonly found in the world. **State Rank** (SRank) The state rank (S-rank) is assigned much the same way as the global rank, except state ranks in California often also contain a threat designation attached to the S-rank: S1: Fewer than 6 viable occurrences worldwide/ statewide, and/ or up to 518 hectares; S2: 6-20 viable occurrences worldwide/ statewide, and/ or more than 518-2,590 hectares; S3: 21-100 viable occurrences worldwide/ statewide, and/or more than 2,590-12,950 hectares; S4: Greater than 100 viable occurrences worldwide/ statewide, and/or more than 12,950 hectares; S5: Demonstrably secure because of its worldwide/ statewide abundance. Additional Threat Ranks: 0.1=Very threatened; 0.2=Threatened; 0.3= No current threat known. **CESA**: California Endangered Species Act. **FESA**: Federal Endangered Species Act.

Field Survey

On April 16th, May 27th, and June 8th 2021, NRM botanists Claire Brown and Jenell Jackson conducted seasonally appropriate botanical surveys of the Study Area, as depicted in Figures 1-5. Claire has a B.S. in Ecology and Evolutionary Biology from the University of Tennessee and has nine years of experience surveying vegetation and rare plants in California, including five years of experience conducting rare plant surveys on the North Coast. Jenell Jackson has an M.S. in Biology from Humboldt State University and has eight years of experience surveying vegetation and rare plants in California, including four years' experience on the North Coast. This survey was floristic in nature, covered the Study Area comprehensively, and followed the 2018 California Department of Fish and Wildlife (CDFW) Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities (CDFW 2018). The timing of the survey was such as to capture the bloom window of the target species for those species with potential to occur at the site elevation and within habitat and soil types present.

Surveys did **not** include delineation of wetlands or other waters. See Table 1, and Figures 1-5.

Within the Study Area, vegetation types were assessed according to the conventions of A Manual of California Vegetation, Online Edition (CNPS 2021b). CDFW's *California Natural Communities* list (CDFW 2020a) was referenced to determine if Sensitive Communities were included in the vegetation alliances and associations found on-site. The portion of the Study Area consisting of the road turnout sites were rapidly visually assessed, but on July 2nd, 2021, Claire Brown assessed the proposed mitigation area via formal stand typing and CNPS-CDFW releve /rapid assessment plots.

Study Area is approximately 21 acres in size, distributed over multiple sites. See Figures 1-5

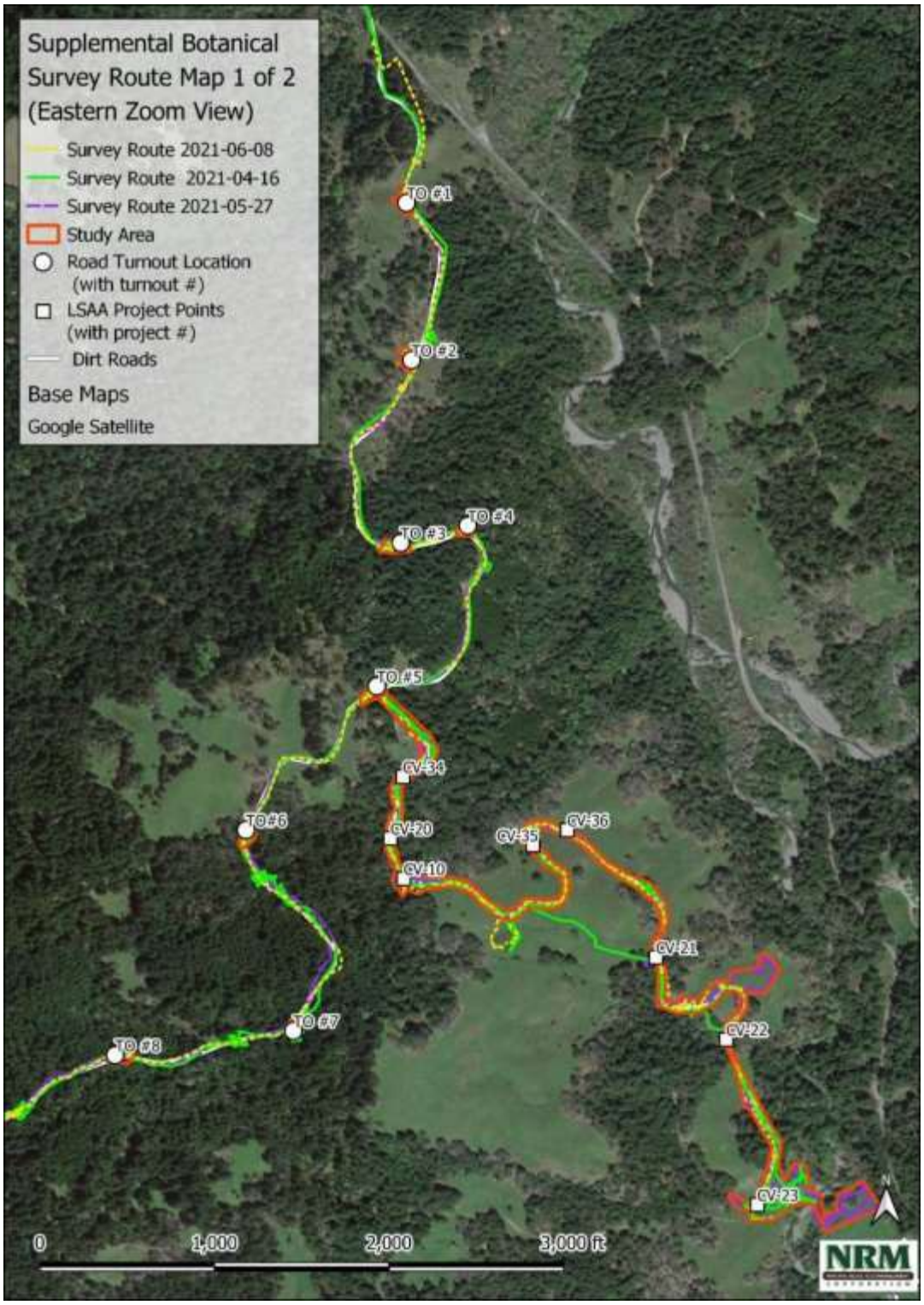


Figure 4. Botanical Survey Routes Map 1 of 2: Eastern Zoom

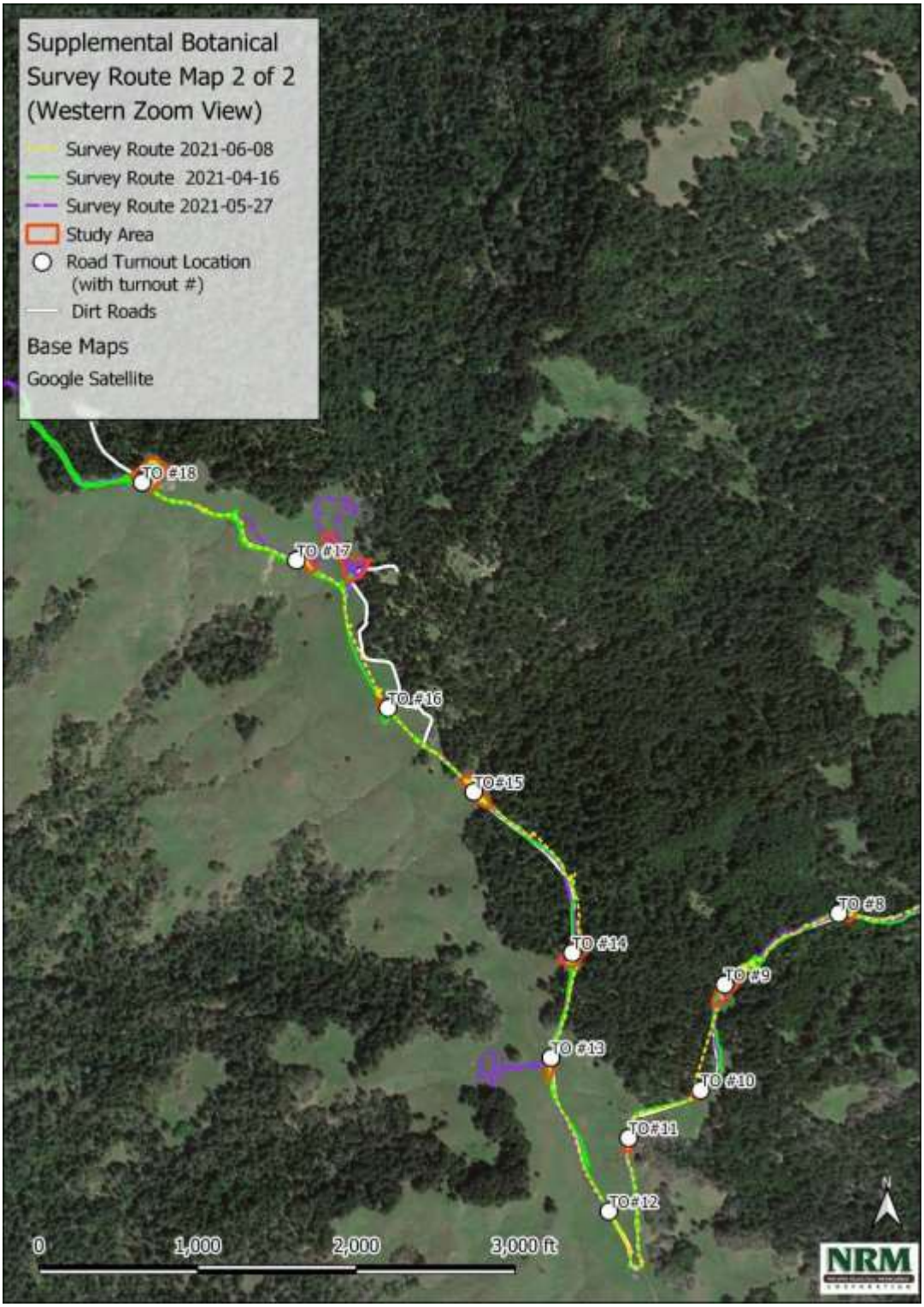


Figure 5. Botanical Survey Routes Map 2 of 2: Western Zoom

V. Results

Special Status Plants

One (1) species with a CRPR of 4.3 was found within the Study Area:

- Tracy's tarplant (*Hemizonia congesta ssp. tracy*i) CRPR 4.3

These findings will be reported to the CNDDB. Occurrence data are found in Table 2, and occurrence locations are displayed in Figures 6-8. Map identification numbers (Map ID #) were assigned to each sub-population found and can be cross-walked between Table 2 and Figures 6-8.

We found nine (9) sub-populations of Tracy's tarplant. Table 2 gives details of the estimated size and distribution of each sub-population. See Figures 6-8. Plants were found both scattered and in dense patches along the existing dirt access roads and the adjacent grasslands.

Additionally, we identified several populations of two (2) plant species that could be considered locally rare, as considered in Article 9 of the California Environmental Quality Act (CEQA). These are:

- Howell's yampah (*Perideridia howellii*)
- Needle goldfields, (*Lasthenia gracilis*)

The occurrence data for these populations are included in Table 2, and population locations are displayed in Figures 6-8. We found six (6) sub-populations of Howell's yampah, and three (3) sub-populations of needle goldfields.

The overall survey results are summarized in Table 3.

No special status species with California Rare Plant Ranks 1, 2, or 3 were identified within the Study Area.

A floristic list of all species encountered during the surveys can be found in Appendix A.

See Discussion in Section VII below.



Figure 6. Special Status Plants Location Map 1 of 3 (See Table 3)

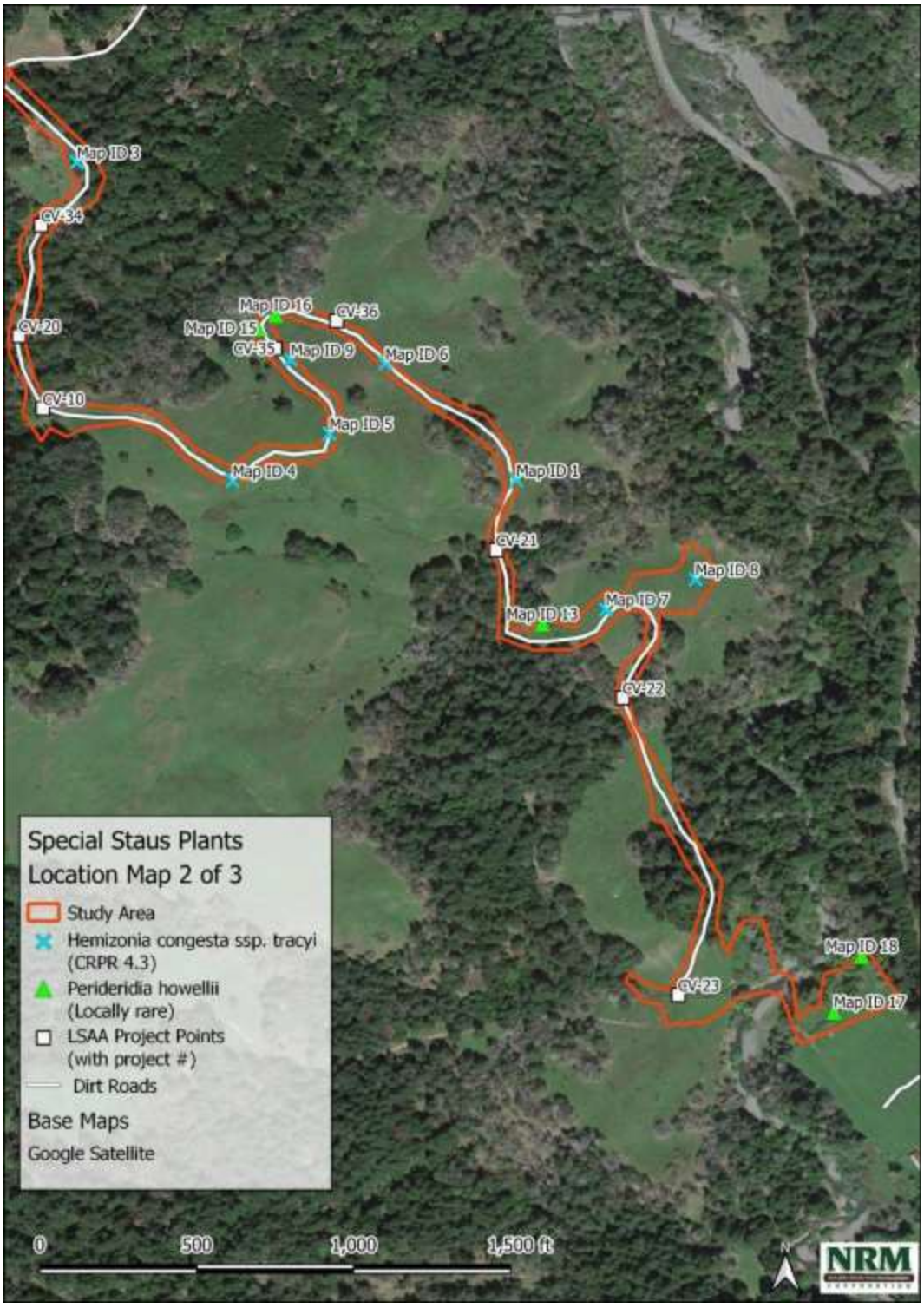


Figure 7. Special Status Plants Location Map 1 of 3 (See Table 3)

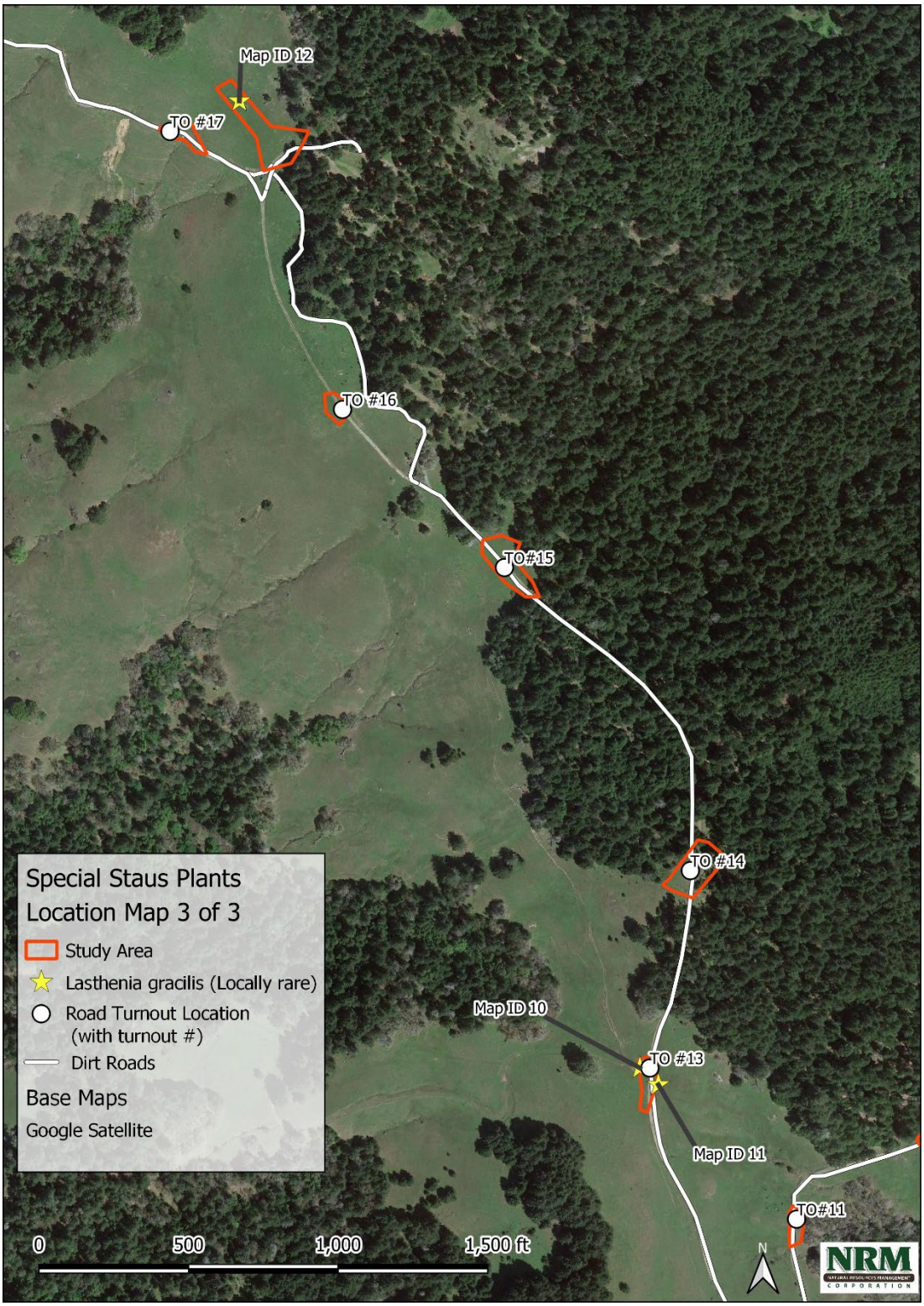


Figure 8. Special Status Plants Location Map 3 of 3 (See Table 3)

Table 2. Special Status Plant Observation Data (Map ID refers to Figures 6-8)

Map_ID	Scientific Name	Total Individuals	Patch Size (Square feet)	Collection?	Observer	% Vegetative	% Flowering	% Fruiting	Habitat Description	Site Quality	Survey Date
Map ID 1	*Hemizonia congesta ssp. tracyi*	5000	12000	No	Claire Brown	0	100	0	Open grassland/prairie	Fair	2021-05-27
Map ID 2	*Hemizonia congesta ssp. tracyi*	3000	9000	Yes	Claire Brown	0	100	0	Open grassland/prairie	Fair	2021-05-27
Map ID 3	*Hemizonia congesta ssp. tracyi*	2500	2500	No	Claire Brown	0	100	0	Open grassland/prairie	Fair	2021-05-27
Map ID 4	*Hemizonia congesta ssp. tracyi*	500	5000	No	Claire Brown	0	100	0	Open grassland/prairie	Fair	2021-05-27
Map ID 5	*Hemizonia congesta ssp. tracyi*	500	2500	No	Claire Brown	0	100	0	Open grassland/prairie, on both sides of road	Fair	2021-05-27
Map ID 6	*Hemizonia congesta ssp. tracyi*	100	9	No	Claire Brown	0	100	0	Open grassland/prairie	Fair	2021-05-27
Map ID 7	*Hemizonia congesta ssp. tracyi*	200	1000	No	Claire Brown	0	100	0	Open grassland/prairie	Fair	2021-05-27
Map ID 8	*Hemizonia congesta ssp. tracyi*	3000	11,000	No	Claire Brown	0	100	0	Open grassland/prairie	Fair	2021-05-27
Map ID 9	*Hemizonia congesta ssp. tracyi*	500	1250	No	Claire Brown	0	100	0	Open grassland/prairie	Fair	2021-05-27
Map ID 10	*Lasthenia gracilis*	200	500	No	Claire Brown	0	100	0	Open grassland/prairie	Fair	2021-05-27
Map ID 11	*Lasthenia gracilis*	500	500	No	Claire Brown	0	100	0	Open grassland/prairie-Roadside ditch/wetland	Fair	2021-05-27
Map ID 12	*Lasthenia gracilis*	20	3000	No	Claire Brown	0	100	0	Open grassland/prairie	Fair	2021-05-27
Map ID 13	*Perideridia howellii*	38	1200	No	Claire Brown	0	100	0	Seasonal wetland	Fair	2021-05-27

Map ID 14	*Perideridia howellii*	15	50	Yes	Jenell Jackson	0	90	10	Seasonal wetland	Fair	2021-06-08
Map ID 15	*Perideridia howellii*	25	50	No	Claire Brown	0	100	0	Seasonal wetland	Fair	2021-05-27
Map ID 16	*Perideridia howellii*	200	2500	No	Claire Brown	0	100	0	Seasonal wetland	Fair	2021-05-27
Map ID 17	*Perideridia howellii*	25	200	No	Claire Brown	0	100	0	Seasonal wetland	Fair	2021-05-27
Map ID 18	*Perideridia howellii*	10	200	No	Claire Brown	0	100	0	Seasonal wetland	Fair	2021-05-27

Table 3. Summary of Survey Findings (Table Data CNDDB 2021, CNPS 2021).

Scientific Name	Common Name	CRPR	GRank	SRank	CESA	FESA	Blooming Period	Habitat	Elevation Low (ft)	Elevation High (ft)	Habitat within Project Footprint?	Species detected?
Allium hoffmanii	Beegum onion	4.3	G4	S4	None	None	Jun-Jul	Lower montane coniferous forest (serpentinite)	3605	5905	No-marginal serpentinite, limited forest habitat, usually found at higher elevations	No
Anisocarpus scabridus	scabrid alpine tarplant	1B.3	G3	S3	None	None	(Jun)Jul-Aug(Sep)	Upper montane coniferous forest (metamorphic, rocky)	5410	7545	No-No exposed metamorphic rock, usually found at higher elevations	No
Arctostaphylos hispidula	Howell's manzanita	4.2	G4	S3	None	None	Mar-Apr	Chaparral (serpentinite or sandstone)	390	4100	No- No chaparral in Survey Area	No
Arctostaphylos manzanita ssp. elegans	Konocti manzanita	1B.3	G5T3	S3	None	None	(Jan)Mar-May(Jul)	Chaparral, Cismontane woodland, Lower montane coniferous forest	1295	5300	No-No volcanic substrate, Study Area grassland	No
Arnica spathulata	Klamath arnica	4.3	G3?	S3	None	None	May-Aug	Lower montane coniferous forest (serpentinite)	2095	5905	No-marginal serpentinite, limited forest habitat	No
Astragalus agnicidus	Humboldt County milk-vetch	1B.1	G2	S2	CE	None	Apr-Sep	Broadleafed upland forest, North Coast coniferous forest	390	2625	Marginal- Possible but unlikely due to grazing impacts	No

Astragalus rattanii var. rattanii	Rattan's milk-vetch	4.3	G4T4	S4	None	None	Apr-Jul	Chaparral, Cismontane woodland, Lower montane coniferous forest	95	2705	Marginal- Possible but unlikely due to grazing impacts	No
Carex praticola	northern meadow sedge	2B.2	G5	S2	None	None	May-Jul	Meadows and seeps (mesic)	0	10500	Yes- Possible in wet areas	No
Carex scabriuscula	Siskiyou sedge	4.3	G4G5	S4	None	None	May-Jul	Lower montane coniferous forest, Meadows and seeps, Upper montane coniferous forest	2325	7695	Yes-Possible in wet areas	No
Claytonia serpenticola	Serpentine spring beauty	4.3	?	?	None	None	?	restricted to ultramafic soils in the Klamath Region of northern California*	?	?	No- No high concentration of ultramafic soils	No
Collomia tracyi	Tracy's collomia	4.3	G4	S4	None	None	Jun-Jul	Broadleafed upland forest, Lower montane coniferous forest	980	6890	Marginal- Possible but unlikely due to grazing impacts and lack of serpentinite	No
Coptis laciniata	Oregon goldthread	4.2	G4?	S3?	None	None	(Feb)Mar-May(Sep-Nov)	Meadows and seeps, North Coast coniferous forest (streambanks)	0	3280	Marginal-Usually associated with some canopy cover	No
Cryptantha rostellata	red-stemmed cryptantha	4.2	G4	S3	None	None	Apr-Jun	Cismontane woodland, Valley and foothill grassland	130	2625	Marginal-No volcanic soils	No
Cypripedium fasciculatum	clustered lady's-slipper	4.2	G4	S4	None	None	Mar-Aug	Lower montane coniferous forest, North Coast coniferous forest	325	7990	No- No serpentinite seeps	No
Cypripedium montanum	mountain lady's-slipper	4.2	G4	S4	None	None	Mar-Aug	Broadleafed upland forest, Cismontane woodland, Lower montane coniferous forest, North Coast coniferous forest	605	7300	No- Unlikely due to lack of canopy and grazing impacts	No

Epilobium oreganum	Oregon fireweed	1B.2	G2	S2	None	None	Jun-Sep	Bogs and fens, Lower montane coniferous forest, Meadows and seeps, Upper montane coniferous forest	1640	7350	Yes- Possible in wet areas	No
Epilobium septentrionale	Humboldt County fuchsia	4.3	G4	S4	None	None	Jul-Sep	Broadleafed upland forest, North Coast coniferous forest	145	5905	Marginal- Unlikely due to grazing impacts, typically associated with rocky and sandy river banks	No
Erigeron biolettii	streamside daisy	3	G3?	S3?	None	None	Jun-Oct	Broadleafed upland forest, Cismontane woodland, North Coast coniferous forest	95	3610	Marginal- No woodland, only open prairie within Study Area	No
Erigeron maniopotamicus	Mad River fleabane daisy	1B.2	G2?	S2?	None	None	May-Aug	Lower montane coniferous forest, Meadows and seeps (open, dry)	4180	4920	Marginal- Usually found at higher elevations	No
Erigeron robustior	robust daisy	4.3	G3	S3	None	None	Jun-Jul	Lower montane coniferous forest, Meadows and seeps	655	2000	Marginal	No
Erythronium oregonum	giant fawn lily	2B.2	G4G5	S2	None	None	Mar-Jun(Jul)	Cismontane woodland, Meadows and seeps	325	3775	Marginal- Usually associated with canopy cover, unlikely due to grazing impacts	No
Erythronium revolutum	coast fawn lily	2B.2	G4G5	S3	None	None	Mar-Jul(Aug)	Bogs and fens, Broadleafed upland forest, North Coast coniferous forest	0	5250	Marginal- Associated with canopy cover	No
Eucephalus glabratus	Siskiyou aster	4.3	G4	S3	None	None	Jul-Sep	Lower montane coniferous forest, Upper montane coniferous forest	390	8875	Marginal-Possible but unlikely due to grazing impacts	No

Fritillaria glauca	Siskiyou fritillaria	4.2	G3G4	S3	None	None	(Apr-May)Jun-Jul	Alpine boulder and rock field, Subalpine coniferous forest, Upper montane coniferous forest	5690	8005	No-no high concentrations of serpentinite or talus, usually found at higher elevations	No
Fritillaria purdyi	Purdy's fritillary	4.3	G4	S4	None	None	Mar-Jun	Chaparral, Cismontane woodland, Lower montane coniferous forest	570	7400	Marginal-possible in woodland or forest openings, but no high concentrations of serpentinite	No
Gilia capitata ssp. pacifica	Pacific gilia	1B.2	G5T3	S2	None	None	Apr-Aug	Coastal bluff scrub, Chaparral (openings), Coastal prairie, Valley and foothill grassland	15	5465	Yes- Possible along roads and in thin sil areas.	No
Hemizonia congesta ssp. tracyi	Tracy's tarplant	4.3	G5T4	S4	None	None	May-Oct	Coastal prairie, Lower montane coniferous forest, North Coast coniferous forest	390	3935	Yes- Possible in prairie	Yes
Hosackia yollabolliensis	Yolla Bolly Mtns. bird's-foot trefoil	1B.2	G2	S2	None	None	Jun-Aug	Meadows and seeps, Upper montane coniferous forest (openings)	5395	7005	No- usually found at higher elevations	No
Howellia aquatilis	water howellia	2B.2	G3	S2	None	FT	Jun	Marshes and swamps (freshwater)	3555	4230	Marginal- Usually found at higher elevations but possible in wet areas	No
Kopsiopsis hookeri	small groundcone	2B.3	G4?	S1S2	None	None	Apr-Aug	North Coast coniferous forest	295	2905	Marginal- Associated with madrone or Salal, forest habitat	No
Lathyrus biflorus	two-flowered pea	1B.1	G1	S1	None	None	Jun-Aug	Lower montane coniferous forest (serpentinite)	4490	4545	No-Associated with forest habitat, usually at higher elevations	No

Lathyrus glandulosus	sticky pea	4.3	G3	S3	None	None	Apr-Jun	Cismontane woodland	980	2625	Marginal	No
Leptosiphon acicularis	bristly leptosiphon	4.2	G4?	S4?	None	None	Apr-Jul	Chaparral, Cismontane woodland, Coastal prairie, Valley and foothill grassland	180	4920	Yes-Possible but unlikely due to grazing impacts	No
Leptosiphon latisectus	broad-lobed leptosiphon	4.3	G4	S4	None	None	Apr-Jun	Broadleafed upland forest, Cismontane woodland	555	4920	Yes-possible in woodland	No
Lilium rubescens	redwood lily	4.2	G3	S3	None	None	Apr-Aug(Sep)	Broadleafed upland forest, Chaparral, Lower montane coniferous forest, North Coast coniferous forest, Upper montane coniferous forest	95	6265	Yes-possible in woodland	No
Listera cordata	heart-leaved twayblade	4.2	G5	S4	None	None	Feb-Jul	Bogs and fens, Lower montane coniferous forest, North Coast coniferous forest	15	4495	Marginal-Possible in few areas of canopy cover	No
Lupinus constancei	The Lassics lupine	1B.1	G1	S1	None	None	Jul	Lower montane coniferous forest (serpentinite)	4920	6560	No- Usually found at higher elevations, no serpentinite	No
Lycopodium clavatum	running-pine	4.1	G5	S3	None	None	Jun-Aug(Sep)	Lower montane coniferous forest (mesic), Marshes and swamps, North Coast coniferous forest (mesic)	145	4020	Marginal-Possible in few areas of canopy cover	No
Lycopus uniflorus	northern bugleweed	4.3	G5	S4	None	None	Jul-Sep	Bogs and fens, Marshes and swamps	15	6560	Yes- possible in wet areas	No

Meesia triquetra	three-ranked hump moss	4.2	G5	S4	None	None	Jul	Bogs and fens, Meadows and seeps, Subalpine coniferous forest, Upper montane coniferous forest (mesic)	4265	9690	No-usually found at higher elevations	No
Mitellastra caulescens	leafy-stemmed mitrewort	4.2	G5	S4	None	None	(Mar)Apr-Oct	Broadleafed upland forest, Lower montane coniferous forest, Meadows and seeps, North Coast coniferous forest	15	5575	Marginal-Possible in few areas of canopy cover	No
Montia howellii	Howell's montia	2B.2	G3G4	S2	None	None	(Jan-Feb)Mar-May	Meadows and seeps, North Coast coniferous forest, Vernal pools	0	2740	Yes- Possible in low-gradient road sections	No
Navarretia leucocephala ssp. bakeri	Baker's navarretia	1B.1	G4T2	S2	None	None	Apr-Jul	Cismontane woodland, Lower montane coniferous forest, Meadows and seeps, Valley and foothill grassland, Vernal pools	15	5710	Marginal-Possible in wet areas	No
Packera bolanderi var. bolanderi	seacoast ragwort	2B.2	G4T4	S2S3	None	None	(Jan-Apr)May-Jul(Aug)	Coastal scrub, North Coast coniferous forest	95	2135	Marginal-Possible in few areas of canopy cover	No
Piperia candida	white-flowered rein orchid	1B.2	G3	S3	None	None	(Mar)May-Sep	Broadleafed upland forest, Lower montane coniferous forest, North Coast coniferous forest	95	4300	Marginal-Possible in few areas of canopy cover	No
Pityopus californicus	California pinefoot	4.2	G4G5	S4	None	None	(Mar-Apr)May-Aug	Broadleafed upland forest, Lower montane coniferous forest, North Coast coniferous forest, Upper montane coniferous forest	45	7300	Marginal-Possible in few areas of canopy cover	No

Pleuropogon refractus	nodding semaphore grass	4.2	G4	S4	None	None	(Mar)Apr-Aug	Lower montane coniferous forest, Meadows and seeps, North Coast coniferous forest, Riparian forest	0	5250	Marginal-Possible in few areas of canopy cover	No
Ptilidium californicum	Pacific fuzz wort	4.3	G4G5	S3S4	None	None	May-Aug	Lower montane coniferous forest, Upper montane coniferous forest	3740	5905	Marginal-Possible in few areas of canopy cover	No
Sabulina decumbens	The Lassics sandwort	1B.2	G1	S1	None	None	Jul	Lower montane coniferous forest, Upper montane coniferous forest	4920	5495	No- Usually found at higher elevations, no serpentinite	No
Sanicula tracyi	Tracy's sanicle	4.2	G4	S4	None	None	Apr-Jul	Cismontane woodland, Lower montane coniferous forest, Upper montane coniferous forest	325	5200	Yes- Possible in grassland	No
Sedum laxum ssp. flavidum	pale yellow stonecrop	4.3	G5T3Q	S3	None	None	May-Jul	Broadleafed upland forest, Chaparral, Cismontane woodland, Lower montane coniferous forest, Upper montane coniferous forest	1490	6560	No-no high concentrations of serpentinite or volcanic soils	No
Sidalcea malachroides	maple-leaved checkerbloom	4.2	G3	S3	None	None	(Mar)Apr-Aug	Broadleafed upland forest, Coastal prairie, Coastal scrub, North Coast coniferous forest, Riparian woodland	0	2395	Marginal-Possible in few areas of mixed canopy cover	No

Sidalcea malviflora ssp. patula	Siskiyou checkerbloom	1B.2	G5T2	S2	None	None	(Apr)May-Aug	Coastal bluff scrub, Coastal prairie, North Coast coniferous forest	45	2885	Yes- Possible in grassland, but unlikely due to grazing impacts	No
Tracyina rostrata	beaked tracyina	1B.2	G2	S2	None	None	May-Jun	Chaparral, Cismontane woodland, Valley and foothill grassland	295	2590	Yes- Possible in grassland and woodland	No
Usnea longissima	Methuselah's beard lichen	4.2	G4	S4	None	None		Broadleafed upland forest, North Coast coniferous forest	160	4790	Marginal-Possible in few areas of canopy cover	No
Veratrum insolitum	Siskiyou false-hellebore	4.3	G4	S4	None	None	Jun-Aug	Chaparral, Lower montane coniferous forest	145	5365		No
Wyethia longicaulis	Humboldt County wyethia	4.3	G4	S4	None	None	May-Jul	Broadleafed upland forest, Coastal prairie, Lower montane coniferous forest	2460	5005	Yes- Possible in open grassland	No

***Listing codes are as follows (CNPS 2018a):California Rare Plant Rank (CRPR**) 1B = rare, threatened, or endangered in CA and elsewhere; 2B = rare, threatened, or endangered in CA, but more common elsewhere; 3 = plants about which more information is needed; a review list; 4 = of limited distribution or infrequent throughout a broader area in California. Ranks at each level also include a threat rank and are determined as follows: 0.1-Seriously threatened in California; 0.2-Moderately threatened in California; 0.3-Not very threatened in California**. Global Ranking (GRank)** - The global rank (G-rank) is a reflection of the overall condition of an element throughout its global range: G1 = Less than 6 viable element occurrences (EOs) OR less than 1,000 individuals OR less than 2,000 acres; G2 = 6-20 EOs OR 1,000-3,000 individuals OR 2,000-10,000 acres; G3 = 21-80 EOs OR 3,000-10,000 individuals OR 10,000-50,000 acres; G4 = Apparently secure; this rank is clearly lower than G3 but factors exist to cause some concern; i.e., there is some threat, or somewhat narrow habitat; G5 = Population or stand demonstrably secure to ineradicable due to being commonly found in the world. **State Rank** (SRank) The state rank (S-rank) is assigned much the same way as the global rank, except state ranks in California often also contain a threat designation attached to the S-rank: S1: Fewer than 6 viable occurrences worldwide/ statewide, and/ or up to 518 hectares; S2: 6-20 viable occurrences worldwide/ statewide, and/ or more than 518-2,590 hectares; S3: 21-100 viable occurrences worldwide/ statewide, and/or more than 2,590-12,950 hectares; S4: Greater than 100 viable occurrences worldwide/ statewide, and/or more than 12,950 hectares; S5: Demonstrably secure because of its worldwide/ statewide abundance. Additional Threat Ranks: 0.1=Very threatened; 0.2=Threatened; 0.3= No current threat known. **CESA**: California Endangered Species Act. **FESA**: Federal Endangered Species Act.

Natural Communities

Most of the Study Area can be classified as open prairie habitat along existing roads, characterized by ruderal and weedy herbaceous species. Understory areas are generally characterized by native perennial species. Within the portion of the Study Area which includes the proposed mitigation area (Figure 9), the following stand types were delineated:

- .67 acres of "ruderal" vegetation including what can be characterized as Avena spp. - Bromus spp. Herbaceous Semi-Natural Alliance : *Hypochaeris glabra- Vulpia bromoides* association;
- .26 acres of *Festuca idahoensis - Danthonia californica* Herbaceous Alliance: *Danthonia californica* association, a sensitive natural community (S3);
- .09 acres of *Salix sitchensis* Provisional Shrubland Alliance, a provisional sensitive natural community (S3?).

Plot data, recorded on CNPS-CDFW Combined Releve/Rapid Assessment forms, for characterized stand types are included in Appendix C. See Figure 9.

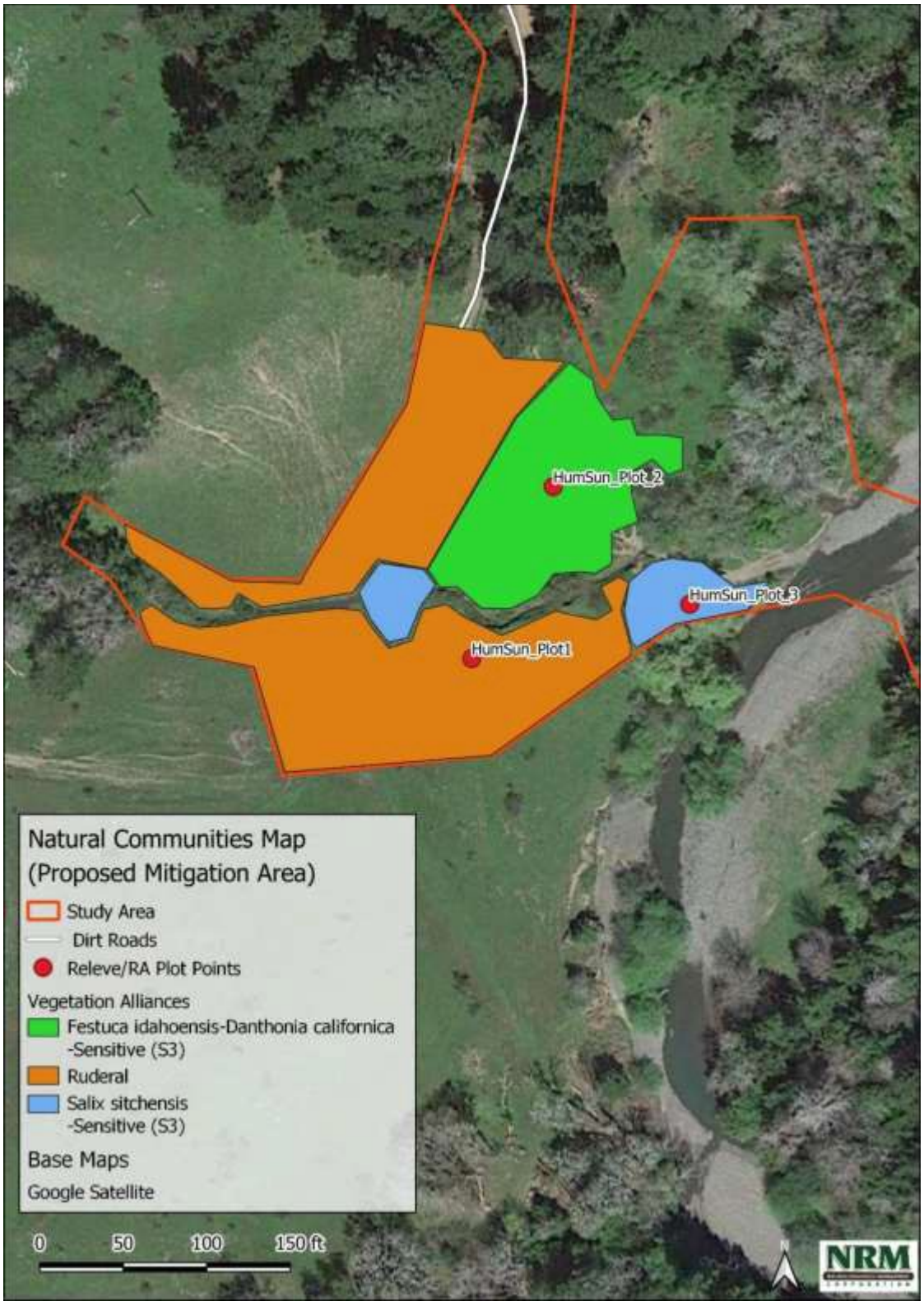


Figure 9. Natural Communities Delineation Map.

VI. Discussion

General

The survey timing should have coincided with the bloom windows of the target species for the habitat or marginal habitat is present within the Study Area. Extra time was spent searching for Howell's montia (*Montia howellii,* 2B.2) along vernally moist and low-gradient sections of roadways and other low-vegetative cover areas during the March 16th survey, as this species is small and can be difficult to detect. A reference population on the ownership, identified by GHD, was checked for phenology on that date and was in-flower. During the May and June surveys, special care was taken to look for populations of Siskiyou checkerbloom (*Sidalcea malviflora ssp. patula*, 1B.2), Pacific gilia (*Gilia capitata ssp. pacifica*), beaked tracyina (*Tracyina rostrata),* and Humboldt County milk-vetch (*Astragalus agnicidus*) as the Study Area presents potential habitat.

Failure to locate populations of the target or other special status species can be assumed to mean these populations are not present within the project impact area. However, negative surveys due to unusual climactic conditions or other environmental conditions are always possible. Winter and spring weather patterns in the area were very dry, but reference populations throughout the county were both observed and reported to be within normal phenology parameters, so we would expect these species to have been detectable during the survey, if present.

Sensitive Natural Communities

Approximately 0.26 acres of *Festuca idahoensis - Danthonia californica* Herbaceous Alliance: *Danthonia californica* association (a sensitive natural community-S3) and 0.09 acres of *Salix sitchensis* Provisional Shrubland Alliance (a provisional sensitive natural community-S3?) were identified within the Study Area. The location of each stand is shown in Figure 9. These areas are within what is proposed as a potential wetland mitigation receiver site. However, the degree to which these stands would be impacted by wetland creation or riparian enhancement is yet unknown. A mitigation and monitoring plan will be needed to compensate for wetland impacts proposed by the Hum Sun development project, but the development of this plan is contingent on project approval.

Sensitive Natural Communities: Mitigation Measures

When a wetland mitigation and monitoring plan is developed, all possible effort shall be made to avoid impacts to the sensitive natural communities described above. If impacts are proposed, compensatory mitigation appropriate to the degree of impacts shall be developed at that time, in addition to the mitigation being developed for wetland impacts.

Tracy's tarplant

*Hemizonia congesta ssp. tracy*i is an annual member of the plant family Asteraceae. It is known from Humboldt, Mendocino, and Trinity counties, and is a California endemic (CNPS 2020a). CNDDB does not report the number of known occurrences, but the Calflora database reports 96

records, with the occurrence reported here falling near the center of its distribution (Calflora 2021). However, most of these records are from before 1990.

*Hemizonia congesta ssp. tracy*i has the California Rare Plant Rank (California Rare Plant Rank) of 4.3. Plant species with a California Rare Plant Rank of 4 are considered by the CNPS Inventory of Rare and Endangered Plants to be "of limited distribution or infrequent throughout a broader area in California" (CNPS 2019a). The Threat Rank of 0.3 indicates that this species is "-not very threatened in California (less than 20% of occurrences threatened / low degree and immediacy of threat or no current threats known)" (CNPS 2021a). Plants with a CRPR of 4 sometimes meet the definition of rare or endangered under CEQA Guidelines section 15380 subdivisions (b) and (d), and "Impacts to CRPR 4 plants may warrant consideration under CEQA if cumulative impacts to such plants are significant enough to affect their overall rarity" (CDFW 2018d). *Hemizonia congesta ssp. tracy*i is given a State Rank of S4: "Apparently secure within California" (CNPS 2020a).

Tracy's tarplant is distinguished from other *Hemizonia congesta* subspecies by the "Leaves generally puberulent or minutely bristly or strigose and nonglandular, distal rarely long-soft-hairy and glandular; ray white, not purple-veined abaxially except NCo; heads in panicle-like cluster" (Baldwin et.al 2012).

Tracy's tarplant is an annual plant, growing each year from the seed set of the previous year or a seed bank from previous years.

Tracy's tarplant: Potential Impacts and Avoidance Recommendations

We found only one subpopulation of Tracys tarplant that would potentially be impacted by proposed development. This is population Map ID 8. The location of Map ID 8 is not within the footprint of the three different portions of the proposed development reviewed here. Instead, it is in the footprint of a proposed pond site reviewed by GHD in 2020. It is likely that this entire sub-population would be impacted by construction of the proposed pond. All other sub-populations are within areas *not* proposed for ground disturbance.

While avoidance is generally recommended for CRPR 4 plants, strict mitigation is only required if the taxa *does* meet the definition of rare or endangered under CEQA Guidelines section 15380 subdivisions (b) and (d). A 2020 Technical memorandum published by the CNPS Rare Plant Program (CNPS 2020c) offers guidance on determining whether a CRPR taxa does or does not meet that definition.

This population is at the center of the species' known distribution in California (Calflora 2021) and is therefore not within a peripheral portion of the known range, and the substrate on which it is found is not an unusual one. However, most of the records from CCH and the Calflora

database are quite old, most being from before 1990 and many from before 1950. It is therefore difficult to know whether this species is still widely distributed within its range or is in decline. It is therefore difficult to say whether it meets the definition of rare or endangered.

However, Tracy's tarplant is widely distributed over the ownership, and impacts to the Map-ID 8 subpopulation will not represent a significant decrease in the distribution or abundance of this species over the local land ownership (proposed development site). Therefore, we do not believe that avoidance or other mitigation measures are needed or warranted for this CNPS Rare Plant rank 4.3 species. Therefore, even if sub-population Map-ID 8 is impacted, these impacts will be less than significant.

Locally Rare Taxa

Article 9 of CEQA states that "special emphasis should be placed on environmental resources that are rare or unique to that region." This is interpreted to mean that plant species which do not have a sensitive State Rank or a CNPS Rare Rank, but are very uncommon to a particular region, should be considered for potential significant impacts under CEQA review processes.

According to the California Native Plant Society (CNPS), locally rare taxa are important to biodiversity conservation.

> "Locally rare plants play an important role in helping to preserve the diversity of the species, as well as the gene pool of local flora. Locally rare plants also preserve the potential for the species to undergo speciation events and are often of scientific or historical importance."-CNPS (CNPS 2021c).

During surveys, we identified two species that meet qualifications of locally rare: Howell's yampah (*Perideridia howellii*) and needle goldfields (*Lasthenia gracilis*).

Howell's yampah only has three other recorded occurrences in Humboldt County, and none in adjacent Trinity County (Calflora 2021, CCH 2021). This species is only known from California and southwestern Oregon.

Needle goldfields has no other recorded occurrences in Humboldt County, only one record from adjacent Trinity county, and only two very old records from adjacent Del Norte County (Calflora 2021, CCH 2021). This species is only known from two states, California and Arizona (eFNA 2021).

These populations represent the periphery of these species' ranges and are worthy of impacts assessment under the CEQA environmental review framework. Specimens of both species were collected and will be submitted to the Humboldt State University Herbarium.

***Howell's Yampah:* Potential Impacts and Mitigation Measures**

Howell's yampah is a perennial herbaceous plant that typically grows in seasonally wet areas and wetlands. All the sub-populations identified are outside of proposed areas of ground disturbance,

and we therefore **do not** expect them to be impacted by proposed development and do not require further avoidance or mitigation measures. See Figures 6-8 and Table 2.

***Needle Goldfields:* Potential Impacts and Mitigation Measures**

Needle goldfields is an annual species, reproducing from seed every year. One of the sub-populations (Map ID 12) is completely within the footprint of a proposed cannabis cultivation site and would be fully impacted by development. Sub-populations Map ID 10 and Map ID 11 are near the site of a proposed nursery structure and road Turnout #13, but are but outside of actual proposed development footprint. See Figures X and Table 2.

The needle goldfields (*Lasthenia gracilis*) population identified here as Map ID 12 is comprised of approximately 300 plants over an approximately 12,000 square foot area. Map ID 10 and Map ID 11 are comprised of approximately 200 and 50 plants, respectively, over an approximately 1000 square foot area.

Given the locally rare status of this plant, impacting this population could be considered significant. Therefore, we outline below the following mitigation measures to reduce impacts to less than significant.

Mitigation Goal:

- Establish a *Lasthenia gracilis* population of equivalent size and density (1:1) at a similar location on the ownership which is outside of the development footprint. This will require thecreation of a *Lasthenia gracilis* population consisting of approximately 300 individuals.

Mitigation Methods:

1. Seed from the Map ID 12 population shall be collected in June of 2022. All seed present can be collected, as the area will be fully impacted.
2. Collected seed will be given to a qualified restoration nursery such as Samara restoration in McKinleyville, CA or the Mattole Restoration Council Nursery in Petrolia, who will be contracted to grow at least 500 and up to 700 *Lasthenia gracilis* plugs in the spring of 2023.
3. A suitable receiver site shall be identified within the original GHD study area but outside the proposed project footprint, to avoid any additional unknown impacts. The chosen receiver site should have similar aspect, exposure, and soil depths/substrate as the impacted site. The receiver site should be between 10,000 and 12,000 square feet in size.
4. In April of 2023, or once plugs have filled their growing containers with roots, the plugs will be out planted into the receiver site by qualified restoration contactors. The contractors will plant the plugs on more or less one-foot centers, but should be qualified to make decisions about plant placement.

Success Criteria:

The mitigation will be considered successful if the installed plugs self-seed, resulting in the presence of at least some *Lasthenia gracilis* plants within the receiver site in the spring of 2024.

If no plants successfully self-seed, 5% of the available seed from the non-impacted populations (Map ID 11, 10) shall be collected and the whole process repeated.

Monitoring Methods:

In the spring following planting (2023), a qualified botanist or restoration practitioner shall visit the receiver site and count the number of *Lasthenia gracilis* plants present. A brief report documenting results shall be submitted to Humboldt County by May 30th of that year.

VII. References

VII. References Cited

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Appendix A: Floristic Plant List

FAMILY	SCIENTIFIC NAME	COMMON NAME	LIFEFORM	STATUS
AGAVACEAE	*Chlorogalum pomeridianum var. pomeridianum*	Common soaproot	Perennial herb	native
ANACARDIACEAE	*Toxicodendron diversilobum*	Poison oak	Vine, Shrub	native
APIACEAE	*Daucus carota*	Carrot	Perennial herb	invasive
	Heracleum maximum	Common cowparsnip	Perennial herb	native
	Lomatium utriculatum	Hog fennel	Perennial herb	native
	Oenanthe sarmentosa	Water parsley	Perennial herb	native
	Osmorhiza berteroi	Sweet cicely	Perennial herb	native
	Perideridia howellii	Howell's yampah	Perennial herb	native
	Sanicula bipinnatifida	Purple sanicle	Perennial herb	native
	Sanicula crassicaulis	Pacific sanicle	Perennial herb	native
	Torilis arvensis	Field hedge parsley	Annual herb	invasive
ASTERACEAE	*Achyrachaena mollis*	Blow wives	Annual herb	native
	Anisocarpus madioides	Woodland madia	Perennial herb	native
	Baccharis pilularis	Coyote brush	Shrub	native
	Carduus pycnocephalus	Italian thistle	Annual herb	invasive
	Hemizonia congesta ssp. congesta	Hayfield tarweed	Annual herb	native
	Hieracium albiflorum	White flowered hawkweed	Perennial herb	native
	Hypochaeris glabra	Smooth cats ear	Annual herb	invasive
	Hypochaeris radicata	Hairy cats ear	Perennial herb	invasive
	Lactuca virosa	wild lettuce	Perennial herb	non-native
	Lasthenia gracilis	Needle goldfields	Annual herb	native
	Logfia gallica	Narrowleaf cottonrose	Annual herb	non-native
	Matricaria discoidea	Pineapple weed	Annual herb	native
	Micropus californicus	Q tips	Annual herb	native
	Psilocarphus tenellus	Slender woolly heads	Annual herb	native
	Soliva sessilis	South american soliva	Annual herb	non-native
	Taraxacum officinale	Red seeded dandelion	Perennial herb	invasive
	Wyethia mollis	Woolly mule's ears	Perennial herb	native
	Bellis perennis	English lawn daisy	Perennial herb	invasive
	Cirsium vulgare	Bullthistle	Perennial herb	invasive
	Silybum marianum	Milk thistle	Annual, Perennial herb	invasive
BERBERIDACEAE	*Berberis aquifolium*	Mountain grape	Shrub	native
BORAGINACEAE	*Nemophila heterophylla*	Canyon nemophila	Annual herb	native
	Myosotis sp.	Forget me not	Annual herb	non-native
BRASSICACEAE	*Cardamine californica*	Bitter cress	Perennial herb	native

	Nasturtium officinale	Watercress	Perennial herb (aquatic)	native
CAPRIFOLIACEAE	*Lonicera hispidula*	Pink honeysuckle	Vine, Shrub	native
	Symphoricarpos albus	Common snowberry	Shrub	native
CARYOPHYLLACEAE	*Cerastium glomeratum*	Large mouse ears	Annual herb	non-native
	Scleranthus annuus	German knotgrass	Annual herb	non-native
	Silene laciniata	Cardinal catchfly	Perennial herb	native
	Spergularia rubra	Purple sand spurry	Annual, Perennial herb	non-native
	Stellaria media	Chickweed	Annual herb	non-native
CONVOLVULACEAE	*Calystegia occidentalis ssp. occidentalis*	Modoc morning glory	Perennial herb	native
CRASSULACEAE	*Crassula connata*	Sand pygmy weed	Annual herb	native
CYPERACEAE	*Carex c.f. barbarae*	Valley sedge	Perennial grasslike herb	native
	Carex gynodynama	Olney's hairy sedge	Perennial grasslike herb	native
	Carex tumulicola	Split awn sedge	Perennial grasslike herb	native
	Isolepis cernua	Low bulrush	Annual grasslike herb	native
DRYOPTERIDACEAE	*Dryopteris arguta*	Wood fern	Fern	native
	Polystichum munitum	Western sword fern	Fern	native
ERICACEAE	*Arbutus menziesii*	Madrono	Tree	native
EUPHORBIACEAE	*Euphorbia c.f. peplus*	Petty spurge	Annual herb	non-native
FABACEAE	*Acmispon brachycarpus*	Short podded lotus	Annual herb	native
	Lathyrus angulatus	Angled pea vine	Vine	non-native
	Lathyrus sulphureus	Sulpher pea	Perennial herb	native
	Lotus corniculatus	Bird's foot trefoil	Perennial herb	invasive
	Lupinus bicolor	Lupine	Annual, Perennial herb	native
	Rupertia physodes	Common rupertia	Perennial herb	native
	Trifolium dubium	Shamrock	Annual herb	non-native
	Trifolium hirtum	Rose clover	Annual herb	invasive
	Trifolium hybridum	Alsike clover	Perennial herb	non-native
	Trifolium striatum	striped clover	Annual herb	non-native
	Trifolium variegatum var. variegatum	Variegated clover	Annual herb	native
	Vicia sativa ssp. nigra	Smaller common vetch	Annual herb, Vine	non-native
	Medicago polymorpha	California burclover	Annual herb	invasive
	Trifolium angustifolium	Narrow leaved clover	Annual herb	non-native
	Trifolium repens	White clover	Perennial herb	non-native
FABACEAE	*Trifolium subterraneum*	Subterranean clover	Annual herb	non-native
	Quercus garryana	Oregon oak	Tree	native
	Quercus kelloggii	California black oak	Tree	native
GERANIACEAE	*Erodium cicutarium*	Coastal heron's bill	Annual herb	invasive

	Geranium molle	Crane's bill geranium	Annual, Perennial herb	invasive
	Erodium botrys	Big heron bill	Annual herb	non-native
GROSSULARIACEAE	*Ribes divaricatum*	Spreading gooseberry	Shrub	native
	Ribes menziesii	Gooseberry	Shrub	native
	Ribes roezlii var. roezlii	Sierra gooseberry	Shrub	native
HYDRANGEACEAE	*Whipplea modesta*	Modesty	Vine, Shrub	native
HYPERICACEAE	*Hypericum perforatum*	Klamathweed	Perennial herb	invasive
IRIDACEAE	*Iris purdyi*	Purdy's iris	Perennial herb	native
	Sisyrinchium bellum	Blue eyed grass	Perennial herb	native
JUNCACEAE	*Juncus bufonius*	Common toad rush	Annual grasslike herb	native
	Juncus occidentalis	Slender juncus	Perennial grasslike herb	native
	Luzula comosa	Hairy wood rush	Perennial grasslike herb	native
	Juncus patens	Rush	Perennial grasslike herb	native
LAMIACEAE	*Mentha pulegium*	Pennyroyal	Perennial herb	invasive
	Prunella vulgaris	Self heal	Perennial herb	native
	Stachys rigida var. quercetorum	Rough hedgenettle	Perennial herb	native
LAURACEAE	*Umbellularia californica*	California bay	Tree	native
LILIACEAE	*Scoliopus bigelovii*	Slink pod	Perennial herb	native
LINACEAE	*Linum bienne*	Flax	Annual herb	non-native
MELANTHIACEAE	*Trillium albidum*	Giant white wakerobin	Perennial herb	native
MONTIACEAE	*Calandrinia menziesii*	Red maids	Annual herb	native
	Claytonia perfoliata	Miner's lettuce	Annual herb	native
	Montia linearis	Narrow leaved water chickweed	Annual herb	native
	Montia fontana	Water montia	Annual herb	native
MYRSINACEAE	*Lysimachia arvensis*	Scarlet pimpernel	Annual herb	non-native
OLEACEAE	*Fraxinus latifolia*	Oregon ash	Tree	native
ONAGRACEAE	*Circaea alpina ssp. pacifica*	Pacific enchanter's nightshade	Perennial herb	native
	Clarkia purpurea ssp. quadrivulnera	Purple clarkia	Annual herb	native
	Clarkia gracilis	Graceful clarkia	Annual herb	native
ORCHIDACEAE	*Calypso bulbosa*	Fairy slipper	Perennial herb	native
OROBANCHACEAE	*Castilleja attenuata*	Narrow leaved owl's clover	Annual herb	native
	Parentucellia viscosa	Yellow parentucellia	Annual herb	invasive
	Triphysaria pusilla	Little owl's clover	Annual herb	native
OXALIDACEAE	*Oxalis oregana*	Redwood sorrel	Perennial herb	native
PAPAVERACEAE	*Eschscholzia californica*	California poppy	Annual, Perennial herb	native

PHRYMACEAE	*Erythranthe guttata*	Yellow monkey flower	Annual, Perennial herb (rhizomatous)	native
PINACEAE	*Pseudotsuga menziesii var. menziesii*	Douglas fir	Tree	native
PLANTAGINACEAE	*Veronica americana*	American brooklime	Perennial herb	native
	Callitriche sp.	Water starwort	Annual herb	native
POACEAE	*Anthoxanthum odoratum*	Sweet vernal grass	Annual, Perennial grass	invasive
	Avena barbata	Slim oat	Annual, Perennial grass	invasive
	Bromus diandrus	Ripgut brome	Annual grass	invasive
	Bromus laevipes	Narrow flowered brome	Annual, Perennial grass	native
	Cynosurus echinatus	Dogtail grass	Annual grass	invasive
	Danthonia californica	California oatgrass	Perennial grass	native
	Deschampsia elongata	Hairgrass	Perennial grass	native
	Elymus caput-medusae	Medusa head	Annual grass	invasive
	Elymus glaucus	Blue wildrye	Perennial grass	native
	Festuca bromoides	Brome fescue	Annual grass	non-native
	Festuca occidentalis	Western fescue	Perennial grass	native
	Festuca perennis	Italian rye grass	Annual, Perennial grass	invasive
	Glyceria Xoccidentalis	Western manna grass	Perennial grass (aquatic)	non-native
	Holcus lanatus	Common velvetgrass	Perennial grass	invasive
	Hordeum marinum	Seaside barley	Annual grass	invasive
	Melica harfordii	Harford's melic	Perennial grass	native
	Melica subulata	Alaska melic	Perennial grass	native
	Poa annua	Annual blue grass	Annual grass	non-native
	Stipa pulchra	Purple needle grass	Perennial grass	native
	Aira caryophyllea	Silvery hairgrass	Annual grass	invasive
	Briza maxima	Rattlesnake grass	Annual grass	invasive
	Bromus commutatus	Hairy chess, meadow brome	Annual grass	non-native
	Bromus hordeaceus	Soft chess	Annual grass	invasive
	Bromus racemosus	Smooth brome	Annual grass	non-native
	Festuca arundinacea	Reed fescue	Perennial grass	invasive
	Festuca myuros	Rattail sixweeks grass	Annual grass	invasive
	Festuca subuliflora	Coast range fescue	Perennial grass	native
	Hordeum marinum ssp. gussoneanum	Barley	Annual grass	non-native
	Polypogon monspeliensis	Annual beard grass	Annual grass	invasive
POLEMONIACEAE	*Leptosiphon bicolor*	True babystars	Annual herb	native
	Navarretia intertexta	Interwoven navarretia	Annual herb	native
	Navarretia squarrosa	Skunkweed	Annual herb	native

POLYGONACEAE	*Rumex acetosella*	Sheep sorrel	Perennial herb	invasive
	Polypodium glycyrrhiza	Licorice fern	Fern	native
PTERIDACEAE	*Pentagramma triangularis*	Gold back fern	Fern	native
RANUNCULACEAE	*Ranunculus occidentalis*	Western buttercup	Perennial herb	native
	Ranunculus sardous	Hairy buttercup	Perennial herb	non-native
	Thalictrum fendleri	Fendler's meadow rue	Perennial herb	native
RHAMNACEAE	*Ceanothus integerrimus*	Deer brush	Shrub	native
ROSACEAE	*Aphanes occidentalis*	Ladie's mantle	Annual, Perennial herb	native
	Fragaria vesca	Wild strawberry	Perennial herb	native
	Prunus c.f. cerasifera	Cherry plum	Tree	invasive
	Rosa gymnocarpa	Wood rose	Shrub	native
	Rosa rubiginosa	Sweet brier	Shrub	non-native
	Rubus ursinus	California blackberry	Vine, Shrub	native
RUBIACEAE	*Galium aparine*	Cleavers	Annual herb	native
	Galium trifidum	Three petaled bedstraw	Perennial herb	native
RUBIACEAE	*Sherardia arvensis*	Field madder	Annual herb	non-native
SALICACEAE	*Salix sitchensis*	Coulter willow	Tree, Shrub	native
SAPINDACEAE	*Acer circinatum*	Vine maple	Tree, Shrub	native
	Acer macrophyllum	Bigleaf maple	Tree	native
SAXIFRAGACEAE	*Heuchera micrantha*	Alum root	Perennial herb	native
	Tellima grandiflora	Fringe cups	Perennial herb	native
SCROPHULARIACEAE	*Verbascum blattaria*	Moth mullein	Perennial herb	non-native
THEMIDACEAE	*Brodiaea coronaria*	Harvest brodiaea	Perennial herb (bulb)	native
	Dichelostemma ida-maia	Firecracker flower	Perennial herb	native
	Triteleia hyacinthina	Wild hyacinth	Perennial herb	native
	Triteleia laxa	Ithuriel's spear	Perennial herb	native
VIOLACEAE	*Viola glabella*	Stream violet	Perennial herb	native
	Viola ocellata	Western heart's ease	Perennial herb	native
	Viola c.f. praemorsa	Astoria violet	Perennial herb	native
	Viola sempervirens	Redwood violet	Perennial herb	native

Appendix B: Photos

All photos taken on May 27th, 2021



Photo 1. *Hemizonia congesta ssp. tracyi*



Photo 2. *Hemizonia congesta ssp. tracyi* Map ID 8



Photo 3. *Perideridia howellii*



Photo 4. *Perideridia howellii*



Photo 5. *Perideridia howellii*



Photo 6. *Perideridia howellii*



Photo 7. *Perideridia howellii*



Photo 8. *Lasthenia gracilis*



Photo 9. *Lasthenia gracilis*

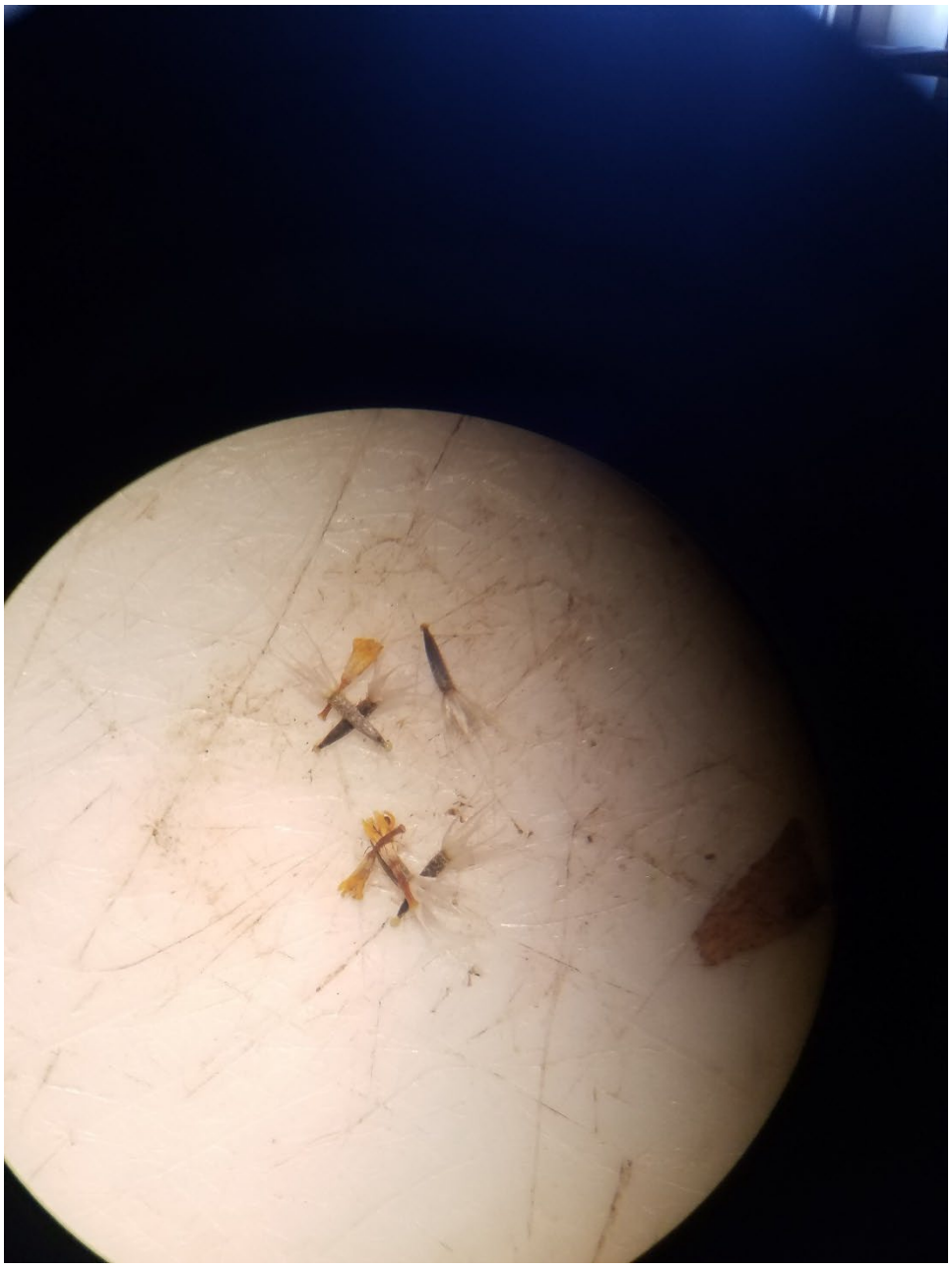


Photo 10. *Lasthenia gracilis:* pappus under microscope

Appendix C: Combined Vegetation Rapid Assessment and Releve Forms

Appendix 2H

Impacts Botanical Resources Sensitive Natural Communities: *Festuca idahoensis-Danthonia californica* Herbaceous Alliance, Dense sedge marshes (*Carex densa*)

Impacts Botanical Resources Sensitive Natural Communities:

Festuca idahoensis- Danthonia californica Herbaceous Alliance, Dense sedge marshes (Carex densa).

Hum Sun Ranch

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December 2020
Revised March 17, 2021
2nd Revision September 28, 2022

NRM
NATURAL RESOURCES MANAGEMENT
CORPORATION

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1.0 Introduction

A proposed project at Hum Sun Ranch will affect stands of *Festuca idahoensis- Danthonia californica* Herbaceous Alliance (association code 41.251.00, S3), dense sedge marshes (*Carex densa*) Provisional Herbaceous Alliance, S2? ("The question mark after the S2 rank denotes an inexact numeric rank because there are insufficient samples over the full expected range of this community type, but existing information points to this rank", GHD 2020). For further details on botanical surveys and Sensitive Natural Community mapping see the projects Botanical Resources Report (GHD, 2020) and Sensitive Natural Communities Report (NRM 2022).

A total of 8.05 acres *Festuca idahoensis- Danthonia californica* Herbaceous Alliance, and 0.09 acres of Dense sedge marsh will be impacted. See figures 1-5 for impact areas. These vegetation communities each have a State Rank of S2 or S3 and are considered Sensitive Natural Communities by the California Department Fish and Wildlife (CDFW 2020). The Impacts to these communities therefore warrant impact analysis under CEQA (CEQA Guidelines checklist at IVb). The lower pond will impact two occurrences of Tracy's tarplant (*Hemizonia congesta ssp. Tracyi*, CRPR 4.3) CNPS List 4 is a watch list, a threat rank of 3 is "not very threatened in California". It is not required for list 4 plants to be evaluated under CEQA.

Impacted areas of dense sedge marsh are found within wetlands. These impacted wetlands will be mitigated for under the projects MMP (see Wetland Impacts document in project file). A minimum of 0.09 acres of newly created wetland will be dense sedge marsh.

The impacted areas qualify for the *Festuca idahoensis- Danthonia californica* Herbaceous Alliance based on the following membership rule: *Festuca californica, Festuca idahoensis, Festuca rubra*or, *Danthonia californica* at least 10% relative cover and often > 30% relative cover in the herbaceous layer with a variety of other herbs in upland settings (Buck-Diaz et al. 2020). Percent cover of *Danthonia californica* in these areas ranged from only 15 to 25 percent. None of the *Festuca* species were present. These areas all have high covers of non-native species. To compensate for unavoidable project impacts, and to reduce these impacts to less than significant, existing degraded stands of *Danthonia californica* prairie outside of the project footprint will be enhanced and expanded.

The goal of this Plan is to guide the successful enhancement and restoration of a total of approximately 8.05 acres (350,860 square feet) of *Danthonia californica* prairie.

Table1. Impacts to Sensitive Natural Communities

Project Feature	Impacted *Danthonia californica* Prairie (sqft)	Impacted Dense sedge marshes
Mid Ridge		
Proposed ponds	43603	
Proposed Solar Array	8852	
Proposed Parking	1038	
Proposed Nursery	30048	
Ridge		
Proposed Solar Array	16421	
Proposed Processing/Drying Facility	2355	
Proposed Parking	317	
Outdoor Cultivation Area	190,847	
Lower Pond	28,599	
Upper Pond	20,836	
Lower Field Cultivation		
Proposed Mixed Light Cultivation	6906	4065
Proposed Parking	1038	

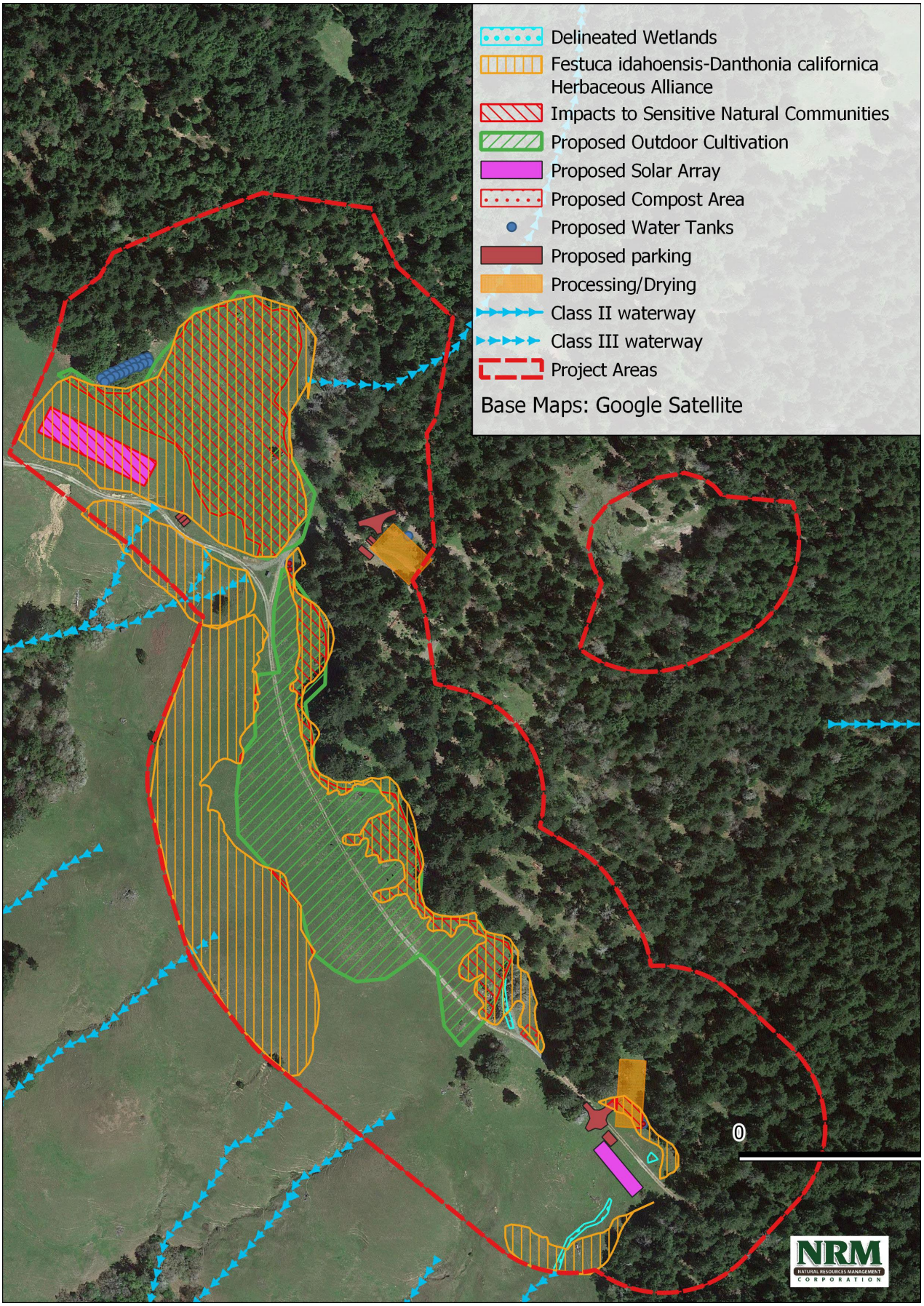


Figure 1. Impacts to Sensitive Natural Communities Ridge

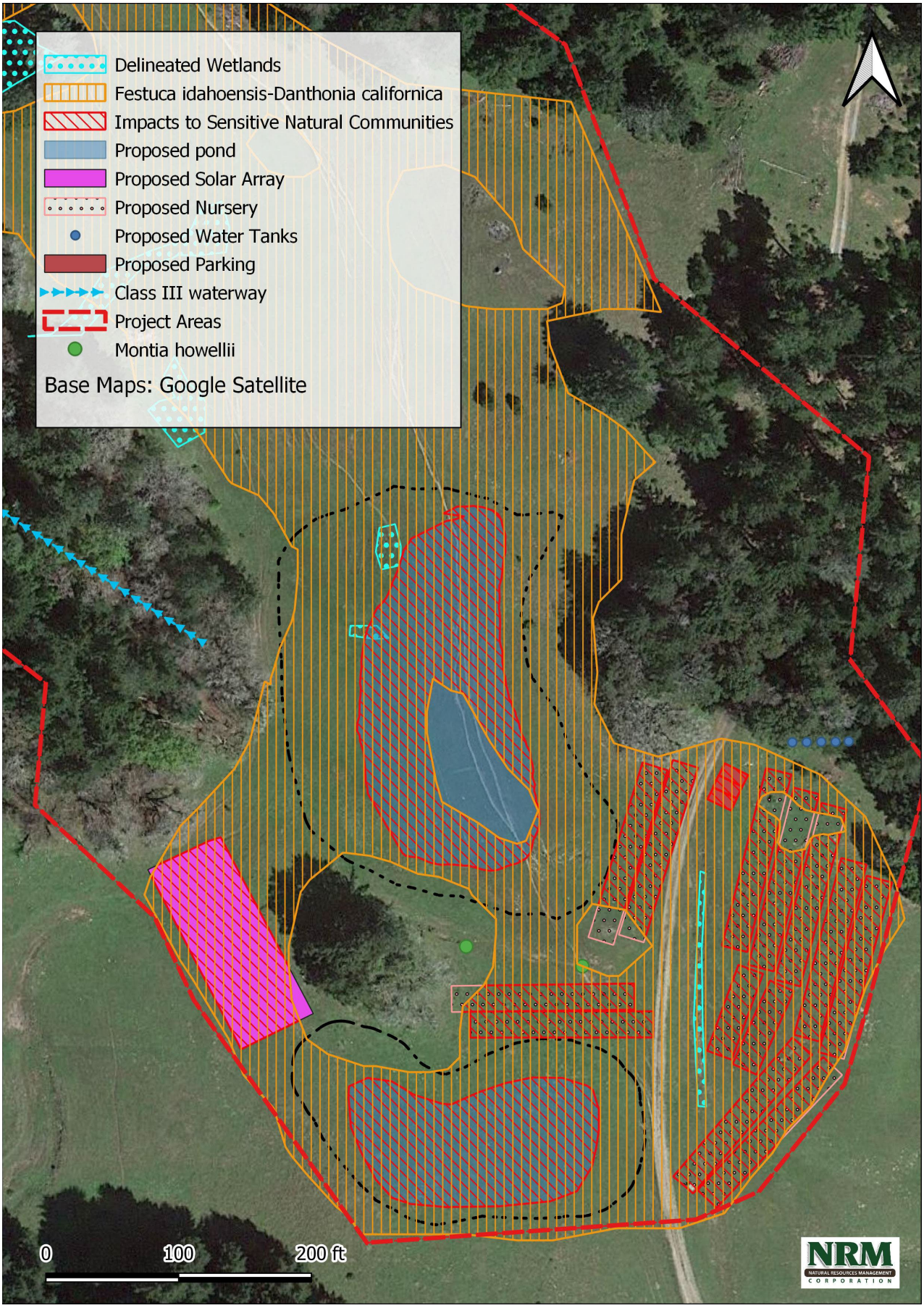


Figure 2. Impacts to Sensitive Natural Communities Mid-Ridge



Figure 3. Impacts to Sensitive Natural Communities Upper Pond

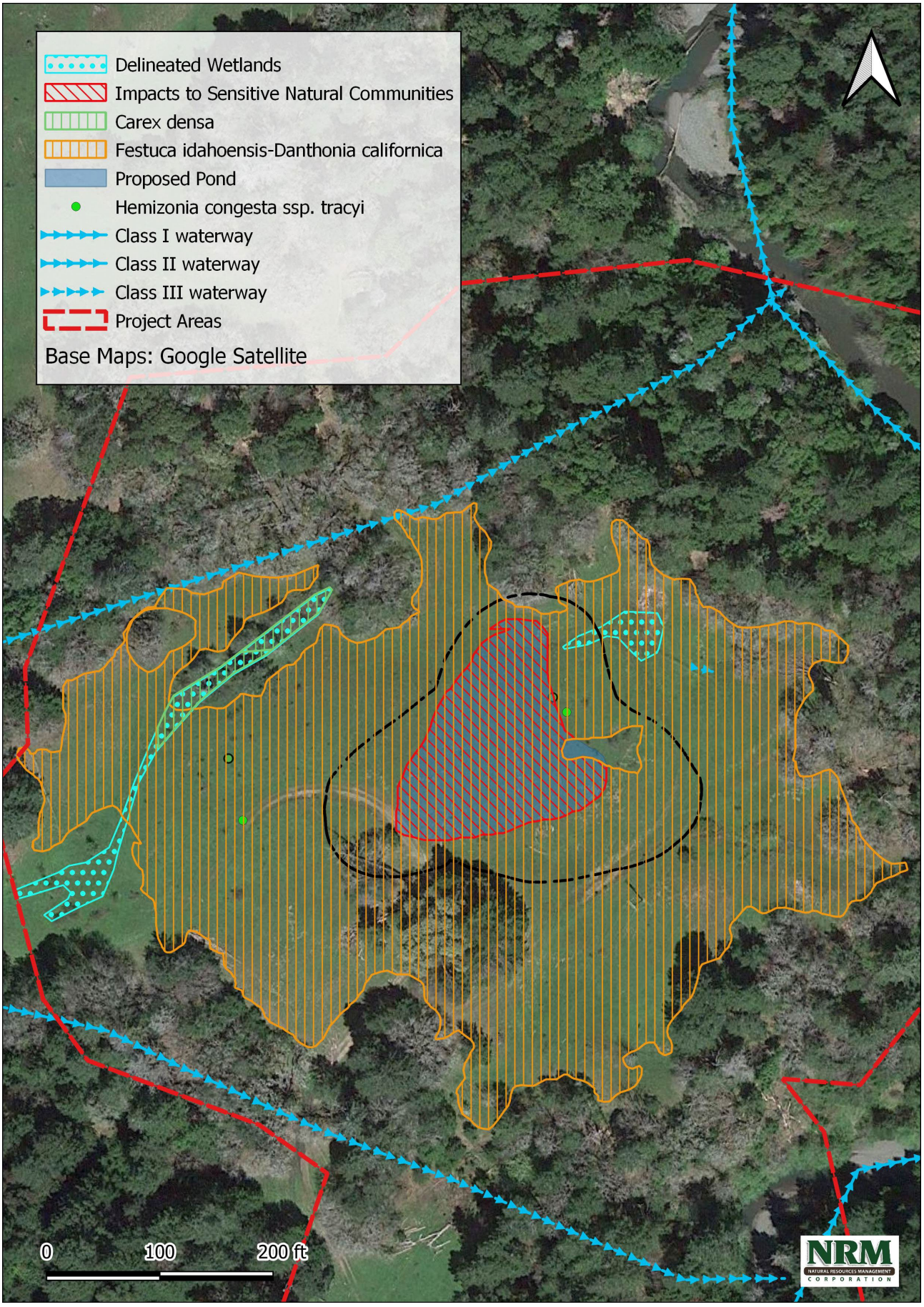


Figure 4. Impacts to Sensitive Natural Communities Lower Pond

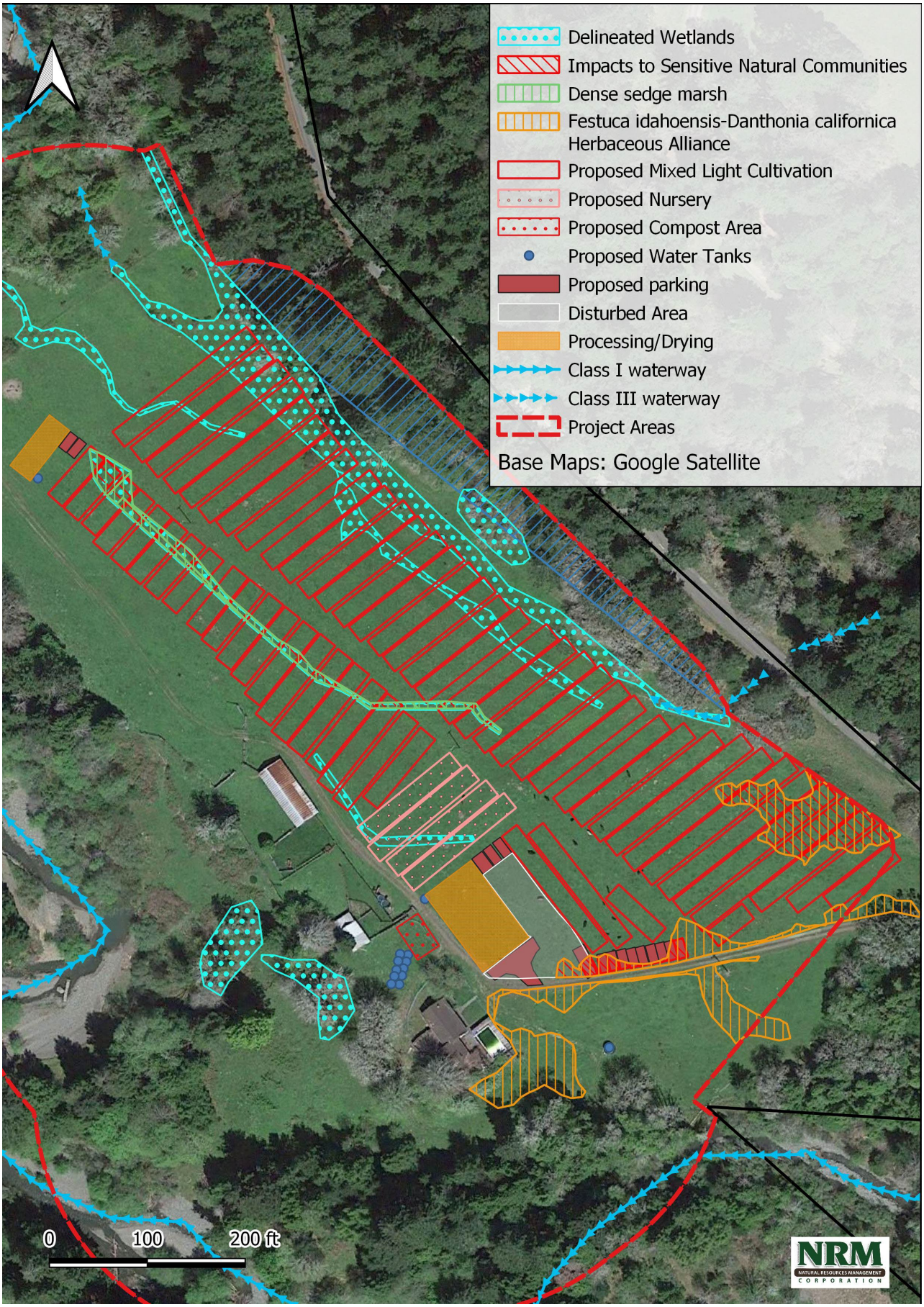


Figure 5. Impacts to Sensitive Natural Communities Lower Field

1.1 Document Preparer Qualifications

Document preparer's are Jenell Jackson, Claire Brown and Prairie Moore, Staff Botanists at Natural Resources Management Corporation (NRM) in Eureka, CA. Jenell Jackson is a botanist and restoration ecologist with 10 years' experience in a professional setting. Claire Brown is a botanist and restoration ecologist with 8 years' experience in a professional setting. Prairie Moore is a botanist and restoration ecologist with 20 years' experience in the professional setting. They have designed and implemented restoration projects, authored mitigation monitoring plans, performed mitigation monitoring, and written monitoring reports.

1.2 Site Location

The project is located in the Blocksburg area in southeastern Humboldt County. In its entirety, Hum Sun Ranch is comprised of over 3,000 acres of agricultural and timber land within contiguous ownership.

1.3 Project Description

Hum Sun Ranch is planning the construction of Cannabis cultivation infrastructure. Some of this infrastructure construction will result in impacts to sensitive natural communities.

1.4. Responsible Parties

Plan approval and success evaluation will be overseen by Humboldt County and the California Department of Fish and Wildlife. Hum Sun Ranch is responsible for project implementation.

2.0 Mitigation Plan Goals and Objectives

This Plan is intended to address environmental impact mitigation required for the certification of a Mitigated Negative Declaration under CEQA. The mitigation goal of this project is as follows:

1. To restore a total of approximately 8.05 acres (350,860 square feet) of *Festuca idahoensis-Danthonia californica* Herbaceous Alliance.

3.0 Mitigation Plan

Danthonia californica **prairie**

3.1 Existing Site Conditions and Site Selection

Many parts of the project parcel (ranch) have grasslands that have been severely degraded by historic grazing and are currently dominated by nonnative grasses and forbs. However, in some areas, large stands of native grassland (including *Danthonia californica* prairie) persist. Within the Study Area, which comprised only a small portion of the ranch, over 1,252,537 square feet of *Festuca idahoensis- Danthonia californica* Herbaceous Alliance was mapped in addition to the areas being impacted by the project. The stands on the ranch vary in the degree to which they are currently invaded by nonnative species.

Several of these stands will be mapped and evaluated as part of the mitigation site selection process. Stands will be categorized as:

- High quality: ~0-30% non-native,

- Moderately invaded: ~31-60% non-native, and
- Heavily invaded: ~61-90% non-native.

These categories will be assigned using stand data collected according to the California Native Plant Society releve protocol (CNPS 2000). Mitigation sites will be created within stands that are moderately to heavily invaded and have the potential to be restored to a category of "high quality" by a combination of weeding and planting.

Mitigation area will be within "moderately invaded" and "heavily invaded" stands that have less than 30% relative *Danothia californica* cover. Implementing mitigation via the restoration of existing stands is a better guarantee for success than planting into areas currently unoccupied by the target species, as these sites are more likely to have suitable environmental conditions for high quality prairie development. Once the mitigation areas have been identified, they will be mapped and visually demarcated in the field. The baseline stand conditions over the mitigation areas will be documented and mapped.

3.2 Mitigation Design

The prairie mitigation site(s) will be referred to as the mitigation prairies for the purpose of the design. Mitigation prairies meeting the "high quality" criterion will be created to compensate for impacts at a 1 to 1 ratio. Therefore, a total of approximately 8.05 acres (350, 860 square feet) of *Festuca idahoensis*-*Danthonia californica* Herbaceous Alliance will be created via restoration. These areas will meet the membership rules for the *Festuca idahoensis- Danthonia californica* Herbaceous Alliance and in addition will only be considered successful if *Danthonia californica* has > 30% relative cover in the herbaceous canopy of the mitigation sites after five years. **A design specific to the selected mitigation sites will be developed.**

Table 1. Prairie Mitigation Design Summary

Feature	**Area (Square Feet)**	**Area (Acres)**
Festuca idahoensis- Danthonia californica Herbaceous Alliance	350,860	8.05

3.3 Site Preparation

Invasive and nonnative species management within the site shall precede all other activity. The primary species of concern are purple velvet grass (*Holcus lanatus*) and yellow star thistle (*Centaurea solstitialis*). Once sites are selected, a weeds management plan tailored to the sites and specific to the problem species there will be developed and implemented.

3.4 Work Schedule

The following outline illustrates the work schedule for mitigation and monitoring.

Year 0:
1) Site selection and documentation of baseline stand conditions within the mitigation areas.
2) Development of restoration plan specific to the selected sites.

3) On-site seed collection and Contracted grow-out of container stock
4) Invasive species and seedbank management in the 12 months preceding construction.
5) Post-rain weeding.
6) Plant installation.

Year 1:
1) Spring monitoring visit in April.
2) Weeds management work as needed.
3) Winter replanting as needed
4) Submission of Annual Monitoring Report by December 31.

Year2:
1) Spring monitoring visit in April.
2) Weeds management work as needed.
3) Winter replanting as needed
4) Submission of Annual Monitoring Report by December 31.

Year 3:
1) Spring monitoring visit in April.
2) Weeds management work as needed.
3) Winter replanting as needed
4) Submission of Annual Monitoring Report by December 31.

Year 4:
1) Spring monitoring visit in April.
2) Weeds management work as needed.
3) Winter replanting as needed
4) Submission of Annual Monitoring Report by December 31.

Year 5:
1) Spring monitoring visit in April.
2) Weeds management work as needed.
3) Winter replanting as needed
4) Submission of Annual Monitoring Report by December 31.

3.5 Restoration and Planting Plan

Plants must be installed by restoration practitioners qualified to utilize adaptive management in plant placement and follow the installations methods described below. Inspections and tracking of work progress is required.

3.5.1 *Danthonia californica* Plantings

As determined by the site-specific plan, the *Danthonia californica* will be planted with 'plug' size *Danthonia californica* plants, preferably grown from seed collected on site (on the ranch), or purchased. Plugs will be planted on 2-ft centers or as needed. After planting, the site may also be seeded with additional *Danthonia California* seed collected on site or purchased.

Table 2. Species Recommended for the *Danthonia californica* Prairie.

Species	**Quantity**	**Size**
California Oatgrass *Danthonia californica*	To be determined	Plug
California Oatgrass *Danthonia californica*	To be determined	Seed

3.5.2 Container Planting Instructions

All plugs must be planted in the late fall or early winter, after the first rains have infiltrated and adequately moistened the soil down to a depth of at least 24 inches. Plants used shall have enough root mass to fill their container size prior to being transplanted. It is preferred that plant stock be planted as soon as it arrives on site. No irrigation will be required.

Container plants will be out-planted in the following manner:

- Excavate a hole twice the diameter and one and a half times the depth of the plant's container.
- Scarify the sides of the hole to loosen the soil.
- Back-fill the hole with loose soil until it is the same depth as the container.
- Place plant into hole. Care shall be taken that roots hang freely, and the plant crown is correctly positioned relative to the surrounding soil level. The use of a stick-level can aid in this determination.
- Back-fill with soil around the root ball, packing gently but firmly.

3.5.3 Direct Seeding Instructions

The seeds of the recommended species are small, and shall be sown directly on the soil surface, gently and shallowly harrowed with a rake and then tamped. Seeds shall be sown prior to the application of erosion control materials such as straw or wood mulch. Mulch in these areas shall not be spread more than ½-inch thick. Adaptive management must be utilized to determine the best use of available seed sources.

3.5.4 Tracking

Accurate records of how many plugs are planted must be kept during plant installation. These records are crucial for accurate project monitoring. A qualified botanist or restoration practitioner must be on-site immediately prior to and during plant installation to inspect and collect these records.

3.6 Materials Quality Assurances

Table 2 shows all plant species proposed for installation in this project. Plant material must be sourced form a nursery that utilizes BMPs that minimize risk of infection with plant pathogens (PNHWG 2016).

Other than the plant stock, materials may include:

- Weed-free wood mulch (sourced locally).
- Weed free rice straw.

To assure quality of materials, installation procedures, and to provide technical assistance a qualified botanist or revegetation specialist shall be on-site to inspect the site prior to the installation of plants.

4.0 Maintenance

4.1 Invasive Species Management

Across the mitigation site, invasive plants (and non-native plant species that threaten to prevent the project from meeting the Success Criteria) shall be intensively managed. Management emphasis will be placed on any invasive species with a Cal-IPC rank of High* or Moderate, and on any non-native plants threatening the successful establishment of any native plantings or natural recruits, herein referred to as weedy species (Cal-IPC 2018). Non-native species without a Cal-IPC rating and that do not threaten the establishment of native plantings or recruits will not be a management priority. Species meeting the criteria for removal are herein referred to as target species. At this site, target species are expected to include yellow star thistle and weedy perennial grasses.

*Species with a rank of "High" have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed (Cal-IPC 2020).

Each year for the five years following planting in the month of April, an individual qualified to identify target species (as described above) will visit the site, and all occurrences of target species within the prairie mitigation site shall be recorded and mapped. All mapped species will be targeted for mechanical removal during a maintenance visit, which will occur within one month. If feasible, the mapping and maintenance can happen in the same visit. Any mechanically removed invasive plant parts shall be properly disposed of to reduce the chance of spread. This may include hauling off-site. If invasive plants are shipped off site for disposal they shall be transported in closed or covered containers and delivered to a suitable destination such as a waste disposal facility.

If weedy species management is to include mowing, mowing crews must be familiarized with planted and desirable species to avoid inadvertent impacts.

4.2 Documentation

Weeding, management techniques, and other maintenance work completed will be included in the Annual Monitoring report, which will be submitted to Humboldt County for review and comment.

5.0 Success Criteria

The following performance criteria will be used to evaluate project success. See Section 6.1 for definition of terms.

The Project will be considered successful if by Monitoring Year 5:

1. A total of approximately 8.05 acres (350, 860 square feet) of *Festuca idahoensis- Danthonia californica* Herbaceous Alliance have been established, which meet the 'high quality' category defined below **and** the membership rules of these vegetation alliance types as described by the Manual of California Vegetation (MCV) (MCV 2020).

    a. 'High quality' stands will be defined as being between 0% and 30% invaded by non-native plants with a Cal-IPC rank.
    b. The *Festuca idahoensis- Danthonia californica* Herbaceous Alliance the membership rules include:
        - *Danthonia californica* > 10% relative cover in the herbaceous canopy, and *Danthonia californica* generally > 30% relative cover in the herbaceous layer.
        - In order to create high quality glass lands the relative cover of *Danthonia California* in the mitigation area must be greater than 30% after five years.

2. Total absolute cover (Section 6.1) by invasive species with a Cal-IPC rank of "High" shall be less than 10% at the site.

5.1 Definition of Terms

Membership Rules: Definition of a vegetation alliance within the Manual of California Vegetation (MCV) (MCV 2020).

6.0 Monitoring Plan

6.1 Monitoring Overview

Annual Monitoring and Maintenance site visits shall occur every year beginning in the first growing season after construction for at least five (5) years and until the Success Criteria are met (see Adaptive Management Section 10). Monitoring visits shall be conducted within the same three-week period in end of May-beginning of June each monitoring year to maintain seasonal consistency between surveys, and to allow time for needed maintenance or replacement plantings to be arranged for. Qualified botanists or restoration specialists shall perform annual monitoring.

6.2 Monitoring Methods

6.2.1 All Monitoring Years

1. Monitor survival of plantings:

- Site will be visually assessed for areas of low plug or seeding survivorship. Any such areas will be mapped and described.

2. Monitor absolute vegetative cover in the prairie mitigation sites.

- 40 to 60 randomly selected 1-square meter plots will be sampled within the *Festuca idahoensis- Danthonia californica* Herbaceous Alliance mitigation areas. Within each plot, total absolute vegetative cover and absolute cover (Section 6.1) for each species present (including plantings and natural /seeded recruits) will be ocularly estimated. The number of plots will be determined by what is needed for sampling adequacy.

3. Monitor and report Cal-IPC rank High species and other weedy species.

- All occurrences of Cal-IPC ranked "Moderate" or "High" invasive species (see Section 5.1), shall be recorded and mapped within the Mitigation Area. The results will be used to develop a concise maintenance plan, if needed. Any other non-native, weedy species that are impacting plantings or the character of the site shall also be addressed.

4. Report pertinent site conditions:

- Any pertinent ecological conditions (outside of those outlined specifically in the Success Criteria) shall be recorded for reporting in the Annual Monitoring report. Adaptive management shall be utilized to determine a corrective course of action for any conditions that may impact project success, create water quality issues or otherwise negatively impact the site. Examples of such conditions include animal impacts, flood events, or wildfire. These observations will enhance the representation of site conditions in the Monitoring Reports.

5. Establishment of four (4) photo points around the project area:

- Initial photos shall be taken before restoration implementation, then once annually following restoration for each monitoring year. Photo point locations shall be permanently established and described, mapped, and images included in Annual Monitoring Reports. Photo point protocols shall conform to methods of the USDA Photo Point Monitoring Handbook (Hall, 2002).

7.0 Analysis

Appropriate statistical methods will be utilized to determine the relative and absolute cover of all plant species. Change in total cover of species over time will be analyzed. This data will be useful in characterizing vegetation development over the site, and assessment of progress towards meeting the Success Criteria.

8.0 Reporting

The results of the annual monitoring will be used to create an Annual Monitoring report which tracks progress toward meeting Success Criteria and recommends adaptive management and contingency

plans for any problems, issues, additional maintenance needs etc. An Annual Monitoring Report will be submitted to Humboldt County by December 31 of each monitoring year.

Each report will include:

- A summary of maintenance done that year;
- Description of site conditions;
- Monitoring methods used;
- Photo points;
- Discussion of any needed corrective actions or proposed method changes;
- Results of Annual Monitoring, as compared to each preceding year, including:
    a. Percent survival of plantings (where applicable)
    b. Total absolute cover estimates (Section 6.1) for vegetative cover plots;
    c. Total absolute cover estimates for native herbaceous cover where applicable;
    d. Absolute cover of target invasive species within the revegetation areas;
    e. Analysis and discussion of progress towards meeting Success Criteria.

9.0 Adaptive Management

The annual monitoring of this site will allow ample opportunity to gage the effectiveness of mitigation strategies. Adaptive management allows for the alteration of site features or the development of alternative techniques not outlined in this plan in order to achieve goals. If, by the 2nd or 3rd monitoring year, the Success Criteria for the project appear unfeasible, the mitigation practitioners must coordinate with responsible agencies (Humboldt County, CFDW) to develop alternative plans to guide the project towards meeting the Success Criteria.

Monitoring reports shall highlight areas of underperforming vegetation and priorities for invasive species/weed management or erosion control. Invasive plants shall be treated at the first opportunity following the most recent monitoring visit. Deficiencies in planting establishment shall be addressed at the first opportunity for planting following monitoring. Plans for any such work will be developed by a qualified mitigation practitioner, at direction of and in consultation with CDFW. All such adaptive management decisions and corrective actions taken shall be documented in the Annual Monitoring Reports.

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Appendix 2I

Supplemental Botanical Survey Report: Sensitive Natural Communities

Supplemental Botanical Survey Report: Sensitive Natural Communities

Humboldt County, Hum Sun Farms, LLC

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September 28, 2022

NRM
NATURAL RESOURCES MANAGEMENT
CORPORATION

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I. Introduction

This Report is supplemental to the Botanical Resources Report prepared in 2020 by GHD of Eureka CA, pertaining to proposed cannabis cultivation infrastructure development in Humboldt County (GHD 2020). The project proponent, Hum Sun Farm, LLC, is applying for a cannabis cultivation permit under Humboldt County OrdinanceNo. 2599 (Cannabis Ordinance 2.0) (Humboldt County 2018a). Please refer to the Botanical Resources Report by GHD for background environmental information, project background and understanding.

This Report updates sensitive natural communities, as defined in the CDFW Sensitive Natural Communities List (CDFW, 2022) from those previously mapped by GHD throughout the proposed project areas.

II. Summary of Findings and Conclusions

We mapped and described approximately 29 acres of *Danthonia californica* with sufficient relative cover (min 10%) to be classified as *Festuca idahoensis-Danthonia californica* Herbaceous Alliance (S3), a Sensitive Natural Community (CDFW, 2022) Table 1, Figure 1.

III. Environmental Setting

Please see the 2020 Botanical Resources Report by GHD for environmental descriptions of the Project Area.

IV. Site Location and Project Description

The project is located in the Blocksburg area in southeastern Humboldt County. In its entirety, Hum Sun Ranch is comprised of over 3,000 acres of agricultural and timber land within contiguous ownership.

Hum Sun Ranch is planning the construction of Cannabis cultivation infrastructure. Some of this infrastructure construction will result in impacts to sensitive natural communities.

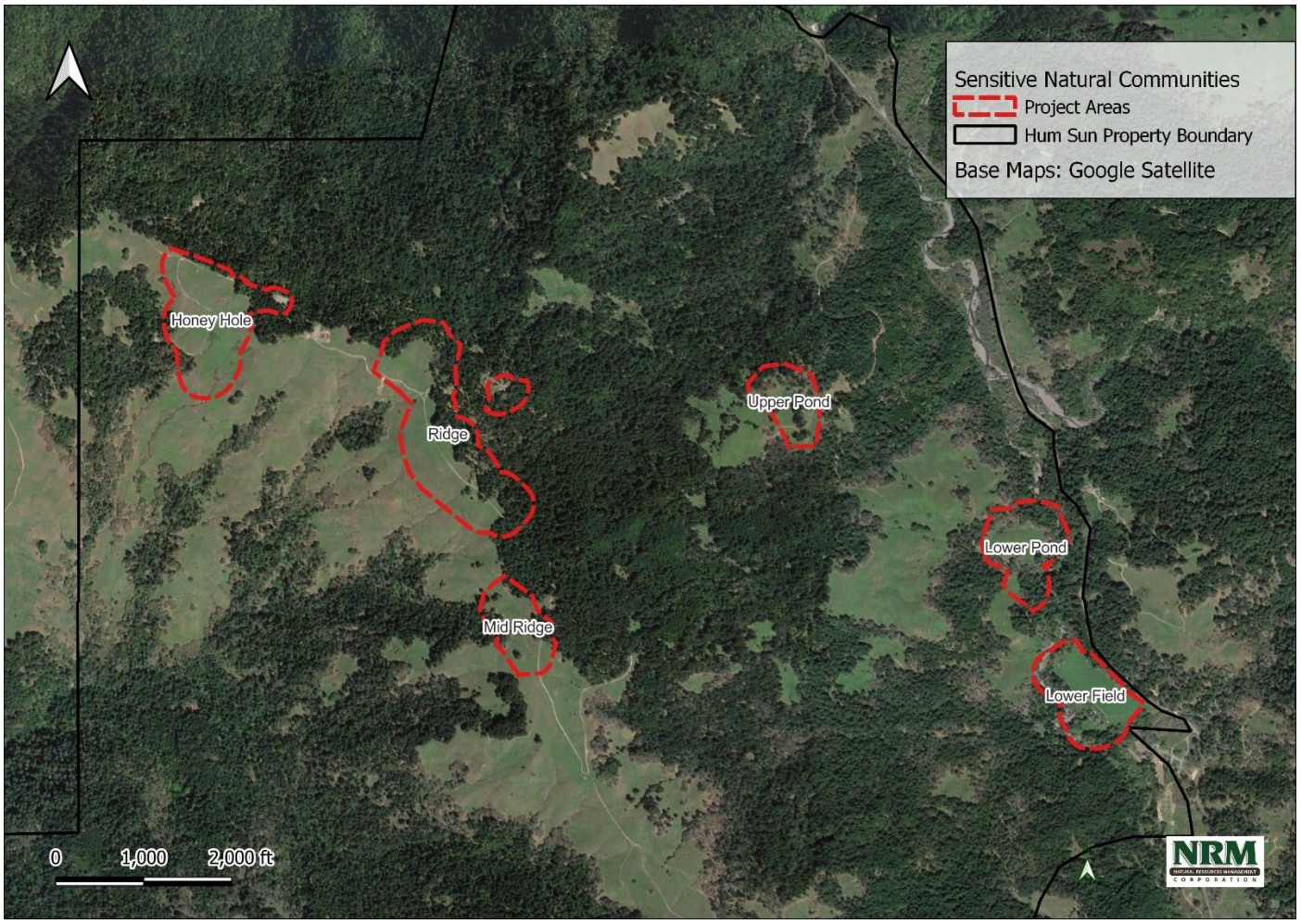


Figure 1. Study Area Map

V. Methods

Pre-field Review

The current inventories of California Natural Communities List (CDFW 2022) and Manual of California Vegetation, Online (Sawyer et al. 2009; CNPS 2022b) were consulted prior to fieldwork.

Botanical taxonomy and nomenclature conform to The Jepson Manual, 2nd Edition (Baldwin et al. 2012) and therecent circumscriptions in the Jepson eFlora (Jepson Flora Project 2021). Common names of plant species are derived from the The Calflora Database (Calflora 2022). And Special Vascular Plants, Bryophytes and Lichens List (CDFW 2018c). Vegetation communities described herein conform to A Manual of California Vegetation, Online edition CNPS 2022b).

Field Survey

On May 20th and 23rd, 2022, NRM botanists Claire Brown and Jenell Jackson mapped identified natural communities in each of the six project areas.

Using this information, on June 1st and 3rd, 2022, NRM Botanists Hollie Ernst and Jenell Jackson assessed vegetation types according to the conventions of A Manual of California Vegetation, Online Edition (CNPS 2021b). CDFW's *California Natural Communities* list (CDFW 2022a) was referenced to determine if Sensitive Communities were included in the vegetation alliances and associations found on-site.

Mapping was done with an Arrow Gold 100, which is able to achieve sub-foot accuracy. Maps were produced using QGIS 3.26 Buena Vista.

This survey was floristic in nature, covered the Study Area comprehensively, and followed the 2018 California Department of Fish and Wildlife (CDFW) Protocols for Surveying and Evaluating Impacts to Sensitive Natural Communities (CDFW 2018). The timing of the survey was such as to capture the peak window for descriptions of the vegetation types with potential to occur at the site elevation and within habitat and soil types present. In each of the six project areas surveyors installed a CNPS-CDFW releve/rapid assessment plots (see Appendix C).

Claire has a B.S. in Ecology and Evolutionary Biology from the University of Tennessee and has ten years of experience surveying vegetation and rare plants in California, including six years of experience conducting rare plant surveys on the North Coast. Jenell Jackson has an M.S. in Biology from Humboldt State Universityand has nine years of experience surveying vegetation and rare plants in California, including five years'experience on the North Coast. Hollie Ernst has a M.S. in Forestry from Humboldt State University and has six years of experience surveying vegetation

and rare plants in California, including four years on the North Coast.

Surveys did **not** include delineation of wetlands or other waters. Wetlands in the study area were previously delineated, see Aquatic Resources Report GHD, 2019. These wetlands are shown on Figures 2-7 in this report.

VI. Results

Natural Communities

Most of the Study Area can be classified as open prairie habitat along existing roads, characterized by ruderal and weedy herbaceous species.

Portions of the proposed project areas are vegetated by a community comprising the *Festuca idahoensis-Danthonia californica* Herbaceous Alliance (S3), a sensitive natural community (CNPS 2021b). A total of approximately 28.8 acres of this community was identified (Table 1).

Table 1. Acres of *Festuca idahoensis-Danthonia californica* herbaceous alliance (s3) mapped across all project areas (see Figure 1).

Area	Acres
Honey Hole	0.13
Lower field	0.53
Lower pond	5.19
Mid-ridge	7.76
Ridge	12.63
Upper pond	2.51
Grand Total	**28.75**

Plot data, recorded on CNPS-CDFW Combined Releve/Rapid Assessment forms, for characterized stand types are included in Appendix C. See Figures 2-7.

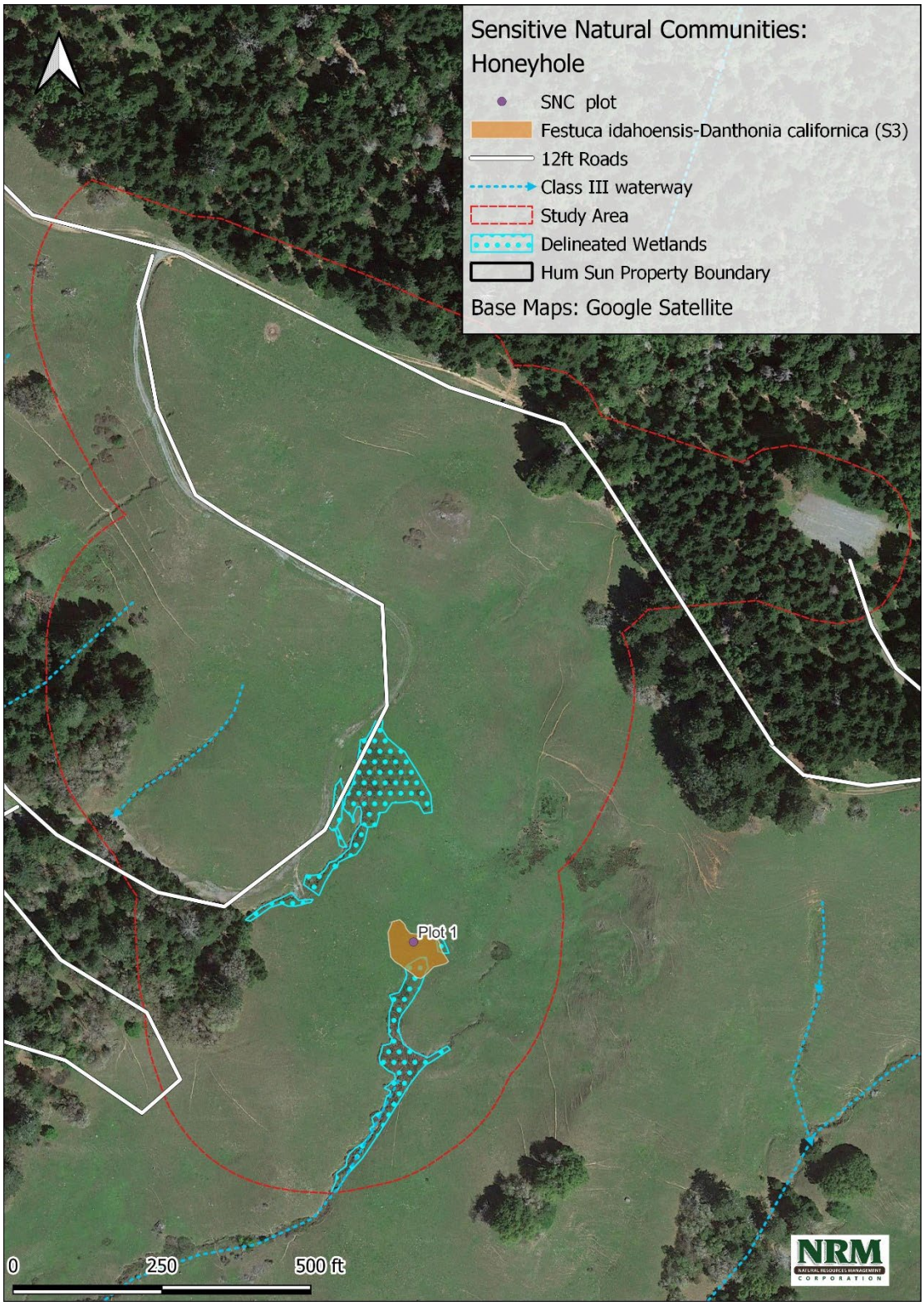


Figure 2. Honey Hole

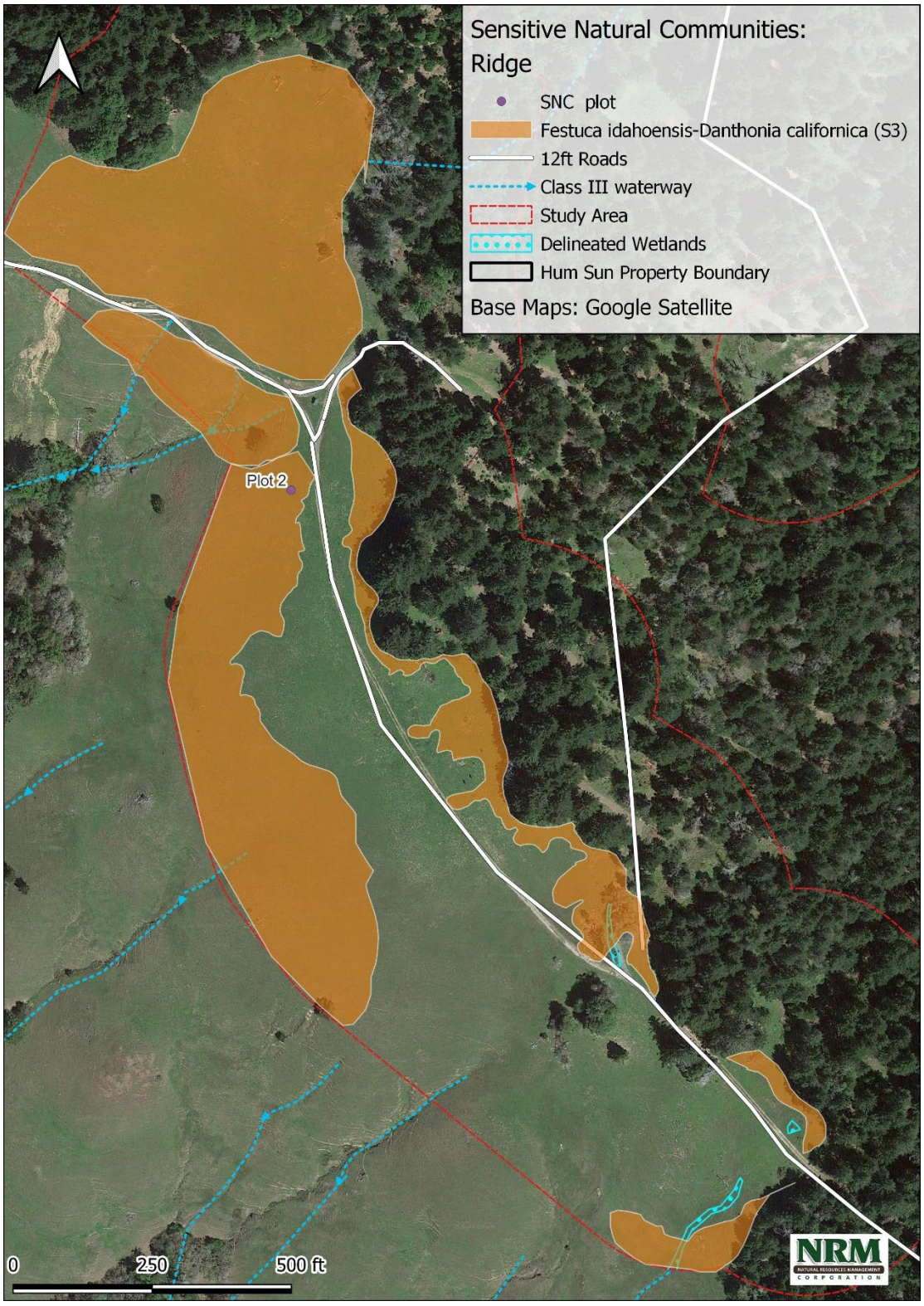


Figure 3. Ridge

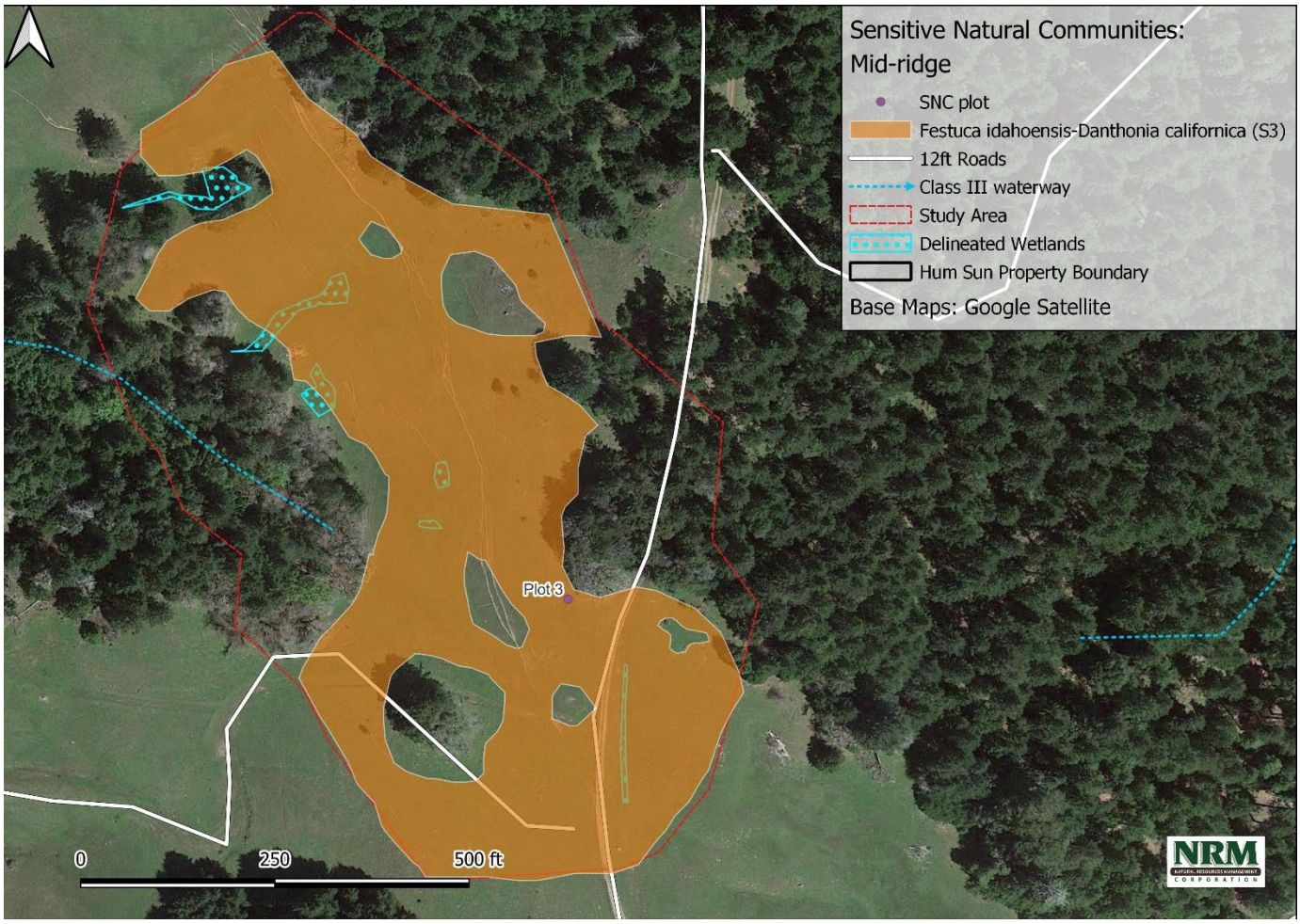


Figure 4. Mid Ridge

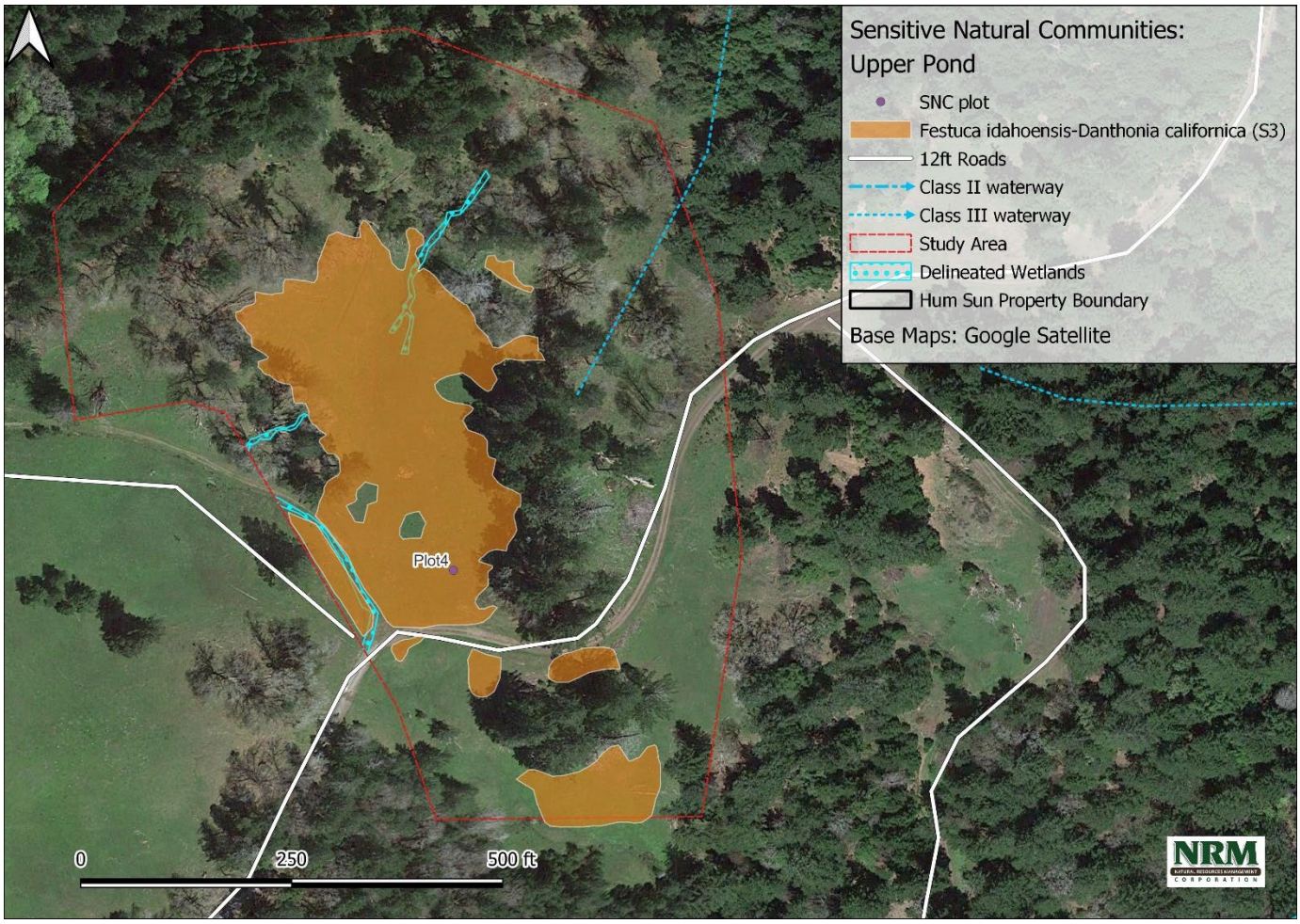


Figure 5. Upper Pond

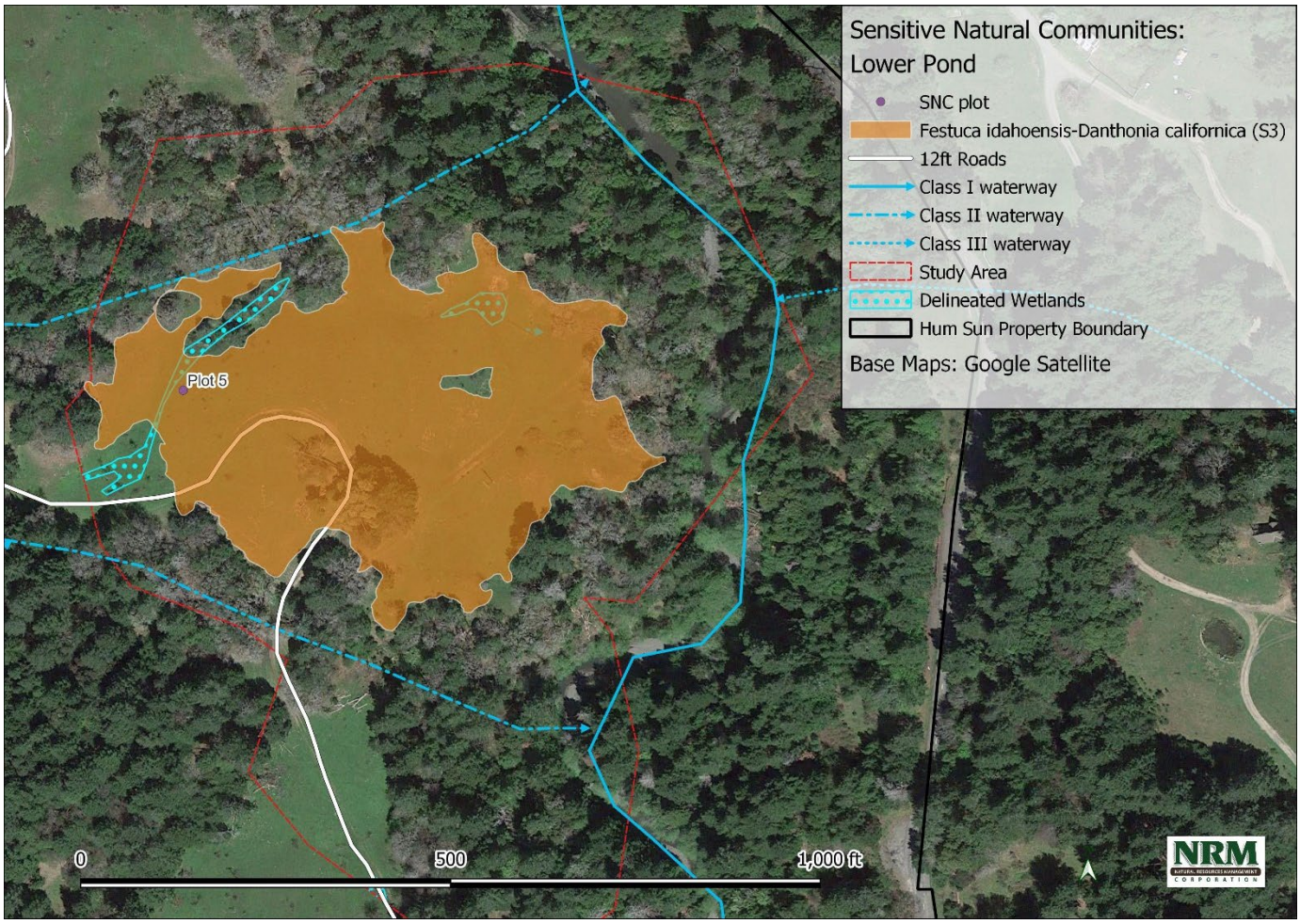


Figure 6. Lower Pond

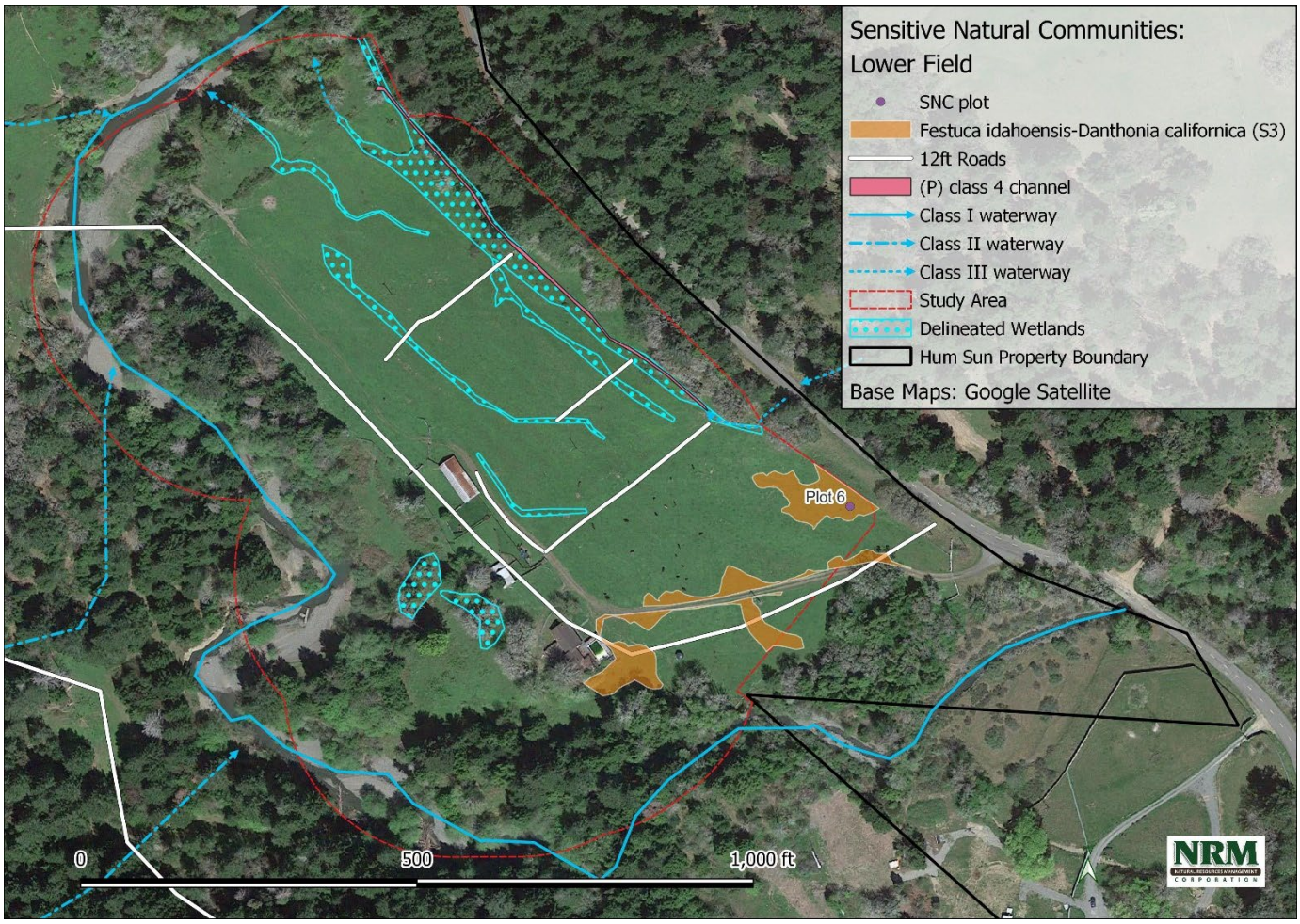


Figure 7. Lower Field

VII. Discussion

The *Festuca idahoensis-Danthonia californica* Herbaceous Alliance, designated by California Department of Fish and Wildlife as a State Rank of S3 is considered a Sensitive Natural Community (CDFW 2022). Its designation is based on the following membership rule: *Festuca californica*, *Festuca idahoensis*, *Festuca rubra*, or *Danthonia californica* at least 10% relative cover and often > 30% relative cover in the herbaceous layer with a variety of other herbs in upland settings (Buck-Diaz et al. 2020). Absolute percent cover of *Danthonia californica* in these areas ranged from 5% to 21% percent and relative percent cover 12% to 50%. None of the Festuca species where present. These areas all have high cover of non-native species (see Appendix C; Sensitive Communities Data Forms).

According to the information available on the Manual of California Vegetation online (CNPS 2022b), this community type is found throughout Humboldt County (especially rare are the extensive Bald Hills prairies) and throughout the North Coast generally, most often on private land. Danthonia establishes on bare soil and the plants are tolerant of moderate grazing. For millennia coastal prairies were maintained by native people through burning in the late summer and fall, which may have improved soil conditions and promoted the regeneration of native grasses; however, since the absence of fire and/or grazing, these native prairies are shifting to a landscape dotted with woody plants and shrubs, dominated by non-native grasses.

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Appendix A: Floristic Plant List

Species Name	*Common Name*	*Lifeform*	*Status*	*Family*
Chlorogalum angustifolium	Narrow leaved soaproot	Perennial herb	native	AGAVACEAE
Daucus pusillus	Wild carrot	Annual herb	native	APIACEAE
Lomatium utriculatum	Hog fennel	Perennial herb	native	APIACEAE
Scandix pecten-veneris	Shepherd's needle	Annual herb, Vine	non-native	APIACEAE
Torilis arvensis	Field hedge parsley	Annual herb	invasive, non-native	APIACEAE
Achyrachaena mollis	Blow-wives	Annual herb	native	ASTERACEAE
Bellis perennis	English lawn daisy	Perennial herb	invasive, non-native	ASTERACEAE
Carduus pycnocephalus	Italian thistle	Annual herb	invasive, non-native	ASTERACEAE
Hemizonia congesta ssp. tracyi	Tracy's tarplant	Annual herb	native	ASTERACEAE
Hypochaeris glabra	Smooth cats ear	Annual herb	invasive, non-native	ASTERACEAE
Hypochaeris radicata	Hairy cats ear	Perennial herb	invasive, non-native	ASTERACEAE
Logfia gallica	Narrowleaf cottonrose	Annual herb	non-native	ASTERACEAE
Micropus californicus var. californicus	Slender cottonweed	Annual herb	native	ASTERACEAE
Soliva sessilis	South american soliva	Annual herb	non-native	ASTERACEAE
Taraxacum officinale	Red seeded dandelion	Perennial herb	invasive, non-native	ASTERACEAE
Cerastium glomeratum	Large mouse ears	Annual herb	non-native	CARYOPHYLLACEAE
Silene gallica	Common catchfly	Annual herb	non-native	CARYOPHYLLACEAE
Convolvulus arvensis	Field bindweed	Perennial herb, Vine	invasive, non-native	CONVOLVULACEAE
Acmispon americanus	American bird's foot trefoil	Annual herb	natie	FABACEAE
Lupinus bicolor	Lupine	Annual, Perennial herb	native	FABACEAE
Trifolium dubium	Shamrock	Annual herb	non-native	FABACEAE
Trifolium fragiferum	Strawberry clover	Perennial herb	non-native	FABACEAE
Trifolium subterraneum	Subterranean clover	Annual herb	non-native	FABACEAE
Trifolium variegatum	Variegated clover	Annual herb	native	FABACEAE
Erodium cicutarium	Coastal heron's bill	Annual herb	invasive, non-native	GERANIACEAE
Geranium dissectum	Wild geranium	Annual herb	invasive, non-native	GERANIACEAE
Geranium molle	Crane's bill geranium	Annual, Perennial herb	invasive, non-native	GERANIACEAE
Sisyrinchium bellum	Blue eyed grass	Perennial herb	native	IRIDACEAE
Juncus patens	Rush	Perennial grasslike herb	native	JUNCACEAE
Mentha pulegium	Pennyroyal	Perennial herb	invasive, non-native	LAMIACEAE
Linum bienne	Flax	Annual herb	non-native	LINACEAE

Lysimachia arvensis	Scarlet pimpernel	Annual herb	non-native	MYRSINACEAE
Triphysaria pusilla	Little owl's clover	Annual herb	native	OROBANCHACEAE
Plantago lanceolata	Ribwort	Perennial herb	invasive, non-native	PLANTAGINACEAE
Agrostis capillaris	Colonial bentgrass	Perennial grass	non-native	POACEAE
Aira caryophyllea	Silvery hairgrass	Annual grass	invasive, non-native	POACEAE
Anthoxanthum odoratum	Sweet vernal grass	Annual, Perennial grass	invasive, non-native	POACEAE
Avena barbata	Slim oat	Annual, Perennial grass	invasive, non-native	POACEAE
Briza maxima	Rattlesnake grass	Annual grass	invasive, non-native	POACEAE
Briza minor	Little rattlesnake grass	Annual grass	non-native	POACEAE
Bromus diandrus	Ripgut brome	Annual grass	invasive, non-native	POACEAE
Bromus hordeaceus	Soft chess	Annual grass	invasive, non-native	POACEAE
Cynosurus echinatus	Dogtail grass	Annual grass	invasive, non-native	POACEAE
Danthonia californica	California oatgrass	Perennial grass	native	POACEAE
Elymus caput-medusae	Medusa head	Annual grass	invasive, non-native	POACEAE
Festuca arundinacea	Reed fescue	Perennial grass	invasive, non-native	POACEAE
Festuca myuros	Rattail sixweeks grass	Annual grass	invasive, non-native	POACEAE
Festuca perennis	Italian rye grass	Annual, Perennial grass	invasive, non-native	POACEAE
Poa trivialis	Rough blue grass	Perennial grass	non-native	POACEAE
Leptosiphon bicolor	True babystars	Annual herb	native	POLEMONIACEAE
Rumex acetosella	Sheep sorrel	Perennial herb	invasive, non-native	POLYGONACEAE
Ranunculus occidentalis	Western buttercup	Perennial herb	native	RANUNCULACEAE
Poterium sanguisorba	Garden burnet	Perennial herb	non-native	ROSACEAE
Rosa rubiginosa	Sweet brier	Shrub	non-native	ROSACEAE
Galium parisiense	Wall bedstraw	Annual herb	non-native	RUBIACEAE
Sherardia arvensis	Field madder	Annual herb	non-native	RUBIACEAE
Brodiaea elegans	Harvest brodiaea	Perennial herb	native	THEMIDACEAE

Appendix B: Plot Photos



Photo 1. Plot 1, Honey hole, facing north



Photo 2. Plot 1, Honey hole, facing east



Photo 3. Plot 1, Honey hole, facing south



Photo 4. Plot 1, Honey hole, facing west



Photo 5. Ridge, facing north



Photo 6. Ridge, facing east



Photo 7. Ridge, facing south



Photo 8. Ridge, facing west



Photo 9. Mid-ridge, facing north



Photo 10. Mid-ridge, facing east



Photo 11. Mid-ridge, facing south



Photo 12. Mid-ridge, facing west



Photo 13. Upper pond, facing north



Photo 14. Upper pond, facing east



Photo 15. Upper pond, facing south



Photo 16. Upper pond, facing west



Photo 17. Lower pond, facing north



Photo 18. Lower pond, facing east



Photo 19. Lower pond, facing south



Photo 20. Lower pond, facing west



Photo 21. Lower field, facing north



Photo 22. Lower field, facing east



Photo 23. Lower field, facing south



Photo 24. Lower field, facing west

Appendix C: Combined Vegetation Rapid Assessment and Releve Forms

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

For Office Use:	Final database #:	Final vegetation type:	Alliance Festuca idahoensis- Danthonia ca Association	(circled)

I. LOCATIONAL/ENVIRONMENTAL DESCRIPTION — circle: (Relevé) or RA

Database #:	Date: 6-1-22	Name of recorder: Hollie Ernest
		Other surveyors: Jenell Jackson
	UID:	Location Name: Humsum PLOT #1

GPS name: Avenza Maps — For Relevé only: Bearing°, left axis at ID point 324° of (Long / Short) side

UTME ___ UTMN ___ Zone: 11 (NAD83) GPS error: ft./ m./ PDOP ___

Decimal degrees: LAT 40.320395 LONG -123.694771

GPS within stand? (Yes) / No If No, cite from GPS to stand: distance (m) ___ bearing ° ___ inclination ° ___

and record: Base point ID ___ Projected UTMs: UTME ___ UTMN ___

Camera Name: Jenell Cardinal photos at ID point: yes

Other photos:

Stand Size (acres): (<1,) 1-5, >5 | Plot Area (m²): (100) ___ | Plot Dimensions 10 x 10 m | RA Radius ___ m

Exposure, Actual °: ___ NE NW SE (SW) Flat Variable | Steepness, Actual °: ___ 0° 1-5° (>5-25°) >25

Topography: Macro: top (upper) mid lower bottom | Micro: convex flat concave (undulating)

Geology code: ___ Soil Texture code: ___ | (Upland) or Wetland/Riparian (circle one)

% Surface cover:	(Incl. outcrops)	(>60cm diam)	(25-60cm)	(7.5-25cm)	(2mm-7.5cm)	(Incl sand, mud)
H_2O: 0	BA Stems: 1	Litter: <1	Bedrock:	Boulder:	Stone:	Cobble:	Gravel: 5	Fines: 94 =100%

% Current year bioturbation ___ Past bioturbation present? Yes / No | % Hoof punch ___

Fire evidence: Yes / No (circle one) If yes, describe in Site history section, including date of fire, if known.

Site history, stand age, comments:

Heavy grazing

Disturbance code / Intensity (L,M,H): M/___ ___/___ ___/___ ___/___ ___/___ "Other" ___/___

II. HABITAT DESCRIPTION

Tree DBH : T1 (<1" dbh), T2 (1-6" dbh), T3 (6-11" dbh), T4 (11-24" dbh), T5 (>24" dbh), T6 multi-layered (T3 or T4 layer under T5, >60% cover)

Shrub: S1 seedling (<3 yr. old), S2 young (<1% dead), S3 mature (1-25% dead), S4 decadent (>25% dead)

Herbaceous: H1 (<12" plant ht.) (H2) (>12" ht.)

Desert Riparian Tree/Shrub: 1 (<2ft. stem ht.), 2 (2-10ft. ht.), 3 (10-20ft. ht.), 4 (>20ft. ht.)

Desert Palm/Joshua Tree: 1 (<1.5" base diameter), 2 (1.5-6" diam.), 3 (>6" diam.)

III. INTERPRETATION OF STAND

Field-assessed vegetation Alliance name: Danthonia californica

Field-assessed Association name (optional): ___

Adjacent Alliances/direction: ___/___, ___/___

Confidence in Alliance identification: L M (H) Explain: ___

Phenology (E/P/L): Herb___ Shrub___ Tree___ Other identification or mapping information:

Plot #1 Humsum 1

PLOT 1

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

Database #: _____ SPECIES SHEET

IV. VEGETATION DESCRIPTION

% NonVasc cover: ____ **Total % Vasc Veg cover:** 42

% Cover - **Conifer tree / Hardwood tree:** ____/____ **Regenerating Tree:** ____ **Shrub:** ____ **Herbaceous:** 100

Height Class - Conifer tree / Hardwood tree: ____/____ **Regenerating Tree:** ____ **Shrub:** ____ **Herbaceous:** 1

Height classes: 1=<1/2m, 2=1/2-1m, 3=1-2m, 4=2-5m, 5=5-10m, 6=10-15m, 7=15-20m, 8=20-35m, 9=35-50m, 10=>50m

Stratum categories: T=Tree, A = SApling, E = SEedling, S = Shrub, H= Herb, N= Non-vascular

% Cover Intervals for reference: r = trace, + = <1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, >75%

Stratum	Species	% cover	C	Final species determination
H	Danthonia californica	5		
	Plagiobothrys	2		Hoggiobothrys nothofulvus
	Avena barbata	3		
	Daucus pusilis	r		
	Leptosiphon bicolor	r		
	Cardaus pynocephalus	2		
	Taraxacum oficinale	1		
	Linum bienne	r		
	Erodium circuterecum (?)	6		
	Elymus caput-medusae	19		
	Plantago lanceolata	8		
	Trifolium variegatum	21		
	Hypochaeris radicata	1		
	Sherardia canadensis	r		
	Rumex acetosella	r		
	Hypochaeris glabrum	r		
	Scandex sp.	r		Scandix pecten-veneris
	Blow wives	r		
	Festuca perennis	1		
	Bromus hordeaceus	r		
	Clarkia sp.	r		Clarkia purpurea ssp. quadrivulnera
	Erodium sp.	r		Erodium botrys
	Madia C.f. elegans	r		
	Ranunculus occidentalis	r		
	Briza minor	r		
	Bromus diandrus	1		
	Lysimachia arvensis	r		
	Trifolium dubium	1		
	Trifolium subterraneum	2		
	Carex leptopoda (?)	r		Carex tumicola
	Bellis perennis	r		
	Juncus patens	1		
	Mentha pulegium	r		
	Crepis sp.	r		Crepis capillaris
	Geranium molle	r		

12% rel cover DANCal

Unusual species: _____

Plot 1 (cont)

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

For Office Use:	Final database #:	Final vegetation type: Alliance Association

I. LOCATIONAL/ENVIRONMENTAL DESCRIPTION circle: **Relevé or RA**

Database #:	Date:	Name of recorder:
		Other surveyors:
	UID:	Location Name:

GPS name: _____ For Relevé only: **Bearing°**, left axis at ID point_____ **of Long / Short** side

UTME ___ ___ ___ ___ ___ ___ **UTMN** ___ ___ ___ ___ ___ ___ ___ **Zone: 11 NAD83** GPS error: **ft./ m./ PDOP** _____

Decimal degrees: **LAT** ___ ___ . ___ ___ ___ ___ ___ ___ **LONG** ___ ___ ___ . ___ ___ ___ ___ ___ ___

GPS within stand? Yes / No If No, cite from GPS to stand: distance (m) _____ bearing ° _____ inclination ° _____

and record: **Base point ID** _____ **Projected UTMs: UTME** ___ ___ ___ ___ ___ ___ **UTMN** ___ ___ ___ ___ ___ ___ ___

Camera Name: **Cardinal photos at ID point:**

Other photos:

Stand Size (acres): <1, 1-5, >5 | **Plot Area (m^2): 100 /** _____ | **Plot Dimensions** ____ **x** ____ **m** | **RA Radius** ____ **m**

Exposure, Actual °: _____ **NE NW SE SW Flat Variable** | **Steepness, Actual °:** _____ **0° 1-5° > 5-25° > 25**

Topography: Macro: top upper mid lower bottom | **Micro: convex flat concave undulating**

Geology code: _____ **Soil Texture code:** _____ | **Upland** or **Wetland/Riparian** (circle one)

% Surface cover: (Incl. outcrops) (>60cm diam) (25-60cm) (7.5-25cm) (2mm-7.5cm) (Incl sand, mud)

H_20: BA Stems: Litter: Bedrock: Boulder: Stone: Cobble: Gravel: Fines: =100%

% Current year bioturbation _____ **Past bioturbation present? Yes / No** | **% Hoof punch** _____

Fire evidence: Yes / No (circle one) If yes, describe in Site history section, including date of fire, if known.

Site history, stand age, comments:

Disturbance code / Intensity (L,M,H): ____/___ ____/___ ____/___ ____/___ ____/___ **"Other"** _____/___

II. HABITAT DESCRIPTION

Tree DBH : T1 (<1" dbh), **T2** (1-6" dbh), **T3** (6-11" dbh), **T4** (11-24" dbh), **T5** (>24" dbh), **T6** multi-layered (T3 or T4 layer under T5, >60% cover)

Shrub: S1 seedling (<3 yr. old), **S2** young (<1% dead), **S3** mature (1-25% dead), **S4** decadent (>25% dead)

Herbaceous: H1 (<12" plant ht.), **H2** (>12" ht.)

Desert Riparian Tree/Shrub: 1 (<2ft. stem ht.), **2** (2-10ft. ht.), **3** (10-20ft. ht.), **4** (>20ft. ht.)

Desert Palm/Joshua Tree: 1 (<1.5" base diameter), **2** (1.5-6" diam.), **3** (>6" diam.)

III. INTERPRETATION OF STAND

Field-assessed vegetation Alliance name: _____

Field-assessed Association name (optional): _____

Adjacent Alliances/direction: _____/_____, _____/_____

Confidence in Alliance identification: L M H Explain: _____

Phenology (E,P,L): Herb ___ **Shrub** ___ **Tree** ___ **Other identification or mapping information:**

Plot #1 Hum Sum

2

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

Database #: _____ SPECIES SHEET

Plot 1 (continued)

IV. VEGETATION DESCRIPTION

% NonVasc cover:____ **Total % Vasc Veg cover:**_____

% Cover - **Conifer tree / Hardwood tree:** _____/_____ **Regenerating Tree:** _____ **Shrub:** _____ **Herbaceous:** _____

Height Class - Conifer tree / Hardwood tree: _____/_____ **Regenerating Tree:** _____ **Shrub:** _____ **Herbaceous:** _____

Height classes: (1=<1/2m) 2=1/2-1m, 3=1-2m, 4=2-5m, 5=5-10m, 6=10-15m, 7=15-20m, 8=20-35m, 9=35-50m, 10=>50m

Stratum categories: T=Tree, A = SApling, E = SEedling, S = Shrub, H= Herb, N= Non-vascular

% Cover Intervals for reference: r = trace, + = <1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, >75%

Stratum	Species	% cover	C	Final species determination
	Geranium dissectum	r		
	~~Plagiobothrys 2~~	~~r~~		Plagiobothrys nothofulvus
	Lupinus bicolor	r		
	Cynosurus echinatus	r		
	Cerastium glomerata	r		
	Poa trivialis	r		

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

For Office Use:	Final database #:	Final vegetation type:	Alliance Festuca idahoensis - Danthonia californica
			Association

I. LOCATIONAL/ENVIRONMENTAL DESCRIPTION — circle: (Relevé) or RA

Database #:	Date: 6-1-22	Name of recorder: Hollie Ernest
		Other surveyors: Jenell Jackson
	UID:	Location Name: Hum Sym Plot #2

GPS name: Avenza Maps — For Relevé only: Bearing°, left axis at ID point 194 of Long / Short side

UTME ___ UTMN ___ Zone: 11 (NAD83) GPS error: ft./ m./ PDOP ___

Decimal degrees: LAT 40.318936 LONG -123.686513

GPS within stand? (Yes) / No If No, cite from GPS to stand: distance (m) ___ bearing ° ___ inclination ° ___

and record: Base point ID ___ Projected UTMs: UTME ___ UTMN ___

Camera Name: Jenell Cardinal photos at ID point: Yes

Other photos:

Stand Size (acres): (<1) 1-5, >5 | Plot Area (m²): (100) / ___ | Plot Dimensions 10 x 10 m | RA Radius ___ m

Exposure, Actual °: ___ NE NW SE (SW) Flat Variable | Steepness, Actual °: ___ 0° (1-5°) >5-25° >25

Topography: Macro: top (upper) mid lower bottom | Micro: (convex) flat concave undulating

Geology code: ___ Soil Texture code: ___ | (Upland) or Wetland/Riparian (circle one)

% Surface cover: (Incl. outcrops) (>60cm diam) (25-60cm) (7.5-25cm) (2mm-7.5cm) (Incl sand, mud)

H_20: 0 BA Stems: Litter: 1 Bedrock: Boulder: Stone: Cobble: 1 Gravel: 3 Fines: 95 =100%

% Current year bioturbation ___ Past bioturbation present? Yes / No | % Hoof punch ___

Fire evidence: Yes / No (circle one) If yes, describe in Site history section, including date of fire, if known.

Site history, stand age, comments:

Heavy grazing

Disturbance code / Intensity (L,M,H): M/___ ___/___ ___/___ ___/___ ___/___ "Other" ___/___

II. HABITAT DESCRIPTION

Tree DBH : T1 (<1" dbh), T2 (1-6" dbh), T3 (6-11" dbh), T4 (11-24" dbh), T5 (>24" dbh), T6 multi-layered (T3 or T4 layer under T5, >60% cover)

Shrub: S1 seedling (<3 yr. old), S2 young (<1% dead), S3 mature (1-25% dead), S4 decadent (>25% dead)

Herbaceous: H1 (<12" plant ht.), (H2) (>12" ht.)

Desert Riparian Tree/Shrub: 1 (<2ft. stem ht.), 2 (2-10ft. ht.), 3 (10-20ft. ht.), 4 (>20ft. ht.)

Desert Palm/Joshua Tree: 1 (<1.5" base diameter), 2 (1.5-6" diam.), 3 (>6" diam.)

III. INTERPRETATION OF STAND

Field-assessed vegetation Alliance name: Danthonia californica

Field-assessed Association name (optional): ___

Adjacent Alliances/direction: ___/___, ___/___

Confidence in Alliance identification: L M (H) Explain: ___

Phenology (E,P,L): Herb ✓ Shrub ___ Tree ___ Other identification or mapping information:

Plot #2
Hum Sym

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

Database #: _____ SPECIES SHEET

IV. VEGETATION DESCRIPTION

% NonVasc cover: ____ **Total % Vasc Veg cover:** 52

% Cover - **Conifer tree / Hardwood tree:** ____/____ **Regenerating Tree:** ____ **Shrub:** ____ **Herbaceous:** 100

Height Class - Conifer tree / Hardwood tree: ____/____ **Regenerating Tree:** ____ **Shrub:** ____ **Herbaceous:** 1

Height classes: 1=<1/2m, 2=1/2-1m, 3=1-2m, 4=2-5m, 5=5-10m, 6=10-15m, 7=15-20m, 8=20-35m, 9=35-50m, 10=>50m

Stratum categories: T=Tree, A = SApling, E = SEedling, S = Shrub, H= Herb, N= Non-vascular

% Cover Intervals for reference: r = trace, + = <1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, >75%

Stratum	Species	% cover	C	Final species determination
	Danthonia californica	21		
	Lupinus bicolor	20		
	Rumex acetosella	8		
	Aira caryophylla	1		
	Leptosiphon bicolor	7		
	Avena barbata	r		
	Trifolium dubium	2		
	Erodium circutarium	r		
	Erodium 2	r		Erodium botrys
	Bromus hordeaceous	r		
	Festuca myuros	r		
	Trifolium variegatum	2		
	Taraxacum officinale	r		
	Trifolium subterraneum	r		
	Hypochaeris glabra	r		
	Hypochaeris radicata	r		
	Clynosaurus echinatus	r		
	Acmispon americanus	r		
	Lioum bienne	r		
	Plantago lanceolata	r		
	Trifolium fragiferum	r		
	Clarkia sp. (magenta, sunea gold)	r		Clar
	Sherardia arvensis	r		

50% DAN CAL

Unusual species: _____

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

Plot #3

For Office Use:	Final database #:	Final vegetation type:	Alliance Festuca idahoensis - Danthonia californica Association

I. LOCATIONAL/ENVIRONMENTAL DESCRIPTION — circle: Relevé or RA

Database #:	Date: 6-1-22	Name of recorder: Hollie Ernest
		Other surveyors: Jenell Jackson
	UID:	Location Name: Hum Sum Plot # 3

GPS name: Avenza maps — For Relevé only: Bearing°, left axis at ID point 156 of Long / Short side

UTME ___ UTMN ___ Zone: 11 NAD83 GPS error: ft./ m./ PDOP ___

Decimal degrees: LAT 40.311691 LONG -123.681802

GPS within stand? Yes / No If No, cite from GPS to stand: distance (m) ___ bearing ° ___ inclination ° ___

and record: Base point ID ___ Projected UTMs: UTME ___ UTMN ___

Camera Name: Jenell Cardinal photos at ID point: yes

Other photos:

Stand Size (acres): <1, 1-5, >5 | Plot Area (m²): 100 / ___ | Plot Dimensions 10 x 10 m | RA Radius ___ m

Exposure, Actual °: 241 NE NW SE SW Flat Variable | Steepness, Actual °: ___ 0° 1-5° > 5-25° > 25

Topography: Macro: top upper mid lower bottom | Micro: convex flat concave undulating

Geology code: ___ Soil Texture code: ___ | Upland or Wetland/Riparian (circle one)

% Surface cover: (Incl. outcrops) (>60cm diam) (25-60cm) (7.5-25cm) (2mm-7.5cm) (Incl sand, mud)

H_2O: 0 BA Stems: 0.5 Litter: 1 Bedrock: Boulder: Stone: Cobble: r Gravel: 1 Fines: 97.5 =100%

% Current year bioturbation ___ Past bioturbation present? Yes / No | % Hoof punch 1

Fire evidence: Yes / No (circle one) If yes, describe in Site history section, including date of fire, if known.

Site history, stand age, comments:

Heavy grazing
hoof punch area is mostly revegetated

Disturbance code / Intensity (L,M,H): ___/___ ___/___ ___/___ ___/___ ___/___ "Other" ___/___

II. HABITAT DESCRIPTION

Tree DBH : T1 (<1" dbh), T2 (1-6" dbh), T3 (6-11" dbh), T4 (11-24" dbh), T5 (>24" dbh), T6 multi-layered (T3 or T4 layer under T5, >60% cover)

Shrub: S1 seedling (<3 yr. old), S2 young (<1% dead), S3 mature (1-25% dead), S4 decadent (>25% dead)

Herbaceous: H1 (<12" plant ht.), H2 (>12" ht.)

Desert Riparian Tree/Shrub: 1 (<2ft. stem ht.), 2 (2-10ft. ht.), 3 (10-20ft. ht.), 4 (>20ft. ht.)

Desert Palm/Joshua Tree: 1 (<1.5" base diameter), 2 (1.5-6" diam.), 3 (>6" diam.)

III. INTERPRETATION OF STAND

Field-assessed vegetation Alliance name: Danthonia californica

Field-assessed Association name (optional): ___

Adjacent Alliances/direction: ___/___, ___/___

Confidence in Alliance identification: L M H Explain: ___

Phenology (E,P,L): Herb ✓ Shrub ___ Tree ___ Other identification or mapping information:

r: trace

Hum Sum plot # 3

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

Database #: _____ SPECIES SHEET

IV. VEGETATION DESCRIPTION

% NonVasc cover: ____ **Total % Vasc Veg cover:** 27

% Cover - **Conifer tree / Hardwood tree:** ____/____ **Regenerating Tree:** ____ **Shrub:** ____ **Herbaceous:** 100

Height Class - Conifer tree / Hardwood tree: ____/____ **Regenerating Tree:** ____ **Shrub:** ____ **Herbaceous:** 1

Height classes: 1=<1/2m, 2=1/2-1m, 3=1-2m, 4=2-5m, 5=5-10m, 6=10-15m, 7=15-20m, 8=20-35m, 9=35-50m, 10=>50m

Stratum categories: T=Tree, A = SApling, E = SEedling, S = Shrub, H= Herb, N= Non-vascular

% Cover Intervals for reference: r = trace, + = <1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, >75%

Stratum	Species	% cover	C	Final species determination
	Leptosiphon II	r		Leptosiphon androsaceus
	Silene gallica	r		
	Micropus californica	r		
	Linum bienne	r		
	Blow wives	r		dichyrachaena mollis
	Erodium circinatum	9		
	Aira caryophylla	r		
	Trifolium variegatum	4		
	Leptosiphon bicolor	1		
	Erodium 2	r		Erodium botrys
	Plantago lanceolata	r		
	Trifolium subterraneum	r		
	Logfhia sp.	r		gallica
	Danthonia californica	13		
	Asteraceae (notched yellow pt ls)	r		
	Hypochaeris glabra	r		
	Sherardia arvensis	r		
	Trifolium dubium	1		
	Galium parisenses	r		
	Briza minor	r		
	Ranunculus occidentalis	r		
	Taraxacum officinale	r		
	Bromus hordeaceus	1		
	Avena barbata	1		
	Plagiobothrys 1	r		Plagiobothrys nothofulvus
	Elymus caput-medusae	r		
	Trifolium fragiferum	r		
	Festuca myuros	r		
	Lomatium utriculatum	r		
	Lupinus bicolor	r		
	Rumex acetosella	2		
	Soliva sessilis	r		
	Daucus pusilis	r		
	Briza maxima	r		
	Geranium dissectum	r		

50% vel Panthonia cal

Unusual species: _____

Hum Sum plot # 3

plot #3

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

For Office Use:	Final database #:	Final vegetation type:	Alliance Association

I. LOCATIONAL/ENVIRONMENTAL DESCRIPTION — circle: **Relevé or RA**

Database #:	Date:	Name of recorder:
		Other surveyors:
	UID:	Location Name:

GPS name: _____ For Relevé only: **Bearing°**, left axis at ID point_____ **of Long / Short** side

UTME ___ ___ ___ ___ ___ ___ **UTMN** ___ ___ ___ ___ ___ ___ ___ **Zone: 11 NAD83** GPS error: **ft./ m./ PDOP** _____

Decimal degrees: **LAT** ___ ___ . ___ ___ ___ ___ ___ ___ **LONG** ___ ___ ___ . ___ ___ ___ ___ ___ ___

GPS within stand? Yes / No If No, cite from GPS to stand: distance (m) _____ bearing ° _____ inclination ° _____

and record: **Base point ID** _____ **Projected UTMs: UTME** ___ ___ ___ ___ ___ ___ **UTMN** ___ ___ ___ ___ ___ ___ ___

Camera Name: **Cardinal photos at ID point:**

Other photos:

Stand Size (acres): <1, 1-5, >5 | Plot Area (m²): 100 / _____ | Plot Dimensions ____ x____ m | RA Radius____ m

Exposure, Actual °: _____ NE NW SE SW Flat Variable | Steepness, Actual °: _____ 0° 1-5° > 5-25° > 25

Topography: Macro: top upper mid lower bottom | Micro: convex flat concave undulating

Geology code: _____ **Soil Texture code:** _____ **| Upland** or **Wetland/Riparian** (circle one)

% Surface cover: (Incl. outcrops) (>60cm diam) (25-60cm) (7.5-25cm) (2mm-7.5cm) (Incl sand, mud)

H_20: BA Stems: Litter: Bedrock: Boulder: Stone: Cobble: Gravel: Fines: =100%

% Current year bioturbation _____ **Past bioturbation present? Yes / No | % Hoof punch** _____

Fire evidence: Yes / No (circle one) If yes, describe in Site history section, including date of fire, if known.

Site history, stand age, comments:

Disturbance code / Intensity (L,M,H): ____/___ ____/___ ____/___ ____/___ ____/___ **"Other"** _____/ ___

II. HABITAT DESCRIPTION

Tree DBH : T1 (<1" dbh), **T2** (1-6" dbh), **T3** (6-11" dbh), **T4** (11-24" dbh), **T5** (>24" dbh), **T6** multi-layered (T3 or T4 layer under T5, >60% cover)

Shrub: S1 seedling (<3 yr. old), **S2** young (<1% dead), **S3** mature (1-25% dead), **S4** decadent (>25% dead)

Herbaceous: H1 (<12" plant ht.), **H2** (>12" ht.)

Desert Riparian Tree/Shrub: 1 (<2ft. stem ht.), **2** (2-10ft. ht.), **3** (10-20ft. ht.), **4** (>20ft. ht.)

Desert Palm/Joshua Tree: 1 (<1.5" base diameter), **2** (1.5-6" diam.), **3** (>6" diam.)

III. INTERPRETATION OF STAND

Field-assessed vegetation Alliance name: _____

Field-assessed Association name (optional): _____

Adjacent Alliances/direction: _____/_____, _____/_____

Confidence in Alliance identification: L M H Explain: _____

Phenology (E,P,L): Herb____ Shrub____ Tree____ Other identification or mapping information:

plot #3 (cont)

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

Database #: _____ SPECIES SHEET

IV. VEGETATION DESCRIPTION

% NonVasc cover:____ **Total % Vasc Veg cover:**_____

% Cover - **Conifer tree / Hardwood tree:** _____/_____ **Regenerating Tree:** _____ **Shrub:** _____ **Herbaceous:** _____

Height Class - Conifer tree / Hardwood tree: _____/_____ **Regenerating Tree:** _____ **Shrub:** _____ **Herbaceous:** _____

Height classes: 1=<1/2m, 2=1/2-1m, 3=1-2m, 4=2-5m, 5=5-10m, 6=10-15m, 7=15-20m, 8=20-35m, 9=35-50m, 10=>50m

Stratum categories: T=Tree, A = SApling, E = SEedling, S = Shrub, H= Herb, N= Non-vascular

% Cover Intervals for reference: r = trace, + = <1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, >75%

Stratum	Species	% cover	C	Final species determination
	Festuca perennis	r		
	Anthoxanthum odoratum	r		

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

For Office Use:	Final database #:	Final vegetation type:	Alliance Festuca idahoensis- Danthonia californica Association

I. LOCATIONAL/ENVIRONMENTAL DESCRIPTION — circle: (Relevé) or RA

Database #:	Date: 6-1-22	Name of recorder: Hollie Ernest
		Other surveyors: Jenell Jackson
	UID:	Location Name: Hum Sum Plot #4

GPS name: Avenza maps — For Relevé only: Bearing°, left axis at ID point 320° of (Long / Short) side

UTME ____ UTMN ____ Zone: 11 (NAD83) GPS error: ft./ m./ PDOP ____

Decimal degrees: LAT 40.318685 LONG -123.671462

GPS within stand? (Yes) / No If No, cite from GPS to stand: distance (m) ____ bearing ° ____ inclination ° ____

and record: Base point ID ____ Projected UTMs: UTME ____ UTMN ____

Camera Name: Jenell Cardinal photos at ID point: yes

Other photos:

Stand Size (acres): (<1) 1-5, >5 | Plot Area (m²): (100)/ ____ | Plot Dimensions 10 x 10 m | RA Radius ____ m

Exposure, Actual °: 310 NE (NW) SE SW Flat Variable | Steepness, Actual °: ____ 0° 1-5° >5-25° >25

Topography: Macro: top upper (mid) lower bottom | Micro: convex flat concave (undulating)

Geology code: ____ Soil Texture code: ____ | Upland or Wetland/Riparian (circle one)

% Surface cover: (Incl. outcrops) (>60cm diam) (25-60cm) (7.5-25cm) (2mm-7.5cm) (Incl sand, mud)

H_20: BA Stems: 1 Litter: | Bedrock: Boulder: Stone: Cobble: Gravel: 2 Fines: 96 =100%

% Current year bioturbation ____ Past bioturbation present? Yes / No | % Hoof punch 2

Fire evidence: Yes / No (circle one) If yes, describe in Site history section, including date of fire, if known.

Site history, stand age, comments:

Hoof punch = ~~as~~ revegetated

Heavy grazing

Disturbance code / Intensity (L,M,H): M /___ ___/___ ___/___ ___/___ ___/___ "Other" ____/___

II. HABITAT DESCRIPTION

Tree DBH : T1 (<1" dbh), T2 (1-6" dbh), T3 (6-11" dbh), T4 (11-24" dbh), T5 (>24" dbh), T6 multi-layered (T3 or T4 layer under T5, >60% cover)

Shrub: S1 seedling (<3 yr. old), S2 young (<1% dead), S3 mature (1-25% dead), S4 decadent (>25% dead)

Herbaceous: H1 (<12" plant ht.), (H2) (>12" ht.)

Desert Riparian Tree/Shrub: 1 (<2ft. stem ht.), 2 (2-10ft. ht.), 3 (10-20ft. ht.), 4 (>20ft. ht.)

Desert Palm/Joshua Tree: 1 (<1.5" base diameter), 2 (1.5-6" diam.), 3 (>6" diam.)

III. INTERPRETATION OF STAND

Field-assessed vegetation Alliance name: Danthonia californica

Field-assessed Association name (optional): ____

Adjacent Alliances/direction: ____/____, ____/____

Confidence in Alliance identification: L M (H) Explain: ____

Phenology (E,P,L): Herb ✓ Shrub ___ Tree ___ Other identification or mapping information:

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

Database #: _____ SPECIES SHEET

IV. VEGETATION DESCRIPTION

% NonVasc cover: ____ **Total % Vasc Veg cover:** 31

% Cover - **Conifer tree / Hardwood tree:** ____/____ **Regenerating Tree:** ____ **Shrub:** ____ **Herbaceous:** 100

Height Class - Conifer tree / Hardwood tree: ____/____ **Regenerating Tree:** ____ **Shrub:** ____ **Herbaceous:** 1

Height classes: 1=<1/2m, 2=1/2-1m, 3=1-2m, 4=2-5m, 5=5-10m, 6=10-15m, 7=15-20m, 8=20-35m, 9=35-50m, 10=>50m

Stratum categories: T=Tree, A = SApling, E = SEedling, S = Shrub, H= Herb, N= Non-vascular

% Cover Intervals for reference: r = trace, + = <1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, >75%

Stratum	Species	% cover	C	Final species determination
	Danthonia californica	9		
	Plantago lanceolata	8		
	Ranunculus occidentalis	r		
	Micropus californica	1		
	Leptosiphon bicolor	1		
	Sisyrinchium bellum	r		
	Elymus glaucus	r		
	Taraxacum officinale	r		
	Trifolium variegatum	r		
	Trifolium fragiferum	r		
	Trifolium dubium	r		
	Bromus hordeaceus	1		
	Aira caryophylla	r		
	Juncus sp.	r		JUNCUS OCCIDENTALIS
	Sherardia arvensis	r		
	Lupinus bicolor	r		
	Vicia sativa	r		
	Festuca myuros	r		
	Anthoxanthum odoratum	4		
	Geranium dissectum	r		
	Clarkia sp (same magenta)	r		Clarkia purpurea ssp. quadrivulnera
	Triphysaria pusilla	r		
	Cynosurus echinatus	r		
	Hypochaeris radicata	9		
	Rumex acetosella	r		
	Briza minor	r		
	Cerastium glomeratum	r		
	Trifolium subterraneum	r		
	Galium pariesensis	r		
	Avena barbata	r		
	Festuca perennis	r		

Unusual species: _____

Thursum plot #4

Plot #5

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

For Office Use:	Final database #:	Final vegetation type:	Alliance Festuca idahoensis - Danthonia californica Association

I. LOCATIONAL/ENVIRONMENTAL DESCRIPTION circle: (Relevé) or RA

Database #:	Date: 6-3-22	Name of recorder: Hollie Ernest
		Other surveyors: Jenell Jackson
	UID:	Location Name: HumSun Plot #5

GPS name: Avenza maps For Relevé only: Bearing°, left axis at ID point 273 of Long / Short side

UTME ___ UTMN ___ Zone: 11 NAD83 GPS error: ft./ m./ PDOP ____

Decimal degrees: LAT 40.315021 LONG -123.663047

GPS within stand? (Yes) / No If No, cite from GPS to stand: distance (m) ____ bearing ° ____ inclination ° ____

and record: Base point ID ____ Projected UTMs: UTME ___ UTMN ___

Camera Name: Jenell Cardinal photos at ID point: Yes

Other photos:

Stand Size (acres): (<1) 1-5, >5 | Plot Area (m²): 100 / 100 | Plot Dimensions 10 x 10 m | RA Radius ____ m

Exposure, Actual °: 301 (NE) NW SE SW Flat Variable | Steepness, Actual °: ____ 0° (1-5°) > 5-25° > 25

Topography: Macro: top (upper) mid lower bottom | Micro: convex flat concave (undulating)

Geology code: ____ Soil Texture code: ____ | Upland or Wetland/Riparian (circle one)

% Surface cover: (Incl. outcrops) (>60cm diam) (25-60cm) (7.5-25cm) (2mm-7.5cm) (Incl sand, mud)

H_20: 0 BA Stems: 1 Litter: C Bedrock: Boulder: Stone: Cobble: Gravel: \ Fines: 98 =100%

% Current year bioturbation ____ Past bioturbation present? Yes / No | % Hoof punch ____

Fire evidence: Yes / No (circle one) If yes, describe in Site history section, including date of fire, if known.

Site history, stand age, comments:

Heavy grazing

Disturbance code / Intensity (L,M,H): M / ___ ___ / ___ ___ / ___ ___ / ___ ___ / ___ "Other" ____ / ___

II. HABITAT DESCRIPTION

Tree DBH : T1 (<1" dbh), T2 (1-6" dbh), T3 (6-11" dbh), T4 (11-24" dbh), T5 (>24" dbh), T6 multi-layered (T3 or T4 layer under T5, >60% cover)

Shrub: S1 seedling (<3 yr. old), S2 young (<1% dead), S3 mature (1-25% dead), S4 decadent (>25% dead)

Herbaceous: (H1) (<12" plant ht.), (H2) (>12" ht.)

Desert Riparian Tree/Shrub: 1 (<2ft. stem ht.), 2 (2-10ft. ht.), 3 (10-20ft. ht.), 4 (>20ft. ht.)

Desert Palm/Joshua Tree: 1 (<1.5" base diameter), 2 (1.5-6" diam.), 3 (>6" diam.)

III. INTERPRETATION OF STAND

Field-assessed vegetation Alliance name: Danthonia californica

Field-assessed Association name (optional): ____

Adjacent Alliances/direction: ____ / ____, ____ / ____

Confidence in Alliance identification: L M (H) Explain: ____

Phenology (E,P,L): Herb ✓ Shrub ___ Tree ___ Other identification or mapping information:

HumSun plot #5

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

Database #: _____ SPECIES SHEET

IV. VEGETATION DESCRIPTION

% NonVasc cover: ____ **Total % Vasc Veg cover:** 44

% Cover - **Conifer tree / Hardwood tree:** ____/____ **Regenerating Tree:** ____ **Shrub:** 5 **Herbaceous:** 100

Height Class - Conifer tree / Hardwood tree: ____/____ **Regenerating Tree:** ____ **Shrub:** ____ **Herbaceous:** 1

Height classes: 1=<1/2m, 2=1/2-1m, 3=1-2m, 4=2-5m, 5=5-10m, 6=10-15m, 7=15-20m, 8=20-35m, 9=35-50m, 10=>50m

Stratum categories: T=Tree, A = SApling, E = SEedling, S = Shrub, H= Herb, N= Non-vascular

% Cover Intervals for reference: r = trace, + = <1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, >75%

Stratum	Species	% cover	C	Final species determination
	Danthonia californica	7		
	Taraxacum officinale	1		
	Linum bienne	r		
	Plantago lanceolata	14		
	Ranunculus occidentalis	r		
	Aira caryophylla	r		
	Leptosiphon 2 (hairy calyx)	r		
	Trifolium fragiferum	1		
	Trifolium variegatum	3		
	Micropus californica	r		
	Hemizonia congesta	r		ssp. tracyi
	Achnatherum americanum	r		
	Bromus hordeaceus	3		
	Hypochaeris glabra	2		
	Hypochaeris radicata	4		
	Anthoxanthum odoratum	r		
	Lupinus bicolor	r		
	Chlorogalum	r		
	Navarretia sp. (not collected)	r		Navarretia intertexta
	Festuca perennis	r		
	Trifolium dubium	r		
	Erodium 2	2		
	Sisyrinchium bellum	r		
	Triphysaria pusilla	r		
S	Rosa rubiginosa	+		
	Cerastium glomeratum	r		
	Agrostis capillaris	r		
	Festuca myuros	r		
	Brodiaea	r		
	Galium parisiense	r		
	Briza minor	r		
	Trifolium subterraneum	10		
	Avena barbata	r		

or 116% relative cover pancal

Unusual species: _____

plot #6

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

For Office Use:	Final database #:	Final vegetation type:	Alliance Festuca idahoensis - Danthonia californica Association

I. LOCATIONAL/ENVIRONMENTAL DESCRIPTION — circle: Relevé or RA

Database #:	Date: 6-3-22	Name of recorder: Hollie Ernest
		Other surveyors: Jenell Jackson
	UID:	Location Name: Humsun Plot # 6

GPS name: _____ For Relevé only: Bearing°, left axis at ID point 289° of Long / Short side

UTME _____ UTMN _____ Zone: 11 NAD83 GPS error: ft./ m./ PDOP _____

Decimal degrees: LAT 40.309962 LONG -123.657098

GPS within stand? Yes / No If No, cite from GPS to stand: distance (m) _____ bearing ° _____ inclination ° _____

and record: Base point ID _____ Projected UTMs: UTME _____ UTMN _____

Camera Name: Jenell Cardinal photos at ID point: yes

Other photos:

Stand Size (acres): <1, 1-5, >5 | Plot Area (m²): 100 / 100 | Plot Dimensions 10 x 10 m | RA Radius ____ m

Exposure, Actual °: _____ NE NW SE SW Flat Variable | Steepness, Actual °: _____ 0° 1-5° >5-25° >25

Topography: Macro: top upper mid lower bottom | Micro: convex flat concave undulating

Geology code: _____ Soil Texture code: _____ | Upland or Wetland/Riparian (circle one)

% Surface cover: (Incl. outcrops) (>60cm diam) (25-60cm) (7.5-25cm) (2mm-7.5cm) (Incl sand, mud)

H_20: 0 BA Stems: 1 Litter: r Bedrock: Boulder: Stone: Cobble: r Gravel: | Fines: 98 =100%

% Current year bioturbation _____ Past bioturbation present? Yes / No | % Hoof punch _____

Fire evidence: Yes / No (circle one) If yes, describe in Site history section, including date of fire, if known.

Site history, stand age, comments:

Heavy grazing

Disturbance code / Intensity (L,M,H): M /___ ___/___ ___/___ ___/___ ___/___ "Other" _____/___

II. HABITAT DESCRIPTION

Tree DBH : T1 (<1" dbh), T2 (1-6" dbh), T3 (6-11" dbh), T4 (11-24" dbh), T5 (>24" dbh), T6 multi-layered (T3 or T4 layer under T5, >60% cover)

Shrub: S1 seedling (<3 yr. old), S2 young (<1% dead), S3 mature (1-25% dead), S4 decadent (>25% dead)

Herbaceous: H1 (<12" plant ht.), H2 (>12" ht.)

Desert Riparian Tree/Shrub: 1 (<2ft. stem ht.), 2 (2-10ft. ht.), 3 (10-20ft. ht.), 4 (>20ft. ht.)

Desert Palm/Joshua Tree: 1 (<1.5" base diameter), 2 (1.5-6" diam.), 3 (>6" diam.)

III. INTERPRETATION OF STAND

Field-assessed vegetation Alliance name: Danthonia californica

Field-assessed Association name (optional): _____

Adjacent Alliances/direction: _____/_____, _____/_____

Confidence in Alliance identification: L M H Explain: _____

Phenology (E,P,L): Herb ✓ Shrub ___ Tree ___ Other identification or mapping information:

Humsun plot # 6

page1

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

Database #: _____ SPECIES SHEET

IV. VEGETATION DESCRIPTION

% NonVasc cover: ____ **Total % Vasc Veg cover:** 33

% Cover - **Conifer tree / Hardwood tree:** ____/____ **Regenerating Tree:** ____ **Shrub:** r **Herbaceous:** 100

Height Class - Conifer tree / Hardwood tree: ____/____ **Regenerating Tree:** ____ **Shrub:** ____ **Herbaceous:** 1

Height classes: 1=<1/2m, 2=1/2-1m, 3=1-2m, 4=2-5m, 5=5-10m, 6=10-15m, 7=15-20m, 8=20-35m, 9=35-50m, 10=>50m

Stratum categories: T=Tree, A = SApling, E = SEedling, S = Shrub, H= Herb, N= Non-vascular

% Cover Intervals for reference: r = trace, + = <1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, >75%

Stratum	Species	% cover	C	Final species determination
	Danthonia californica	6		
	Plantago lanceolata	5		
	Rumex acetosella	1		
	Ranunculus occidentalis	r		
	Taraxacum oficinale	1		
	Erodium 2?	r		Erodium botrys
	Bromus hordeaceus	7		
	Lasimachia arvensis	r		
	Cerastium glomeratum	r		
	Trifolium subterraneum	4		
	Aira caryophyllea	r		
	Linum bienne	r		
	Juncus sp (tenuis?)	r		Juncus occidentalis
	Carex sp.	r		
	Trifolium dubium	r		
	Hypochaeris radicata	r		
	Hypochaeris glabra	r		
	Festuca perrenis	r		
	Sherardia arvensis	r		
	Erodium circutareum	6		
	Trifolium variegatum	r		
	Briza minor	r		
	Convolvulus arvensis	r		
	Madia sp.	r		Madia c.f. exigua
	Acmispon americanus	r		
	Galium parisensis	r		
	Geranium dissectum	r		
	Avena barbata	r		
	Taraxacum oficinale	4		
	Anthoxanthum odoratum	r		
	Trifolium fragiferum	r		
S	Rosa rubiginosa	+		
	Elymus caput-medusae	r		
	Bromus diandrus	r		
	Torilis arvensis	r		

approx 17% Danthonia rel cover

Unusual species: _____

hum SM plot 6

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

plot #6 (cont)

For Office Use:	Final database #:	Final vegetation type:	Alliance Association

I. LOCATIONAL/ENVIRONMENTAL DESCRIPTION circle: **Relevé or RA**

Database #:	Date:	Name of recorder:
		Other surveyors:
	UID:	Location Name:

GPS name: _____ For Relevé only: **Bearing°**, left axis at ID point_____ **of Long / Short** side

UTME ___ ___ ___ ___ ___ ___ **UTMN** ___ ___ ___ ___ ___ ___ ___ **Zone: 11 NAD83** GPS error: **ft./ m./ PDOP** _____

Decimal degrees: **LAT** ___ ___ . ___ ___ ___ ___ ___ ___ **LONG** ___ ___ ___ . ___ ___ ___ ___ ___ ___

GPS within stand? Yes / No If No, cite from GPS to stand: distance (m) _____ bearing ° _____ inclination ° _____

and record: **Base point ID** _____ **Projected UTMs: UTME** ___ ___ ___ ___ ___ ___ **UTMN** ___ ___ ___ ___ ___ ___ ___

Camera Name: **Cardinal photos at ID point:**

Other photos:

Stand Size (acres): <1, 1-5, >5 | Plot Area (m^2): 100 / _____ | Plot Dimensions ____ x____ m | RA Radius____ m

Exposure, Actual °: _____ **NE NW SE SW Flat Variable | Steepness, Actual °:** _____ **0° 1-5° > 5-25° > 25**

Topography: Macro: top upper mid lower bottom | Micro: convex flat concave undulating

Geology code: _____ **Soil Texture code:** _____ **| Upland** or **Wetland/Riparian** (circle one)

% Surface cover: (Incl. outcrops) (>60cm diam) (25-60cm) (7.5-25cm) (2mm-7.5cm) (Incl sand, mud)

H_20: BA Stems: Litter: Bedrock: Boulder: Stone: Cobble: Gravel: Fines: =100%

% Current year bioturbation _____ **Past bioturbation present? Yes / No | % Hoof punch** _____

Fire evidence: Yes / No (circle one) If yes, describe in Site history section, including date of fire, if known.

Site history, stand age, comments:

Disturbance code / Intensity (L,M,H): ____/___ ____/___ ____/___ ____/___ ____/___ **"Other"** _____/___

II. HABITAT DESCRIPTION

Tree DBH : T1 (<1" dbh), **T2** (1-6" dbh), **T3** (6-11" dbh), **T4** (11-24" dbh), **T5** (>24" dbh), **T6** multi-layered (T3 or T4 layer under T5, >60% cover)

Shrub: S1 seedling (<3 yr. old), **S2** young (<1% dead), **S3** mature (1-25% dead), **S4** decadent (>25% dead)

Herbaceous: H1 (<12" plant ht.), **H2** (>12" ht.)

Desert Riparian Tree/Shrub: 1 (<2ft. stem ht.), **2** (2-10ft. ht.), **3** (10-20ft. ht.), **4** (>20ft. ht.)

Desert Palm/Joshua Tree: 1 (<1.5" base diameter), **2** (1.5-6" diam.), **3** (>6" diam.)

III. INTERPRETATION OF STAND

Field-assessed vegetation Alliance name: _____

Field-assessed Association name (optional): _____

Adjacent Alliances/direction: _____/_____, _____/_____

Confidence in Alliance identification: L M H Explain: _____

Phenology (E,P,L): Herb____ Shrub____ Tree____ Other identification or mapping information:

Hum Sun Plot #6 page 2

plot #6 (cont)

Combined Vegetation Rapid Assessment and Relevé Field Form

(Revised March 27, 2018)

Database #: _____ SPECIES SHEET

IV. VEGETATION DESCRIPTION

% NonVasc cover:____ **Total % Vasc Veg cover:**_____

% Cover - **Conifer tree / Hardwood tree:** _____/_____ **Regenerating Tree:** _____ **Shrub:** _____ **Herbaceous:** _____

Height Class - Conifer tree / Hardwood tree: _____/_____ **Regenerating Tree:** _____ **Shrub:** _____ **Herbaceous:** _____

Height classes: 1=<1/2m, 2=1/2-1m, 3=1-2m, 4=2-5m, 5=5-10m, 6=10-15m, 7=15-20m, 8=20-35m, 9=35-50m, 10=>50m

Stratum categories: T=Tree, A = SApling, E = SEedling, S = Shrub, H= Herb, N= Non-vascular

% Cover Intervals for reference: r = trace, + = <1%, 1-5%, >5-15%, >15-25%, >25-50%, >50-75%, >75%

Stratum	Species	% cover	C	Final species determination
	Festuca arundinacia	r		
→	Rosaceae sp (green sepals, red styles!)	r		Poterium sanguisorba
	Poterium Sanguisorba			

Appendix 2J

Update to *Festuca idahoensis- Danthonia californica* Herbaceous Alliance – HumSun 3, LLC Memo

NORTHPOINT
CONSULTING GROUP, INC.

FROM: NorthPoint Consulting Group, Inc.

TO: Humboldt County Planning & Building Department

RE: Update to *Festuca idahoensis- Danthonia californica* Herbaceous Alliance Impacts and Mitigation – HumSun 3, LLC (Key APN: 217-253-001)

DATE: **September 5, 2024**

Purpose

The purpose of this Memorandum is to 1) provide an update to the "Impacts to Botanical Resources Sensitive Natural Communities – *Festuca idahoensis-Danthonia californica* Herbaceous Alliance" mitigation report (NRM Report (2022b)) prepared for the HumSun Ranch cannabis project by Natural Resources Management Corporation (NRM) 2nd Revision dated September 28th, 2022, and 2) provide supporting information for the CEQA Initial Study and Mitigated Negative Declaration for HumSun 3, LLC. Sources utilized include existing botanical resources reports, pre-consultation with the California Department of Fish and Wildlife (CDFW) regarding impacts, and mitigation measures for California oat grass (*Festuca idahoensis- Danthonia californica* Herbaceous Alliance) resulting from development of the proposed HumSun 3, LLC project.

Summary

The Proposed HumSun 3, LLC project would impact 0.21 acres of *Festuca idahoensis-Danthonia californica* Herbaceous Alliance. During consultation with CDFW, CDFW provided comments in May 2024 regarding *Festuca idahoensis-Danthonia californica* mitigation. Mitigation is proposed at a minimum of a 2:1 ratio, as recommended by CDFW. Accordingly, a minimum of 0.42 acres of mitigation would occur to transform existing highly impacted and invaded "low-quality" stands at the mid-ridge location to "high-quality" stands by removing invasive species and fencing the protected area to exclude cattle and feral pigs, also recommended by CDFW. A minimum of 3 years of monitoring by a qualified professional is recommended, with a success criteria of a minimum of 0.42 acres of "high quality" *Festuca idahoensis-Danthonia californica* stands with a minimum of 30% *Danthonia californica* cover and no greater than 10% invasive species cover. A monitoring report is recommended to be submitted to the Humboldt County Planning Department each year, prior to December 31st.

Project Description and Background

The Proposed HumSun 3, LLC project ("Proposed Project") is a Use Permit application for 3.1 acres of new mixed-light commercial cannabis cultivation under the Humboldt County Commercial Medical Marijuana Land Use Ordinance (CMMLUO) on a single legal parcel comprised of ten (10) Assessor Parcel Numbers (APNs) 217-051-001, 217-052-001, 217-053-002, 217-055-002, 217-056-001, 217-061-001, 217-062-003, 217-213-003, 217-214-001, and 217-253-001 in unincorporated Humboldt County, California. All proposed development and impacts to sensitive natural communities would occur on the Lower Field site, located on APN 217-253-001.

The current version of the 3.1-acre project has been significantly reduced in both size and impact from the version provided in the original application. The original application (referred to as the "Original Project Scope", or "OPS") was for approximately twelve (12) acres of cannabis cultivation, across the entire project parcels. Numerous technical studies, including the aforementioned NRM Report (2022b) that this memorandum serves to update, were conducted for the original scope of the project. Therefore, some of the referenced technical studies refer to a larger scope of work and greater impacts than the currently proposed 3.1-acre project, and some information is no longer relevant. However, there are technical studies which are still relevant to the current project and applicable information has been sourced from these studies to evaluate impacts in the Initial Study/Mitigated Negative Declaration for the Proposed Project. This Memorandum serves to update the NRM Report (2022b) discussing *Danthonia californica* impacts and mitigation strategies.

The *Festuca idahoensis- Danthonia californica* Herbaceous Alliance is designated by CDFW (2022) as a State Rank of S3 is considered a Sensitive Natural Community. According to the Manual of California Vegetation (CNPS, 2022), *Festuca idahoensis- Danthonia californica* Herbaceous Alliance is found throughout Humboldt County and throughout North Coast generally. Danthonia establishes on bare soil and is tolerant of moderate grazing.

Previous Technical Studies

Numerous botanical surveys and reports have occurred across the parcel, all for the Original Project Scope. In 2020, GHD conducted seasonally-appropriate surveys for state, federal, and other sensitive listed plant species, and sensitive natural communities, within the areas of impact of the Original Project Scope. To provide more accurate baseline conditions to develop an assessment of impacts and mitigation plan for an environmental analysis, ICF (2021) wrote a review to the GHD Botanical Resources Report prepared in 2020 for the OPS. Mitigation site selection process, mitigation design, invasive species management/site preparation, schedule, documentation, monitoring methods, and reporting were described in "Impacts Botanical Resources Sensitive Natural Communities" (NRM, 2022a). NRM also prepared a "Supplemental Botanical Survey Report: Sensitive Natural Communities" (2022b), to directly quantify and address impacts and mitigation strategies of *Festuca idahoensis – Danthonia californica*.

Presence of mapped onsite *Danthonia californica*

In "Supplemental Botanical Survey Report: Sensitive Natural Communities" (2022b), NRM noted that large stands of native grassland, including where *Danthonia californica* prairie persist. These stands were evaluated by the degree of which they were invaded by non-native species. Approximately 28.75 acres of *Festuca idahoensis- Danthonia californica* was mapped across the parcel designated by the membership rule: *Festuca californica, Festuca idahoensis, Festuca rubra,* or *Danthonia californica,* at least 10% relative cover and often 30% or greater relative cover in the herbaceous layer with a variety of other herbs in upland settings (Buck-Diaz et al., 2020, as cited in NRM 2022a). No *Festuca* species were identified onsite. In addition, absolute percent cover of *Danthonia californica* in these areas ranged from 5% to 21% and relative percent cover 12% to 50%, which would indicate high cover of non-native species.

A total of approximately 28.75 acres across the Proposed Project parcel was identified as *Festuca idahoensis-Danthonia californica* Herbaceous Alliance (S3) with the acre distribution displayed in

Table 1. The Lower Field, the area for the current version of the Proposed Project development, contains 0.53 acres.

Table 1. Acres of Festuca idahoensis-Danthonia californica herbaceous alliance (s3) mapped across the project area for the Original Project Scope (Source: NRM, 2022b).

Area	Acres
Honey Hole	0.13
Lower field	0.53
Lower pond	5.19
Mid-ridge	7.76
Ridge	12.63
Upper pond	2.51
Grand Total	**28.75**

Impacts

The Original Project Scope of 12-acres would have impacted 8.05 acres of the *Festuca idahoensis – Danthonia californica* Herbaceous Alliance across the 1,887-acre ranch. In reducing the Proposed Project by condensing all impacts to the Lower Field site, impacts to this Sensitive Natural Community have been greatly reduced, and a total of 0.21 acres are now proposed to be impacted, leaving 0.32 acres intact on the Lower Field site (Figure 1).

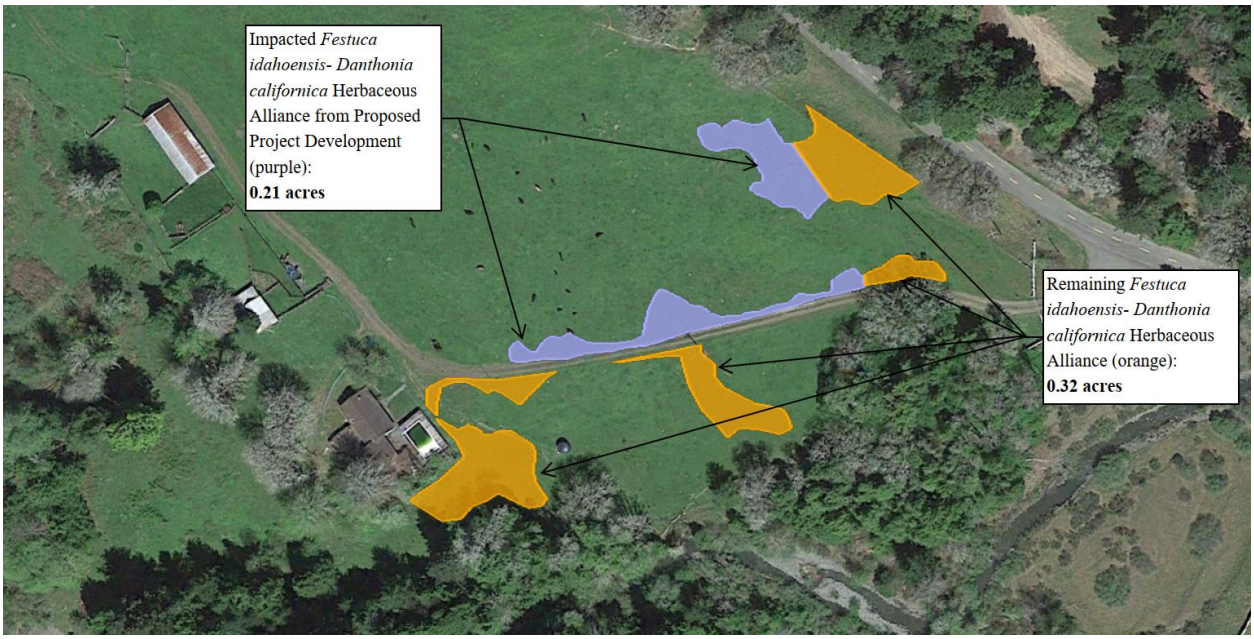


Figure 1: Impacted (purple) and remaining (orange) Danthonia californica stands on the Lower Field Site as a result of the Proposed Project (Source: Google Earth mapping derived from NRM-delineated stands, 2024)

Mitigation Design

NRM (2022a) categorized three California oat grass stands (*Festuca idahoensis – Danthonia californica* herbaceous alliance) based on the CNPS relevé protocol: "high quality" (~0-30% non-native), "moderately invaded" (~31-60% non-native), and "heavily invaded" (~61-90% non-native). They proposed that mitigation sites would be enhanced within existing "moderately invaded" and "heavily invaded" stands to bring the stands to a category of "high quality" by using a combination of weeding out invasive species and excluding and cattle and feral pigs.

In NRM's report (2022b), a 1:1 acre ratio of mitigation to impacts was proposed for the Original Project Scope. In consultation with CDFW for the Proposed Project, CDFW recommended a 2:1 mitigation ratio where impacts cannot be avoided. Accordingly, to address the potential impact to 0.21 acres of *Festuca idahoensis – Danthonia californica* herbaceous alliance, a minimum 2:1 ratio of compensatory mitigation is proposed to enhance at least 0.42 acres of *Festuca idahoensis-Danthonia californica* that are currently designated as moderately invaded (~31-60% non-native) and/or heavily invaded (~61-90% non-native). Enhancement would be performed using invasive species management and cattle and feral pig exclusion with the goal of achieving high quality stands with 0-30% invaded by non-native plants.

Due to the difficulty of planting *Festuca idahoensis – Danthonia californica* and considering the compensatory mitigation at least 0.42 acres, mitigation for the Proposed Project will focus on a combination of invasive species management and cattle and feral pig exclusion. Invasive species management emphasis will be placed on any invasive species with a California Invasive Plant Council (Cal-IPC) rank of High or Moderate, and any weedy species of non-native plants threatening the successful establishment of any natural recruits. Target invasive species will include yellow star thistle and weedy perennial grasses. Excluding cattle from mitigation areas will be accomplished with fencing installed around the protected stand to prevent cattle and pigs from accessing the area. Additional management of feral pigs would be through hazing, licensed sport hunting, depredation permits, or a combination thereof.

The recommended mitigation area is the Mid-Ridge Site (Figure 2) with 7.76 acres of mapped *Festuca-idahoensis - Danthonia californica* stands. This area was identified as a low to moderate quality stand due to presence of invasive species and cattle/pig impacts.

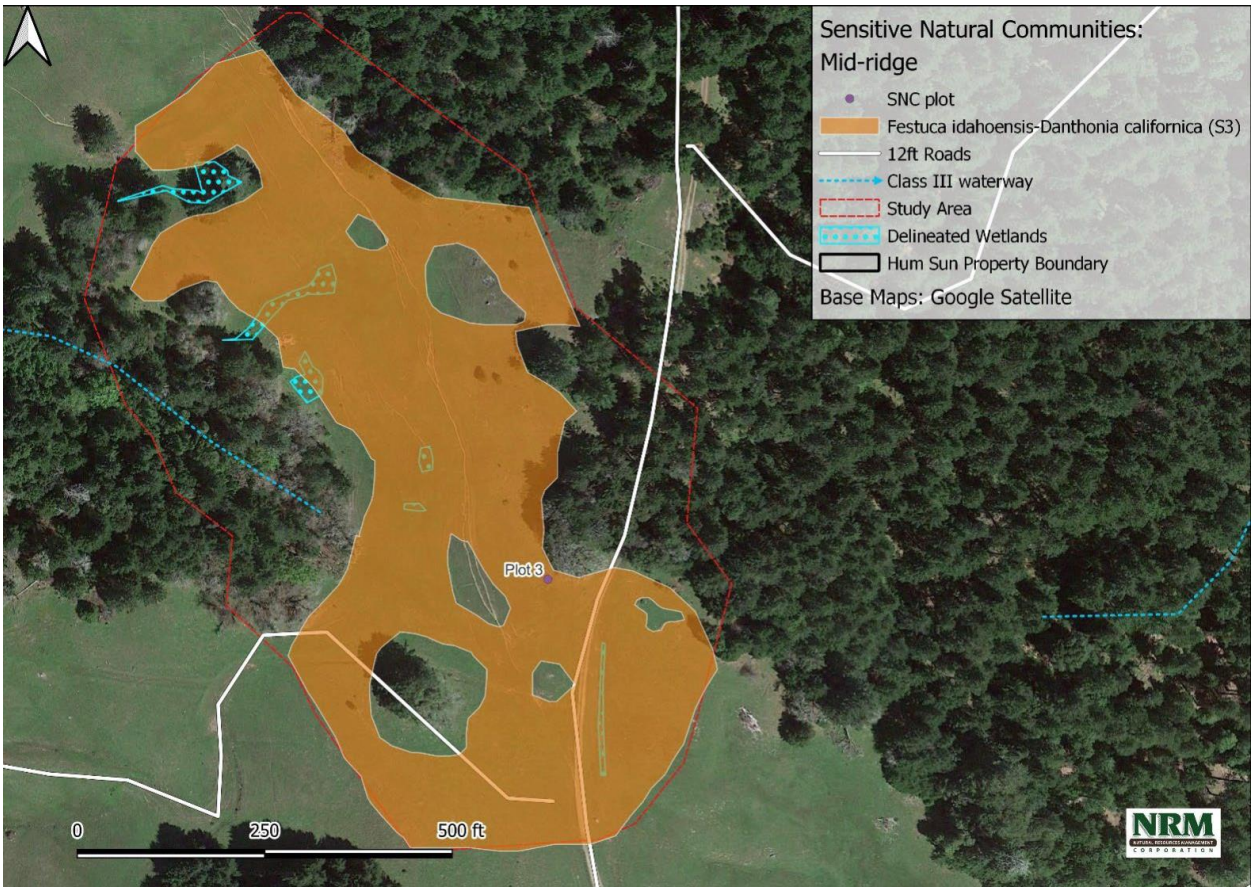


Figure 2. Mapped 7.76 acres of Festuca idahoensis-Danthonia californica herbaceous alliance on the mid-ridge study area (Source: NRM, 2022b).

Monitoring and Reporting

Per the NRM Report (2022b), a successful project over five years will meet the following criteria:

1. A total of at least 0.42 acres (2:1 ratio) of *Festuca idahoensis – Danthonia californica* Herbaceous Alliance have been established meeting the high-quality category and membership rules of these vegetation alliance types as described by the Manual of California Vegetation (MCV) (2020):
    a. High quality stands defined as being between 0% to 30% invaded by non-native plants with a Cal-IPC rank.
    b. The *Festuca idahoensis- Danthonia californica* Herbaceous Alliance the membership rules include:
        i. *Danthonia californica* > 10% relative cover in the herbaceous canopy, and *Danthonia californica* generally > 30% relative cover in the herbaceous layer.
        ii. The relative cover of *Danthonia Californica* in the mitigation area must be greater than 30%.
2. Total absolute cover by invasive species with a Cal-IPC rank of "High" shall be less than 10% at the mitigation site.

A qualified botanist or restoration specialist shall perform annual monitoring. Monitoring and maintenance site visits shall occur every year beginning in the first growing season after construction until the Success Criteria is met, with a minimum of 3 years of monitoring. Monitoring visits and invasive species

maintenance shall be conducted within the same three-week period at the end of May or beginning of June. Appropriate statistical methods will be used to determine the change in total cover of species over time.

The monitor will include the following list in their monitoring protocol:

1. Visually assess the prairie mitigation sites to establish a baseline or use the baseline mapped data from the NRM 2022 study.
2. Monitor absolute vegetative cover in the mitigation sites by randomly selecting 1-square meter plots. The number of plots will be determined by a qualified botanist or restoration specialist. Within each plot, total absolute vegetative cover and absolute cover for each species present.
3. Monitor and report Cal-IPC rank High species and other weedy species. Other non-native weedy species that are impacting plantings or character of the site will also be addressed.
4. Report pertinent site conditions that are outside of those outlined in the Success Criteria such as any conditions that may impact project success, create water quality issues, or otherwise negatively impact the site to allow for adaptive management.
5. Initial photos shall be taken before restoration implementation, then once annually following restoration during the monitoring period.

A Monitoring Report will be submitted to Humboldt County by December 31 of each monitoring year. Per the NRM report (2022b), each Monitoring Report will include:

1. A summary of maintenance and enhancement done that year
2. Description of site conditions
3. Monitoring methods used
4. Photos and photo points
5. Discussion of any needed corrective actions or proposed method changes
6. Results of Annual Monitoring, including total absolute cover estimates for vegetative cover plots, total absolute cover estimates for native herbaceous cover where applicable, absolute cover of target invasive species within the target area, analysis and discussion of progress towards meeting Success Criteria.

Reports Incorporated by Reference (Provided as Appendices of the IS/MND)

CDFW (California Department of Fish and Wildlife). *CDFW Comments.* May 2024. Prepared for HumSun 3, LLC Cannabis Cultivation (APN 217-253-001).

GHD. January 2020. *Botanical Resources Report – Hum Sun Farms Development Project*. Prepared for Hum Sun LLP.

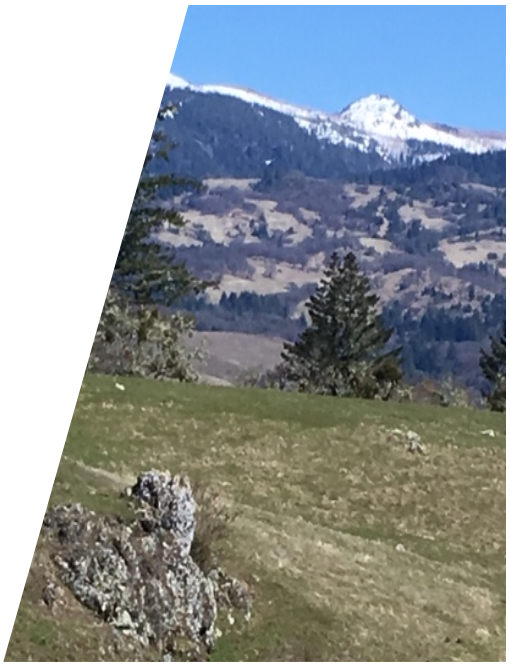
ICF. March 2021. *Memorandum - Review of final 2019 Botanical Resources Survey Report.*

NorthPoint Consulting Group Inc. 2024. *HumSun 3, LLC Site Plan*.

NRM (Natural Resources Management). September 2022a. *Impacts Botanical Resources: Sensitive Natural Communities: Festuca idahoensis- Danthonia californica Herbaceous Alliance, Dense sedge marshes (Carex densa)* (2nd revision). Prepared for Hum Sun Ranch.

NRM (Natural Resources Management). September 2022b. *Supplemental Botanical Survey Report: Sensitive Natural Communities.* Prepared for Hum Sun Farms, LLC.

Appendix 2K
Wildlife Resources Report



Wildlife Resources Report

Hum Sun Farms Development Project
Blocksburg, California
Prepared for Hum Sun LLC









GHD

718 Third Street, Eureka, CA, 95511

11185843 | 10 | January 2020

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1. Introduction

1.1 Overview

On July 20, 2018, the County of Humboldt Planning and Building Department identified 11 priority issues to be addressed prior to ICF's preparation of a California Environmental Quality Act (CEQA) Initial Study (IS) for Hum Sun Ranch application #12856. The 11 issues are identified below; this report addresses some, but not all of the issues.

1. Cultural Resources Study. Being prepared under separate cover by DZC, a subconsultant to GHD, and not included in the present report;
2. Protocol Level Biological Studies that cover all seasonally-appropriate special-status species (plants, herpetofauna, birds, and mammals) as well as a report discussing wetlands/riparian buffers.
3. Hydrological Connectivity of Wells. This is being addressed by GHD under separate cover.
4. Cultivation and Operations Site Plan. Not part of the present report, although information developed by others has been used to guide study design and is referenced as appropriate.
5. Updated Site Plan. New graphics have been developed for the present report, and are intended to illustrate biological issues. Additional graphics may be required for items not in the scope of this report.
6. Water Rights. Addressed by others and not part of the present report.
7. Water Resources Protection Plan. Prepared by others and not part of the present report.
8. Construction/Site Development. Similar to #4 above, this information would largely be provided by the applicant and incorporated as appropriate into the analysis within this report.
9. Operational schedule; same as #8.
10. Outdoor lighting; same as #8.
11. Source(s) of power; same as #8.

This report directly addresses item #2 above, and incorporates information as appropriate from the other items. This report addresses sensitive wildlife resources onsite, while separate memos will address special-status plants, wetlands, and habitat.

The county letter specifies a number of activities to be included within wildlife biological studies. These include the following (reprinted verbatim from County of Humboldt Planning and Building Department letter:

1. Raptor Species. The Project area contains suitable nesting habitat and many known nesting occurrences for several raptor species, including American Peregrine Falcon, Bald Eagle, Golden Eagle, Northern Goshawk, Northern Spotted Owl, and White-tailed Kite. Peregrine Falcon, Bald Eagle, Golden Eagle, and White-tailed Kite are fully protected under California Fish and Game Code Section 3511. Bald Eagle is also listed as endangered under

California Endangered Species Act (CESA). Bald and Golden eagles are also protected under the Federal Bald and Golden Eagle Protection Act. Northern Spotted Owl is listed as threatened under the Endangered Species Act (ESA) and the California Endangered Species Act (CESA) and there are three known occurrences on the Project site. Northern Goshawk is a California Department of Fish and Wildlife (CDFW) species of special concern.

- Suitable nesting habitat for these species includes trees, snags, cliffs, and in some cases, human-made structures. These habitats will need to be identified and adequately addressed in biological memo(s).
- Several different surveys may be needed to capture early breeding season activities in order to comprehensively assess the potential for loss of breeding habitat not limited to but including: Northern Spotted Owls, Nesting Raptors, and Special-Status Birds.

2. "Amphibians. Biological reconnaissance surveys for western pond turtles and special-status amphibian surveys will be needed under the jurisdiction of Commercial Cannabis Land Use (CCLUO) Ordinance No. 2599 (V.2 Ordinance). "
3. Mammals. Biological reconnaissance surveys for American badgers, Fishers, Humboldt Martens, and special-status bats will be needed under the jurisdiction of Commercial Cannabis Land Use (CCLUO) Ordinance No. 2599.
4. Bullfrogs. The American Bullfrog is an invasive non-native species in California and poses a significant threat to California's native fish and wildlife resources. American bullfrogs are considered highly invasive and are well documented to prey upon a variety of fish and wildlife species, including some that are rare, threatened, and endangered. Human modifications to the environment provide favorable conditions to American bullfrogs such as artificially created agricultural ponds, canals and ditches where warm still water occurs. We request surveys for bullfrogs in any existing ponds onsite, as well as elucidation of mitigation measures for all ponds proposed within the Project area. For instance, annual pond dewatering may be necessary to eliminate Bullfrog infestations and pond designs should incorporate this possibility.

1.2 Project Objectives

The objective of the project is to provide the necessary information to allow the County of Humboldt to successfully complete the CEQA process. This report addresses the wildlife resources component.

1.3 Project Location

The project site is located approximately 2.5-miles north-northwest of Blocksburg on the west side of Alderpoint Road (Figure 1). The site includes 12 contiguous parcels and in sum covers approximately 3,200 acres. The site is bisected by a central roughly northwest-southeast trending ridge, with a series of small ravines and ephemeral streams flowing east and northeast into Larabee Creek (flows through the eastern portion of the site), or southwest into Coleman Creek and to the

Eel River (located about 0.5-mile west of the westernmost part of the site). Elevations range from approximately 600 feet in the southwest corner, 1,300 feet along the eastern edge, up to about 2,300 feet at the highest part of the central ridge. Some slopes, especially west of the ridgetop, are quite steep (800 feet elevation change over about 2,000 horizontal feet).

1.4 Definition of the Study Area

For purposes of this Biological Resources Report, we created a nested study design. For wetlands, rare plants, and protocol-level habitat mapping we used a tightly defined boundary limited to a 200-foot buffer around actual project-related ground disturbance areas. For more mobile wildlife, we examined a much larger area extending a minimum of 0.5-mile around ground disturbance area and sometimes more; for example, we visited all three known Northern Spotted Owl activity centers on the property even though one of these was at a considerable distance from any proposed ground disturbance. In practice we excluded only peripheral northern, southern, and southwestern portions of the properties which are far removed from any proposed activities and which have habitat types similar to those we characterized elsewhere on the site. We were not able to access adjoining private lands, thus our study boundaries are limited to parcels owned by Hum Sun Ranch. The Project Study Boundaries (PSB) are shown on Figures 2 and 3.

2. Project Description

The proposed activity includes several components focused largely in three parts of the site. These include cultivation areas, water sources (ponds), and structures (drying sheds). These are briefly described below. Note that this project description and associated figures is based on information available at the beginning of field work; some changes to project elements are anticipated to avoid or minimize potential impacts to natural resources. The study area included buffers to ensure that all potential impacts would be assessed and to allow some flexibility to avoid possible impacts.

2.1 Cultivation Areas

Three cultivation areas have been identified: A greenhouse complex near the Alderpoint Road entrance and two outdoor cultivation areas (“Jellybean” and “Honeyhole”), both on or near the ridgetop. The Jellybean site is near the highest point on the ridgetop and relatively centrally located. The Honeyhole site is about 0.6 mile to the northwest, at and just southwest of the ridgetop. All three sites are located on relatively level parts of the site.

2.2 Ponds

Seven proposed pond locations have been identified, most within reasonable proximity to cultivation sites (Figures 2 through 5).

2.3 Structures

Four drying sheds are proposed. Two are near the greenhouse location described above, and one is near each of the interior cultivation sites. One shed has been relocated to avoid potential rare plant and wetland impacts.

2.4 Construction Activities and Schedule

Construction and onset of cultivation would presumably occur in the first suitable season after issuance of all relevant permits and approvals.

3. Regulatory Background

3.1 Federal Jurisdiction

3.1.1 Endangered Species Act (ESA)

The ESA of 1973 (16 USC 1531 et seq.) establishes a national policy that all federal departments and agencies provide for the conservation of threatened and endangered species and their ecosystems. The Secretary of the Interior and the Secretary of Commerce are designated in the ESA as responsible for: (1) maintaining a list of species likely to become endangered within the foreseeable future throughout all or a significant portion of its range (threatened) and that are currently in danger of extinction throughout all or a significant portion of its range (endangered); (2) carrying out programs for the conservation of these species; and (3) rendering opinions regarding the impact of proposed federal actions on listed species. The ESA also outlines what constitutes unlawful taking, importation, sale, and possession of listed species and specifies civil and criminal penalties for unlawful activities.

Pursuant to the requirements of the ESA, an agency reviewing a proposed project within its jurisdiction must determine whether any federally listed or proposed species may be present in the project region, and whether the proposed project would result in a “take” of such species. The ESA prohibits “take” of a single threatened and endangered species except under certain circumstances and only with authorization from the U.S. Fish and Wildlife Service (USFWS) or the National Oceanic and Atmospheric Administration (NOAA) Fisheries through a permit under Section 7 (for federal entities or federal actions) or 10(a) (for non-federal entities) of the Act. “Take” under the ESA includes activities such as “harass, harm, pursue, hunt shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.” USFWS regulations define harm to include “significant habitat modification or degradation.” On June 29, 1995, a U.S. Supreme Court ruling further defined harm to include habitat modification “…where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering.”

In addition, the agency is required to determine whether the project is likely to jeopardize the continued existence of any species proposed to be listed under the ESA, or result in the destruction or adverse modification of critical habitat for such species (16 USC 1536[3][4]). If it is determined that a project may result in the "take" of a federally-listed species, a permit would be required under Section 7 or Section 10 of the ESA.

Critical Habitat is defined by the ESA as a specific geographic area containing features essential for the conservation of an endangered or threatened species. Under Section 7 of the ESA, critical habitat should be evaluated if designated for federally listed species that may be present in the project Action Area. The Action Area serves as the “study area” for the purposes of a Section 7 Biological Assessment. If impacts to federally listed species can be avoided (no effect) then consultation or incidental take authorization would not be necessary.

3.1.2 Clean Water Act (CWA)

The CWA (1977, as amended) establishes the basic structure for regulating discharges of pollutants into waters of the U.S. It gives the U.S. Environmental Protection Agency (EPA) the authority to implement pollution control programs, including setting wastewater standards for industry and water quality standards for contaminants in surface waters. The CWA makes it unlawful for any person to discharge any pollutant from a point source into navigable waters, without a permit under its provisions.

Discharge of fill material into "waters of the U.S.," including wetlands, is regulated by the U.S. Army Corps of Engineers (USACE) under Section 404 of the CWA (33 USC 1251-1376). USACE regulations implementing Section 404 define "waters of the U.S." to include intrastate waters (such as, lakes, rivers, streams, wetlands, and natural ponds) that the use, degradation, or destruction of could affect interstate or foreign commerce. Wetlands are defined for regulatory purposes as "areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 CFR 328.3; 40 CFR 230.3). The placement of structures in "navigable waters of the U.S." is also regulated by the USACE under Section 10 of the Federal Rivers and Harbors Act (33 USC 401 et seq.). Projects are approved by USACE under standard (i.e., individual) or general (i.e., nationwide, programmatic, or regional) permits. The type of permit is determined by the USACE and based on project parameters.

The USACE and the EPA announced the release of the Clean Water Rule on May 27, 2015 (80 FR 124: 37054-37127). The Rule is intended to ensure waters protected under the CWA are more precisely defined, more predictable, easier to understand, and consistent with the latest science. The intent is to: 1) clearly define and protect tributaries that impact the quality of downstream waters; 2) provide certainty in how far safeguards extend to nearby waters; 3) protect unique regional waters; 4) focus on streams instead of ditches; 5) maintain the status of waters associated with infrastructure (i.e., sewer systems); and 6) reduce the need for case specific analysis of all waters. The U.S. Court of Appeals for the Sixth Circuit stayed implementation of the Clean Water Rule pending further action of the court in October 2015. In response, the USACE and EPA resumed case-by-case analysis of waters of the U.S. determinations. Implementation of the Clean Water Rule was pending litigation prior to February 2017. An Executive Order (Restoring the Rule of Law, Federalism, and Economic Growth by Reviewing the "Waters of the United States" Rule) was signed on February 28, 2017, directing the USACE and EPA to review The Rule and publish for notice and comment a proposed rule rescinding or revising The Rule. The USACE and EPA subsequently published a Notice of Intention to Review and Rescind or Revise the Clean Water Rule in the Federal Register on March 6, 2017. The definition of "navigable waters" under the CWA along with The Rule is currently under review per the Executive Order.

The Fish and Wildlife Coordination Act requires consultation with the USFWS, NOAA Fisheries, and responsible state wildlife agency for any federally authorized action to control or modify surface waters. Therefore, any project proposed or permitted by the USACE under the CWA Section 404 must also be reviewed by the federal wildlife agencies and California Department of Fish and Wildlife (CDFW).

Section 401 of the CWA requires any applicant for a federal license or permit, which involves an activity that may result in a discharge of a pollutant into waters of the U.S., obtain a certification that

the discharge will comply with applicable effluent limitations and water quality standards. CWA 401 certifications are issued by Regional Water Quality Control Boards (RWQCBs) under the California Environmental Protection Agency.

3.1.3 Executive Order 11990

Executive Order 11990 (1977) furthers the protection of wetlands under NEPA through avoidance of long and short-term adverse impacts associated with the destruction or modification of wetlands where practicable. The order requires all federal agencies managing federal lands, sponsoring federal projects, or funding state or local projects to assess the effects of their actions on wetlands. The agencies are required to follow avoidance, mitigation, and preservation procedures. The Presidential Wetland Policy of 1993 and subsequent reaffirmation of the policy in 1995 supports effective protection and restoration of wetlands, while advocating for increased fairness of federal regulatory programs.

3.1.4 Migratory Bird Treaty Act (MBTA)

The MBTA of 1918 (16 USC 703-711) as amended established federal responsibilities for the protection of nearly all species of birds, their eggs, and nests. A migratory bird is defined as any species of bird that lives, reproduces, or migrates within or across international borders at some point during their annual life cycle. The MBTA prohibits the take, possession, buying, selling, purchasing, or bartering of any migratory bird listed in 50 CFR Part 10, including feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 CFR 21). Only exotic species such as Rock Pigeons (*Columba livia*), House Sparrows (*Passer domesticus*), and European Starlings (*Sturnus vulgaris*) are exempt from protection.

In 2001, President Clinton defined “take” in Executive Order 13186 to include both “intentional” and “unintentional.” However, in 2017, the Department of the Interior’s (DOI) Office of Solicitor argued via Opinion M-37050 that incidental take was not prohibited under the Migratory Bird Treaty Act. Opinion M-37050 is currently the subject of a lawsuit between eight U.S. states and the U.S. DOI.

3.1.5 Bald and Golden Eagle Protection Act (BGEPA)

The Bald Eagle Protection Act was originally enacted in 1940 in order to protect the national emblem of the United States, the Bald Eagle (*Haliaeetus leucocephalus*). At this time, the Bald Eagle was experiencing significant population pressures from hunting, egg collection, and habitat loss (Buehler 2000). This act was expanded upon in 1962 to include protections for the Golden Eagle (*Aquila chrysaetos*). Similarly, the Golden Eagle was also experiencing precipitous population declines due to habitat loss, hunting, and electrocution from power lines (Kochert et al. 2002).

The current federal statute as amended (16 U.S.C. 668-668d) includes criminal penalties for anyone, including individuals, associations, partnerships, and corporations who “take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or in any manner any bald eagle commonly known as the American eagle or any golden eagle, alive or dead, or any part, nest, or egg thereof” without a permit (16 U.S.C. § 668a). “Take” is defined as “pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb” (16 U.S.C. § 668c). “Disturb” is defined as “to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease

in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior" (50 CFR 22.3). Broadly construed, "take" may be applied to the protection of habitat around nest sites (Wisch 2002). Civil and criminal penalties may include monetary fines, imprisonment, a cancellation of grazing agreements on federal land, and a loss of property that was used in violating the act (e.g. boat, gun, or car). According to the USFWS, "a violation of the Act can result in a fine of up to $100,000 ($200,000 for organizations), imprisonment for one year, or both, for a first offense. Penalties increase substantially for additional offenses, and a second violation of this Act is a felony" (USFWS 2016). However, the act allows for Bureau of Indian Affairs certified tribe members to use eagles and eagle parts for religious ceremonies, as well as exceptions for scientific or educational purposes, falconry, and in cases of livestock depredation (16 U.S.C. § 668a). Any employee of the Department of the Interior (DOI) may enforce the provisions of the statute and may arrest individuals for violations (16 U.S.C. § 668b).

In the case of development projects, a permit may be required if the project activity is near an active or inactive eagle nest, roosting site, or foraging site. This is particularly true if the project is near breeding habitat (as opposed to wintering habitat or migratory stop-over sites). The act applies to all activities that may impact eagles, including projects without a federal nexus. If there is a possibility that the project could "non-purposefully take" eagles (unavoidable take associated with, but not the purpose of an activity) the USFWS may issue a programmatic take permit. In this case, the permit is subject to conditions or mitigation measures to minimize impacts. Post-construction monitoring and annual reports may also be required (50 CFR 22.26).

3.1.6 Magnuson-Stevens Act

The Magnuson-Stevens Fishery Conservation and Management Act (MSA) provides the federal government with the authority to manage fisheries in the U.S. Exclusive Economic Zone (EEZ) (from state waters which end 3 nautical miles offshore to a distance of 200 nautical miles). In addition, the Act mandates inter-agency cooperation in achieving protection, conservation, and enhancement of Essential Fish Habitat (EFH). The Act defines EFH as "Those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. For the purpose of interpreting the definition of EFH: 'Waters' include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; 'substrate' includes sediment, hard bottom, structures underlying the waters, and associated biological communities; 'necessary' means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem; and "spawning, breeding, feeding, or growth to maturity" covers a species' full life cycle" (50 CFR 600.10). EFH designations serve to highlight the importance of habitat conservation for sustainable fisheries and sustaining valuable fish populations. EFH relates directly to the physical fish habitat and indirectly to factors that contribute to degradation of this habitat. Important features of EFH that deserve attention are adequate water quality, temperature, food source, water depth, and cover/vegetation.

3.2 State Jurisdiction

3.2.1 California Environmental Quality Act (CEQA)

CEQA applies to certain activities of state and local public agencies. A public agency must comply with CEQA when it undertakes an activity defined by CEQA as a "project." A project is an activity undertaken by a public agency or a private activity which must receive some discretionary approval. The Proposed Project is a project under CEQA; therefore, CEQA compliance is required. Under CEQA, a variety of technical studies including biological, cultural, traffic, and air quality studies as well as research and professional knowledge are considered to determine whether the project may have an “adverse effect” on the environment. Lead agencies are charged with evaluating the best available data when determining what specifically should be considered an “adverse effect” to the environment.

3.2.2 Porter-Cologne Water Quality Act

The Porter-Cologne Act provides for statewide coordination of water quality regulations by establishing the California State Water Resources Control Board. The State Board is the statewide authority that oversees nine separate RWQCBs that collectively oversee water quality at regional and local levels. California RWQCBs issue CWA Section 401 Water Quality Certifications for possible pollutant discharges into waters of the U.S. or state.

3.2.3 California Endangered Species Act (CESA)

The CESA includes provisions for the protection and management of species listed by the State of California as endangered, threatened, or designated as candidates for such listing (California Fish and Game Code (FGC) Sections 2050 through 2085). The CESA generally parallels the main provisions of the ESA and is administered by the CDFW, who maintains a list of state threatened and endangered species as well as candidate and species of special concern (SSC). The CESA prohibits the “take” of any species listed as threatened or endangered unless authorized by the CDFW in the form of an Incidental Take Permit. Under FGC, “take” is defined as to “hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.”

Species of special concern are broadly defined as species that are of concern to the CDFW, because of population declines, restricted distributions, and/or they are associated with habitats that are declining in California. Impacts to special status plants and animals may be considered significant under CEQA.

3.2.4 California Fish and Game Code (FGC)

Lake or Streambed Alteration Agreement

Streams, lakes, and riparian vegetation that serve as habitat for fish and other wildlife species are subject to jurisdiction by the CDFW under Sections 1600-1616 of the FGC. Any activity that will do one or more of the following: 1) substantially obstruct or divert the natural flow of a river, stream, or lake; 2) substantially change or use any material from the bed, channel, or bank of a river, stream, or lake; or 3) deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into a river, stream, or lake; generally require a 1602 Lake and

Streambed Alteration Agreement (LSAA). The term “stream,” which includes creeks and rivers, is defined in the California Code of Regulations (CCR) as follows: “a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life. This includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation” (14 CCR 1.72). In addition, the term stream can include ephemeral streams, dry washes, watercourses with subsurface flows, canals, aqueducts, irrigation ditches, and other means of water conveyance if they support aquatic life, riparian vegetation, or stream-dependent terrestrial wildlife. Riparian is defined as, “on, or pertaining to, the banks of a stream;” therefore, riparian vegetation is defined as, “vegetation which occurs in and/or adjacent to a stream and is dependent on, and occurs because of, the stream itself.” Removal of riparian vegetation also requires a Section 1602 Lake and Streambed Alteration Agreement from the CDFW.

Birds of Prey and Native Nesting Birds

Section 3503 of the FGC prohibits the take, possession, or needless destruction of the nest or eggs of any bird. Subsection 3503.5 specifically prohibits the take, possession, or destruction of any birds in the orders *Falconiformes* (hawks and eagles) or *Strigiformes* (owls) and their eggs or nests. These provisions, along with the federal MBTA, essentially serve to protect nesting native birds. Non-native species, including the European Starling (*Sturnus vulgaris*), Rock Pigeon (*Columba livia*), and House Sparrow (*Passer domesticus*), are not afforded protection under the MBTA or FGC.

Fully Protected Species

The CDFW enforces the FGC, which provides protection for “fully protected birds” (Section 3511), “fully protected mammals” (Section 4700), “fully protected reptiles and amphibians” (Section 5050), and “fully protected fish” (Section 5515). As fully protected species, the CDFW cannot authorize any project or action that would result in “take” of these species even with an incidental take permit.

3.3 Local Jurisdiction

3.3.1 Humboldt County Commercial Cannabis Land Use Ordinance (CCLUO) No. 2599

Ordinance 2259 concerns commercial cultivation, processing, manufacturing, distribution, testing, and sale of cannabis for medicinal or adult use for the areas outside the Coastal Zone. The purpose of this ordinance is to “establish land use regulations concerning the commercial cultivation processing, manufacturing, distribution, testing, and sale of cannabis for medicinal or adult use within the County of Humboldt in order to encourage safe, reasonable and responsible growth that reduces negative impacts on our community and environment, increases public awareness, and community health and safety while creating a clear and attainable path for operators to follow and authorities to enforce…[and] to protect the environment from harm resulting from cannabis activities, including but not limited to streams, fish, and wildlife, residential neighborhoods, schools, community institutions and Tribal Cultural Resources” (CCLUO No. 2259). In some cases, other County ordinances are incorporated by reference.

In addition, new cannabis development activities are required to provide information to implement mitigation measures from the County’s Final Environmental Impact Report (FEIR) for the

Amendments to Humboldt County Code Regulating Commercial Cannabis Activities (SCH# 2017042022) (Ascent Environmental 2018).

4. Methods

4.1 Preliminary Investigation

4.1.1 Database Searches (IPaC, CNDDB, NMFS/MMPA, and CNPS)

Prior to field surveys, a database search of the California Natural Diversity Database (CNDDB), USFWS IPaC (Information for Planning and Conservation), and the NOAA Fisheries West Coast Region California Species List Tool was conducted by GHD on August 21, 2018 for the Hum Sun Farms Development Project. The list was queried again on August 22, 2019. In addition, citizen science databases such as eBird and iNaturalist were reviewed for additional local wildlife information. The search encompassed nine USGS quadrangles (quads) centered on the study area quad (Blocksburg) and the surrounding eight quads (Bridgeville, Larabee Valley, Dinsmore, Myers Flat, Black Lassic, Miranda, Fort Seward and Alderpoint).

Based on these database results, observations from the special status wildlife surveys, and personal knowledge regarding the habitat and conditions surrounding the PSB area, a scoping table was compiled (Appendix B). This table summarizes special status state or federal wildlife species that could be present in the PSB. The table also presents information such as the likelihood of each species or community to occur in the PSB.

4.2 Field Surveys

A reconnaissance-level field visit was conducted on August 20, 2018 by Senior Ecologist Ken Mierzwa and Senior Scientist Misha Schwarz of GHD accompanied by Nicholas Mello of Hum Sun Ranch LLC and attorney Jeff Slack of Janssen Malloy LLP. All three cultivation sites and many of the pond and structure sites were visited during the half-day visit.

On December 14th the proposed pond locations were visited by Ken Mierzwa, Patrick Sullivan, and Tim Windbigler of GHD.

Numerous winter, spring and summer visits (December 2018 through August 2019) were conducted by GHD staff to complete the required biological studies. The biology team included the following individuals from GHD:

- Ken Mierzwa, project management, mammals, reptiles, amphibians, fish
- Genevieve Rozhon, mammals and birds
- Elizabeth Meisman, mammals, birds, and amphibians
- Misha Schwarz, wetland delineation
- Amy Livingston, wetland delineation and rare plant surveys
- Joslyn Curtis, wetland delineation, habitat mapping, and rare plant surveys

Detailed methods for wildlife surveys are described below. Wetland delineation, habitat mapping, and rare plant protocols are described in separate reports.

4.2.1 Mammalian Surveys

Survey objectives were to address CEQA requirements and gather occurrence data for all possible special-status mammalian species across the PSB. In order to collect this information, wildlife camera traps were installed across the site to capture photographic evidence of mammalian species within the PSB. In addition, nocturnal bat acoustic surveys were conducted throughout the PSB. Although no formal sampling of scat was conducted during site visits, scat and other mammal sign at the site was opportunistically photographed.

4.2.1.1 Wildlife Camera Traps

The PSB is roughly five kilometers (km) long by five km wide, divided into 21 – one km^2 grids. Five Trophy Cam HD Essential E3® (Bushnell Outdoor Products, Overland Park, Kansas, USA) cameras were deployed across these grids from May 29 to August 6 2019 (Figure 4). Cameras were positioned in unique locations during each site visit. At least one camera was placed in each grid across the PSB, within varying habitats; some focused near cultivation areas and the rest distributed to best sample across available habitat types within the PSB. Because many mammal species have large home ranges and move frequently, a large area was sampled relative to the actual proposed impact areas to increase the probability of detections. Several grids only partially overlapped the property boundary and were thus left out of the sampling scheme. In some instances, cameras were deployed within the same grid multiple times, to focus on areas of potential high mammal activity. Cameras were placed in areas where mammal activity was likely to intersect. For instance, cameras were often placed at the intersection of old logging roads or trails where mammal sign (tracks or scat) had been seen nearby. Photos were then retrieved and cameras were redeployed in a different one km^2 grid.

Several cameras were placed where wildlife had been witnessed nearby or to confirm potential wildlife activity. During initial site visits, a medium-sized den was observed a short distance south of the proposed Jelly Bean cultivation site. A camera was deployed facing the entrance to the den to confirm whether the den was actively being used and by what species.

Cameras were attached to straight, live trees with an unobstructed view in the target direction wherever possible. Where no existing structure was available, cameras were attached to T-posts. Tall vegetation within four feet of each camera was cleared to prevent obstruction of view and false triggers from vegetation movement caused by wind. Whenever feasible, cameras were positioned to face north to limit sun glare.

Camera settings were adjusted to collect the highest number of possible photos without significantly affecting image quality. The interval length was changed to three seconds during one visit (deployed 6/11/2019, retrieved 6/26/2019) in an attempt to improve photo capture quality. This proved to have no major effect, so cameras were set back to a one second interval length for all subsequent visits. The sensitivity was set on ‘auto’ for the duration of the study because no extremely low or high temperatures were anticipated in that area which might substantially influence trigger sensitivity. Grid number, elevation, the substrate the camera was attached to, and habitat type at the camera station were recorded during deployment. Photos were downloaded in the field during each site visit.

Photos were later reviewed and sorted. Mammal and/or incidental species detections were recorded.

4.2.1.2 Bat Acoustic Monitoring

GHD Wildlife Biologists conducted bat acoustic monitoring along developed roads across the PSB, around cultivation sites, and areas of high quality habitat via mobile transects (Figure 5). The goal was to document species presence (e.g., sampling techniques do not definitively allow for determination of species absence). Surveys were conducted via walking or driving at speeds no more than 10 miles per hour (mph) or standing at stationary monitoring points along roads (sampling points were all approximately 500 feet or more from Northern Spotted Owl call stations). This allowed sampling of all available habitat types on the property with a focus on potential bat foraging and roosting areas. In addition, GHD Wildlife Biologists noted and mapped snags across the property as potential bat roosting habitat. Surveys were conducted from just after sunset (approximately 2045 hours) up to 0230 hours. In total, acoustic monitoring occurred over seven nights from May through August.

Acoustic monitoring equipment included a Pettersson M500 ultrasonic, omnidirectional microphone (frequency range of 10 kiloHertz (kHz) to 160 kHz) for recording full spectrum bat echolocation calls and SonoBat LIVE (with SonoBat 4 decision engine). The microphone was mounted on a 6.5 ft telescopic pole (set up in a backpack or in a vehicle) and alternately placed vertically or at a 45 degree angle to minimize sound interference in forested areas with high canopy cover (NPS 2016).

Calls were processed in the field using the software, SonoBat LIVE (visualized in the field with an HP Elite x2 tablet). The software analyzes the sonogram of each bat echolocation call and identifies it to the species level with varying levels of confidence. Noise rejection algorithms (“scrubbing”) were applied in real-time during walking versus driving transects and in areas of high katydid presence. The SonoBat northwestern California classifier was used to identify species by echolocation calls. Echolocation calls were also evaluated in SonoBat 4 for desktop by an experience bat biologist, extensively familiar with the calls of North American bat species (Reichert et al. 2018). This desktop evaluation produced the final bat species presence determinations for the PSB. It is possible that additional species, not captured during acoustic monitoring, may be present on the site. These species are addressed further in Section 5.2.1.3.

4.2.2 Avian Surveys

Seasonally appropriate avian surveys were conducted to address CEQA requirements and document special-status species presence and breeding behavior onsite. The PSB survey areas included cultivation areas, developed roads, and immediately adjacent high quality habitat (within 500 feet of the PSB). Surveys were conducted by GHD Wildlife Biologists on multiple visits across the nesting bird season. Three separate types of surveys were conducted to sample avian presence onsite: special-status nesting bird surveys (all species, including raptors), Golden Eagle Surveys, and Northern Spotted Owl Surveys. Some species were not recorded during dedicated surveys but detected incidentally. These species are addressed further in Section 5.2.2.

4.2.2.1 Special Status Nesting Bird Surveys

Surveys were conducted within the PSB to identify confirmed or probable avian nesting activity. Where the habitat allowed the surveyor to walk without risk of damaging nests and surrounding vegetation, the survey included a physical search of the area. This included inspecting the ground, shrubs, and trees for the presence of active nests (cup nests, stick nests, mud nests, and cavities) and any avian species within them. Additionally, the bark of vegetation and the ground layer under vegetation were inspected for evidence of avian species, such as feathers, pellets, or whitewash. Where the habitat was dense or otherwise impenetrable/inaccessible, observations were made from fixed locations (Ralph et al. 1993).

Surveys were conducted within the first four hours after sunrise to coincide with the period of high bird activity. Surveys were completed from May 7, 2019 through August 6, 2019. Weather on the survey days varied, but surveys were conducted when there was no precipitation, high winds (wind speeds < 5 mph), or other conditions that could negatively impact the likelihood of detecting avian species. A list of all avian species heard or observed on site was completed after each survey. Each detected species was also associated with a code representing the highest breeding evidence observed during the day. GHD Wildlife Biologists also noted and mapped snags across the property as potential habitat for cavity nesting avian species. High-powered binoculars were used during the surveys (10x42 magnification).

4.2.2.2 Eagle Surveys

An initial raptor nesting survey was conducted on March 18th, 2019, to address early season nesting species such as Bald and Golden Eagles. Survey protocol involved stationary four-hour surveys along the highest points at the project site (Figure 6), with unobstructed views of the surrounding region (Pagel et al. 2010). Two four-hour surveys were conducted from mid-morning to late afternoon. Weather on the survey day included light and variable winds (wind speeds < 5 mph), clear skies, and temperatures around 65 degrees Fahrenheit. Observation points overlooked open grazing lands, mixed forest, and coniferous forest. The Wildlife Biologist constantly scanned the project area with high-powered binoculars (10x42 magnification) and a spotting scope (60x magnification). Habitat onsite was also generally evaluated in terms of its potential to support eagle species. Additional observations (two to three hour stationary observational surveys) were conducted on April 11th, May 10th, May 29th, and June 11th, to document any eagle species potentially missed earlier in the season.

4.2.2.3 Northern Spotted Owl Surveys

In order to meet the requirements of the USFWS Northern Spotted Owl (NSO) survey protocol for the California Coast Range (Douglas-fir/mixed conifer zone) Physiogeographic Province, the PSB and a buffer region of 1.3 miles around the PSB were surveyed for owl presence. A total of 15 nighttime calling stations were established along roads (maintained and inactive) within the property boundary. Call station placement took into account topography, natural sources of background noise (e.g. presence of streams, which could make owl calls harder to hear), historic Activity Centers (ACs), and historic NSO detections within or adjacent to the PSB (Figures 7 through 10). Northern Spotted Owls can establish nesting territories as early as March in the California Coast Range and thus the survey season spans from March 1 to the end of August (August 31; USFWS 2012). To meet protocol-level requirements, two years of surveying are required involving six surveys per year

(USFWS 2012). Full protocol-level surveys are required to document absence; since the species was already known to occur in the PSB, we instead proposed only one year of surveys to verify whether/where activity still occurs onsite. The proposed NSO (diurnal survey and nighttime calling) survey schedule included six complete nighttime calling visits across the season: May (one survey), June (two surveys), July (two surveys), and August (one survey) in 2019 (six total surveys). All owl survey methods following USFWS protocol (USFWS 2012).

Activity Center Searches

The three previously documented ACs within 1.3 miles of the PSB were surveyed in April of 2019 to determine NSO presence or absence. These daytime surveys involved searches of potential spotted owl habitat within the general vicinity (approximately a 0.5-mile radius) of the estimated NSO historic AC. Daytime surveys involved playing digitally recorded spotted owl calls with a FOXPRO ® NX4 electronic caller (FOXPRO Inc., Lewistown, PA, USA) as well as visually searching the area. Low volume amplified spotted owl calls with an emphasis on the female contact whistle, were used to try to elicit a response.

Nighttime calling

Digitally recorded spotted owl calls were broadcast from the night calling stations. Calls included the standard 4-note and 5-note calls, barking calls, and contact whistle both normal and agitated. At least 10 minutes was spent at each station, with pauses taken between calling to listen for potential spotted owl responses. This listening time was extended if an owl was detected or the survey conditions were slightly compromised (e.g. wind gusts). Calling was discontinued if a spotted owl was detected.

Follow-up Outings

Three additional daytime follow-up outings were conducted in attempts to locate the NSOs detected during nighttime surveys. These daytime surveys involved searches of potential spotted owl habitat within the general vicinity (approximately a 0.5-mile radius) of the estimated NSO location. Daytime surveys involved calling as well as visually searching the area. Low volume amplified spotted owl calls, with an emphasis on the female contact whistle, were used to try to elicit a response. Incidental signs of owls (whitewash, pellets, and feathers) were noted which might indicate potential presence of spotted owls. Additionally a spot check survey was conducted to cover a portion of the property previously not surveyed which contained potentially suitable NSO habitat.

4.2.3 Reptiles and Amphibians

Survey objectives were to address CEQA requirements and gather occurrence data for special-status amphibian and reptile species across the study site. Reptile and amphibian surveys were typically conducted using time-constrained visual encounter surveys (Heyer et al. 1994). Experienced observers walked through appropriate habitat types, turning and replacing cover objects such as rocks and fallen logs and watching for animals in the open. Surveys focused on potential impact areas as well as streams and wetlands down-gradient of impact areas. Particular effort was made to sample special-status species with a potential to be present in the PSB. Surveys were conducted in high-gradient streams by placing nets below sample locations and moving large cobbles and kicking gravel in riffles, dislodging larvae or aquatic adults into the net. In Larabee

Creek and other semi-perennial water sources, banks and basking locations were first scanned with binoculars, then cover objects along the bank were lifted and replaced.

4.2.4 Fish

Although the County request for information did not discuss fish, special status aquatic species are known to occur in Larabee Creek, thus we chose to include relevant information. Both Larabee Creek and Coleman Creek have been the subject of past stream inventories conducted by CDFW (CDFG 1999, 2000) and have been thoroughly characterized. Because of the known presence of federally listed species (Steelhead) we made no attempt to physically sample open water in known salmonid bearing reaches. Information on aquatic species relies on past stream inventory reports and non-intrusive visual observations made during project-related site visits.

4.3 Agency Coordination

This document represents an initial review that will be used in future agency coordination (County of Humboldt, CDFW). Additional agency coordination is anticipated as part of the permit process.

5. Results

5.1 Wildlife Habitat

Detailed habitat mapping of impact areas and immediate buffers have been prepared under separate cover. The following discussion is more general, covers the entire PSB, and is focused on habitat structure and quality as it relates to wildlife.

5.1.1 Riparian Areas

Riparian areas serve as valuable habitat for all wildlife species, particularly amphibians. The vast majority of riparian areas on the property are comprised of narrow corridors bordering small Class II and III streams as well as Larabee and Coleman Creeks. These streams are degraded and have large amounts of sediment as a result of historic timber harvesting practices and heavy cattle grazing of the area. In addition, riparian habitat was heavily impacted during the historic flood event in 1964 (Jeff Bryant Forestry, Inc. 2012). Currently, the limited amount of riparian habitat onsite may serve as nesting and foraging habitat for a variety of avian species, foraging habitat for certain bat species, and dispersal or foraging habitat for amphibians.

5.1.2 Mixed Douglas Fir (*Psuedosuga menziesii*), Oak, and Hardwood Forests

Forested habitat onsite consists of varying age stands of primarily Douglas fir across the property. Much of the property has been managed via selective logging practices. On the property, 201 acres are dedicated to Douglas fir plantations with an additional 193 acres comprised of mixed Douglas fir and “natural” oak. An estimated 1,128 acres consist of Douglas fir and Tanoak. There are also 284 acres of mixed Douglas fir and hardwood (Jeff Bryant Forestry, Inc. 2012). No timber operations have occurred since 2014, when the Timber Harvest Plan (THP) for the site was withdrawn (Brummer 2014). Douglas fir forests with complex age structure (e.g., dead snags and dying trees) provide foraging, roosting, nesting, wintering, and stop-over habitat for a variety of wildlife species

including, but not limited to, Pileated Woodpecker, Northern Spotted Owl, Pacific Fisher, Northern Goshawk, and Black Bear (Brown 1985).

5.1.3 Oak Woodlands

The property contains approximately 163 acres of oak woodlands, dominated by Oregon White Oak (*Quercus garryana*), Black Oak (*Quercus kelloggii*), Madrone (*Arbutus menziesii*), and California Bay (*Umbellularia californica*). Previous property owners had agreements with the USFWS Partners program to thin Douglas fir saplings in order to prevent encroachment on oak woodlands on the property (Jeff Bryant Forestry, Inc. 2012). Oak woodlands provide sources of food that are valuable for Acorn Woodpeckers (*Melanerpes formicivorus*), Band-tailed Pigeons (*Columba fasciata*), and numerous other wildlife species that rely on masting fruits. Over 300 species of terrestrial wildlife in California rely on oak woodlands for breeding, foraging, and sheltering habitat. Resource use within the oak woodland vary by wildlife species, season, and the horizontal and vertical structure of the patch (Giusti et al. 2005).

5.1.4 Grasslands

The property contains approximately 489 acres of grasslands, comprised primarily of annual and perennial native species (Jeff Bryant Forestry, Inc. 2012). The majority of outdoor cultivation sites onsite will be located in annual grasslands. Annual grasslands provide foraging, breeding, and sheltering habitat for numerous wildlife species in northern California.

5.1.5 Aquatic Resources

5.1.5.1 Larabee Creek

Larabee Creek, a tributary of the mainstem Eel River, flows generally through the eastern edge of the PSB and crosses under Alderpoint Road twice within the property road frontage. Larabee Creek becomes perennial a short distance downstream (north) of the PSB. This was verified during an August 2018 reconnaissance-level site visit; at that time Larabee Creek within the PSB consisted of a series of pools either isolated or with a trickle of flow from one to the next, depending on location and long stretches of channel had no water present. Larabee Creek was characterized by CDFG (2000) and Steelhead were detected during aquatic sampling (described further in Section 5.2.5). Larabee Creek also provides aquatic habitat for Western Pond Turtles and Foothill Yellow-legged Frogs.

5.1.5.2 Coleman Creek

Coleman Creek, a tributary of the mainstem Eel River, originates in part within the western half of the PSB. It is a small, steep stream with headwaters at or above 1,800 feet elevation, at about 760 feet elevation as it leaves the PSB, and at 120 feet at the mouth. The lower part of the stream, beginning just inside the PSB, is perennial. Coleman Creek was characterized by CDFG (1999) and juvenile salmonids were observed (salmon not identified to the species level in this report) although several natural barriers apparently prevent access to the PSB (described further in Section 5.2.5).

5.1.5.3 Wetlands

A wetland delineation report has been prepared under separate cover. Twenty-five seasonal wetlands were delineated on site. Soils generally included silty loam, silty clay loam, clay or silt loam, or gravelly or cobbly loam. General dominant hydrophytic vegetation included spreading rush (*Juncus patens)*, western manna grass (*Glyceria x occidentalis*), common buttercup (*Ranunculus californicus*), pennyroyal (*Mentha pulegium*) (however, dominant species were variable based on the individual wetland). Seasonal wetlands may provide breeding habitat on site for special status amphibian species and serve as a foraging habitat for reptile and avian species (Bertoldi and Swain 1996). To the extent practical the proposed activity will avoid wetlands.

5.2 Summary of General Wildlife Resources

5.2.1 Special Status Mammals

5.2.1.1 Summary of Camera Trapping Results

Columbian Black-tailed Deer (*Odocoileus hemionus columbianus)* was the most commonly recorded mammal species out of the eight species captured on camera traps (Appendix C, Table C.1). The following additional mammal species were detected on cameras: Coyote (*Canis latrans)*, North American Porcupine (*Erithizon dorsatum*), Bobcat (*Lynx rufus*), Raccoon (*Procyon lotor*), Feral Pig (*Sus scrofa*), Gray Fox (*Urocyon cinereoargenteus*), and Black Bear (Ursus americanus). A collection of photographs was compiled highlighting each species recorded (Appendix D). Many of these species and some other mammal species not detected on cameras were observed incidentally during site visits (Appendix C, Table C.1). Additionally, sign (scat, tracks, and dens) was noted (Appendix C, Table C.1). The following species, or their sign, were encountered but were not captured on photos: Northern Flying Squirrel (*Glaucomys sabrinus*), Striped Skunk (*Mephitis mephitis*), Dusky-footed Woodrat (Neotoma fuscipes), and Mountain Lion (*Puma concolor*).

Several avian, non-target species were also recorded including Wild Turkeys (*Meleagris gallopavo*; at five stations), Turkey Vulture (*Cathartes aura*; at two stations), American Crows (*Corvus brachyrhynchos*; at two stations). All three were also encountered during avian surveys. Cows were detected at 17 out of the 20 camera stations, documenting how widely they cover the property. Their pervasiveness and grazing likely influence wildlife activity. Three photographs were of too poor quality to be able to identify the subject to species.

No mustelids were recorded on cameras. However, failure to detect a species using camera trapping does not always mean the species is absent (Rovero et al. 2010). Absence of mustelid detections may be due to low detection probabilities and relatively large home ranges of these species. We did not bait camera stations, which is the standard method when targeting for fisher and marten using camera traps (Fowler and Golightly 2004, Slauson and Moriarty 2014). Baiting these camera stations was not recommended due to the long period of time between camera checks (B. Clucas, Humboldt State University Wildlife professor, pers. comm).

5.2.1.2 Summary of Bat Acoustic Monitoring

A total of seven monitoring nights yielded acoustic detections of nine bat species. Species detected included: California Myotis (*Myotis californicus*) (MYCA), Western Red Bat (*Lasiurus blossevillii*)

(LABL), Brasilian (aka Mexican) Free-tailed Bat (*Tadarida brasiliensis*) (TABR), Little Brown Bat (*Myotis lucifugus*) (MYLU), Long-eared Myotis (*Myotis evotis*) (MYEV), Big Brown Bat (*Eptesicus fuscus*) (EPFU), Western Small-footed Myotis (*Myotis ciliolabrum*) (MYCI), Silver-haired Bat (*Lasionycteris noctivagans*) (LANO), and Yuma Myotis (*Myotis yumanensis*) (MYYU). Of these species, Silver-haired Bats (CDFW Special Animals List), Western Red Bats (CDFW SSC), Western Small-footed Myotis (CDFW Special Animals List), Long-eared Myotis (CDFW Special Animals List), and Yuma Myotis (CDFW Special Animals List) have a special conservation status in California. It is possible that additional species, not captured during acoustic monitoring, may be present on the site. These species are addressed further in Section 5.2.1.3. Sixty-two dead snags/live trees with complex habitat features were also mapped on site. These trees had cavities/loose bark that may provide roosting habitat for some of the above-listed bat species. Other bat species, such as the Western Red Bat, are deciduous tree foliage roosters, and considerable roosting habitat for this species is available onsite.

5.2.1.3 Species Accounts

The County of Humboldt letter specifically identifies four mammal species or groups of species as of potential concern. Additional special-status mammal species were identified as potentially present based on database review, available habitat, or other sources. Each of these species is addressed below.

Terrestrial Mammals

Sonoma Tree Vole (Arborimus pomo), California State Species of Special Concern, Present

Sonoma Tree Voles are primarily arboreal mammals. Their head and body are approximately four inches long with orange-brown fur, with a dark tail 2 ¾ inches long (Reid 2006). Previously recognized as Red Tree Vole, *Arborimus* (or *Phenacomys*) *longicaudus,* the two species are generally separated by state lines (Blois et al. 2008). Sonoma Tree Voles usually occur within the fog belt of northern California from Sonoma County to the Oregon border, whereas Red Tree Vole distribution starts at the Oregon border (Zeiner et al. 1988, Blois et al. 2008). They are diet specialists on needles of Douglas fir and grand fir. Tender leaves may be eaten entirely, but usually the needle resin ducts are removed and may be used to line the nest or discarded (Zeiner et al. 1988). These can be found littering the ground below an active nest. Females build large, domed nursery nests out of needles in trees ranging in height from six to 150 feet off the ground whereas males build smaller arboreal nests but also may nest in shallow burrows at the base of fir trees (Zeiner et al. 1988). They are primarily nocturnal when they forage outside of the nest, but they also feed on needles stored in the nest throughout the day (Zeiner et al. 1988). Spotted owls are the main predator throughout their range (Forsman 1976), although other owls, raccoons, and fishers likely prey upon them too (Blois et al. 2008). Their populations are vulnerable to logging and habitat fragmentation (Reid 2006, Blois 2008).

A small nest containing Douglas fir needles and fecal pellets was found near a camping area along the main ridgeline (Appendix G). Based on the small size, it is not a nursery nest. With implementation of mitigation measures, the Proposed Project is anticipated to have no effect on this species.

North American Porcupine (Erethizon dorsatum), California Special Animals List, Present

North American Porcupines are primarily nocturnal, but can sometimes be seen during the day. They are approximately 27 inches in length with yellowish quills on the head, rump, and upper surfaces of the tail (Reid 2006). Their range extends across mainland Canada, Alaska, and the western and northeastern United States (Reid 2006). They use a wide variety of habitats, but are most common in montane conifer, Douglas fir, alpine dwarf-shrub (Sweitzer 2013). The nearest population, centered in Tolowa Dunes State Park, is especially known to concentrate in riparian areas. Porcupines are herbivores and feed on a variety of plant materials depending on the season (Appel et al. 2017, SNZ and CBI 2019). They feed on berries, seeds, grasses, leaves, roots and stems during the spring and summer (SNZ and CBI 2019). In contrast, they primarily feed on evergreen needles and tree bark. They often feed heavily on single trees which can result in the death of the tree. This attribute has resulted in historic persecution of the species by proponents of the timber industry. Their populations have been in decline across California. In northwestern California, this may be caused by the regeneration of forests to an age that no longer provides food resources (Appel et al. 2017). They have also been heavily extirpated through targeted control efforts such as poisoning and shooting (Appel et al. 2017).

This species was detected via wildlife camera monitoring at the site (observed on a wildlife camera trap on main ridge at very western end of property near boundary) and presence is confirmed. The Proposed Project will not impact any porcupine habitat, and with mitigation measures is expected to have no effect on this species.

Humboldt Marten (Martes caurina), CESA Threatened, No Potential

Two species of marten are recognized in North America, *Martes americana* and *Martes caurina*, Although the Humboldt Marten is treated as a distinct subspecies of *Martes caurina*, the subspecies is not evolutionarily distinct from *Martes caurina* populations in coastal Oregon (considered to be the subspecies *Martes caurina caurina*). Taxonomy is currently unsettled (Slauson et al. 2009, CDFW 2018, USFWS 2018, NatureServe 2019).

The Humboldt Marten is a small mustelid with yellow to dark brown fur and a lighter chest and throat patch (CDFW 2018). In California, they inhabit old growth, large, contiguous patches of coniferous forest with dense, mature, shrub layers. This includes coastal redwood, Douglas-fir, and mixed conifer forests. They may also be found in serpentine habitats with dense shrub cover, rock piles, and rock outcroppings. Important microhabitat features include fallen logs, woody debris, snags, trees with decadent features, and hollow trees. Snags, hollow trees, and rock outcrops in particular are preferred for natal dens. In Oregon, the species is also known to inhabit shore pine (*Pinus contorta contorta*) forests within dune complexes (CDFW 2018).

Humboldt Martens historically ranged throughout coastal forests from the California-Oregon border south to Sonoma County, California (CDFW 2018, NatureServe 2019). Based on genetic data, four extant populations of Humboldt Marten were identified by USFWS (2018). These are the Central Coastal Oregon, Southern Coastal Oregon, California-Oregon Border, and Northern Coastal California populations. The Northern Coastal California population is centered on the Humboldt-Del Norte County border, extending a short distance into southwest Siskiyou County, and covers 1170 km^2. This population is entirely north of the Klamath River which is thought to be a barrier to dispersal.

Humboldt Martens are polygynous, with one male breeding with multiple females. Martens breed once a year in the summer. Fertilized eggs may not implant for up to eight months (in February). After implantation, females give birth in 27 days. Martens may produce a litter of up to three kits. Females are solely responsible for care of young (CDFW 2018, USFWS 2018). Young are weened at 18 weeks and disperse as early as August from the natal area. Average dispersal distance is less than 15 kilometers. Martens live roughly five years in the wild (CDFW 2018). Humboldt Martens are omnivores with a diverse diet including small mammals, eggs, birds, carrion, insects, fruits, nuts, berries, and fungi (CDFW 2018, NatureServe 2019).

Historical threats to the species include habitat loss, modification, and fragmentation as a result of timber harvest practices and fur trapping (CDFW, 2018, NatureServe 2019). Habitat loss is also an existing threat to the subspecies as well as wildfires, cannabis cultivation, environmental contaminants, and climate change. Intense predation pressures, particularly by Bobcats in northern California, is also a known threat to the subspecies. Current population data indicate that there are fewer than 200 Humboldt Marten remaining in California and less than 100 in Oregon (CDFW 2018).

Historically (pre-1980) the range of the Humboldt Marten extended over a wide area including much of Humboldt County; however the closest documented historic records are in central Humboldt and northern Mendocino Counties, none closer than 25 miles to the PSB (CDFW 2019). Based on the absence of proximate records despite recent extensive field surveys conducted as part of federal and state listing reviews, the Humboldt Marten is excluded from further consideration and is not likely to be present in or near the PSB. The species is thought to be extirpated from as much as 95% of its historic California range (USFWS 2018) including most areas south of the Klamath River. No impacts are expected to occur to this species because it is believed they no longer occur in southern Humboldt County, therefore, they are excluded from further consideration.

Fisher – West Coast DPS (Pekania pennant), Federal ESA Candidate Threatened, CESA Candidate Threatened, CDFW SSC, Moderate Potential

The West Coast DPS Fisher was proposed for listing as federally threatened on October 7, 2014 (79 FR 60419). The proposed rule was withdrawn on April 18, 2016 (81 FR 22710). As a result of litigation, a summary judgement was issued on September 21, 2018 which vacated the listing withdrawal and required reconsideration. On January 31, 2019 USFWS reopened the comment period and expects to issue a new determination by September 21, 2019 (84 FR 644).

The Fisher, West Coast DPS, is a large mustelid that inhabits old growth coniferous forests (CBD 2008). Individuals have dark brown to glossy black fur, with lighter fur on the face, neck and shoulders. The fisher has a long body with short legs and a long bushy tail. The species once ranged from Washington to the southern Sierras in California, but now occupies less than half of its historic range (CBD 2008, NatureServe 2019). Existing populations are located around Crater Lake in Oregon (reintroduced population), in the North Coast Range and Klamath region in California, and in the southern Sierra Nevada range. The total population size for California is estimated as roughly 1,110 individuals. Genetic exchange between the northern and southern populations is not believed to occur (CBD 2008).

In terms of habitat, Fisher prefer late successional forests with high canopy closure, multi-story canopy, woody debris, and snags/large, hollow trees (CBD 2008, NatureServe 2019). Snags and hollows serve as den locations (USFWS 2016).The breeding season lasts from February through

late May. Egg implantation is delayed up to nine months. After implantation, female Fishers give birth in roughly 40 days. Litter sizes range from one to four kits. Kits are weaned in ten weeks (CBD 2008). Fishers live to roughly ten years of age (USFWS 2016). Fishers are omnivorous generalists and will take a variety of prey items including porcupines, small rodents, carrion, and birds. Fisher will also eat fruits and certain vegetation (CBD 2008). Historic threats to the species included fur trapping, predator bounties/control, and habitat loss. Habitat loss is also an existing threat to the species as well as population isolation, low genetic diversity, and environmental contaminants, and habitat fragmentation (CBD 2008, NatureServe 2019).

Although Zielinski et al. (1995) did not note any fisher observations in southeastern Humboldt County, they also noted that "several areas of the historic distribution of fisher were inadequately surveyed. No surveys were conducted in southern Humboldt, Mendocino, or northern Lake Counties where Grinnell et al. (1937) reported fishers trapped between 1919-1924." Based on historic presence in the region, the absence of recent field work, and the presence of potentially suitable although marginal (logged) habitat within the PSB, potential presence cannot be ruled out. The closest known record of this species to the PSB is from 2012 near Alderpoint (CDFW 2019).There is moderate potential for the Pacific Fisher to occur in the PSB or adjacent areas because of the presence of woodland and dense forest stands of various age classes, including tanoaks. With implementation of mitigation measures, the Proposed Project is anticipated to have no effect on this species.

American Badger (Taxidea taxus), California State Species of Special Concern, Low Potential

The American Badger is a small mammal approximately 1.5 to 3 feet in length. The head appears pointed and small for the body, with short ears and a short furry tail. The American Badger is most abundant in drier open stages of shrub, forest and herbaceous habitats with friable soils. They prefer uncultivated ground. The American Badger digs burrows and preys on burrowing rodents. Suitable habitat is limited within the project site or immediate project vicinity and is primarily within the more extensive grasslands. There is potential for this species to occur in the project site although much of the grassland is on steep slopes with dense, shallow, rocky soils. A large burrow within the size range characteristic of badger was noted a short distance south of the proposed Jelly Bean cultivation site although it did not appear to be in active use.

A camera station was set up facing the entrance to the hole and remained deployed for a single interval (5/29/2019 to 6/11/2019). Unfortunately, many of the photos from this camera were not usable because a cow dislodged the camera from the initial position it was placed in facing the hole, after three days. The remaining photos are facing the limbs of the tree to which the camera was attached.

There are no records of this species from within the PSB or project vicinity. The closest CNDDB occurrence for this species (the only one within Humboldt County) is from near Upper Mattole School in 2007 over 30 miles east of the PSB (CDFW 2019). No American Badgers were documented onsite via wildlife cameras or incidental sightings and there is low potential for presence. With mitigation measures no impacts are expected to occur to this species and, therefore, they are excluded from further consideration.

Bats

Pallid Bat (Antrozous pallidus), California State Species of Special Concern, Western Bat Working Group High Priority, Moderate Potential

The Pallid Bat is found throughout most of the western U.S., from sea level up to elevations of 6,700 feet. In California, the species is found throughout the state with the exception of the high Sierras. Pallid Bats are commonly associated with habitats such as grassland, scrub, woodland, mixed conifer, and redwood forest (Erickson et al. 2002). They utilize day and night roosts in a variety of habitat types including bridges, mines, barns, rocks pile, rocky outcroppings, dead tree snags, live old-growth tree basal hollows, and buildings (Baker et al. 2008). In general, this species roosts in places that protect them from temperature extremes. During the day, the species uses these sites to go into a shallow state of inactivity, or torpor. Optimal day roost temperatures are around 86 degrees Fahrenheit (in terms of maintaining low metabolic rates) (Trune and Slobodchikof 1976). Day roosts may include up to 200 individuals (in some cases, roosts may include other bat species) (Hermanson and O'Shea 1983).

Foraging habitats include agricultural areas, riparian woodland, open pine forests, oak savannah, and talus slopes (Williams et al. 2006). Pallid Bats forage close to the ground surface and glean prey from the ground or off exposed vegetation. They rely primarily on passive hearing to locate prey moving on the ground (Fuzessery et al. 1993). Preferred prey items include moths, Jerusalem crickets, beetles, grasshoppers, and scorpions (Hermanson and O'Shea 1983, Erickson et al. 2002).

The species breeds in the fall and winter (October through as late as February in coastal locations). Females store the sperm over the winter and ovulation occurs the following spring. Maternity colonies are typically formed in April and may consist of up to 100 individuals (Erickson et al. 2002). Females typically give birth to twin pups in May or June (Hermanson and O'Shea 1983). The species hibernates during the winter, but may arouse to forage and drink water (Erickson et al. 2002). As a colonial roosting species, Pallid Bats are very sensitive to roost site disturbance. This is particularly true in the case of maternity colonies.

Ground foraging bats, as opposed to the aerial “hawking” species, are typically light averse. While hawking species are drawn to lights due to the increased insects, slower, less agile, ground foragers are found to avoid these areas; perhaps because they are more vulnerable to terrestrial predators that could see them in the light (Rowse et al. 2016).

Although this species was not detected during acoustic monitoring, the potential presence of this species cannot be ruled out. Suitable habitat exists within the PSB and the closest documented occurrence to the Project site is from Humboldt Redwoods State Park (roughly 15 miles west) (CBI 2019). With implementation of mitigation measures, the Proposed Project is anticipated to have no effect on this species.

Townsend’s Big-eared Bat (Corynorhinus townsendii), California State Species of Special Concern, Western Bat Working Group High Priority, Moderate Potential

Townsend’s Big-eared Bats are medium-sized bats, distinguished from other co-occurring bat species by their large ears and a two-pronged horseshoe-shaped lump on the muzzle. The species occurs throughout the western U.S. and Canada. In California, the species is found throughout the state with the exception of the high elevations in the Sierra Nevada Mountain Range (CDFW 2016a).

Townsends' Big-eared Bats are typically associated with coastal Redwood forests, foothill oak woodlands, inland deserts, pinyon-juniper and pine forests, and mixed coniferous-deciduous forests (Erickson et al. 2002, CDFW 2016a). The species roosts colonially in a variety of structures including hollow trees, buildings (barns), mines, and lava tubes. Roost site fidelity is high. Maternity colonies (of females) occur between March and June (CDFW 2016a). Males roost singly (Erickson et al. 2002). Females give birth to a single pup per year between May and July. The species winters in mixed sex groups in caves and lava tubes. Townsend's Big-eared Bats feed primarily on moths (Erickson et al. 2002, CDFW 2016a).

Although this species was not detected during acoustic monitoring, the potential presence of this species cannot be ruled out. Suitable habitat exists within the PSB and the closest documented occurrence to the Project site is from Humboldt Redwoods State Park (roughly 15 miles west) (CBI 2019). With implementation of mitigation measures, the Proposed Project is anticipated to have no effect on this species.

Silver-haired Bat (Lasionycteris noctivagans), Western Bat Working Group Medium Priority, Present

The Silver-haired Bat is a small bat with brown to black silver-tipped fur (SDBWG 2004). They are widely distributed in Norther America, which a range that extends from southern Alaska to northern Mexico. The species is only absent from the southern Gulf Coast, Florida, and southern California. The species is associated with coniferous and mixed deciduous forested habitat (with diverse tree structure and snags), typically near a water source (the species requires drinking water) (SDBWG 2004, NatureServe 2019). The species is insectivorous and frequently forages over water and open brushy areas (Harris et al. 2005, NatureServe 2019). Moths are a preferred prey item (Erickson et al. 2002).

Silver-haired Bats mate in the late summer/early fall and pups are born the following summer (June/July) (NatureServe 2019). Females generally give birth to one or two pups a year (Erickson et al. 2002). Maternity colonies are comprised of small groups of less than 20 individuals. Maternity colonies are typically in tree foliage, cavities, under loose bark, and occasionally in buildings. Woodpecker holes are also frequency used for maternity roosts (Erickson et al. 2002). Roosts may also be in caves or rock crevices. Females may roost singly however and males typically roost singly. Roosts may also be in caves or rock crevices. Silver-haired Bat populations engage in seasonal fall migratory movements (NatureServe 2019). The species hibernates during the winter (Harris et al. 2005). Threats to the species include deforestation, wind energy developments (common source of mortality for the species), and reduced prey from over application of pesticides (NatureServe 2019).

This species was detected during bat acoustic monitoring at the site and presence is confirmed. With implementation of mitigation measures, the Proposed Project is anticipated to have no effect on this species.

Western Red Bat (Lasiurus blossevillii), California State Species of Special Concern, Western Bat Working Group High Priority, Present

Western Red Bats are primarily found at low elevations in the Central Valley or along the coast of California, with most occurrences west of the Sierras. The species engages in seasonal movements from breeding areas (primarily in the valley) to wintering areas (along the coast) (Pierson et al. 2004). Western Red Bats are closely associated with extensive stands of mature cottonwood and

sycamore riparian forest (roosting and foraging habitat). The species roosts singly (except in the case of family groups) in the tree canopy in leaves (Erickson et al. 2002, Harris et al. 2008d). However, in areas where riparian forest has been lost to human development, this species will also roost in orchards (Pierson et al. 2004). Roosts are commonly located along a habitat edge (e.g. adjacent to a creek or field). The breeding season for this species spans the fall through summer. Breeding occurs in the fall, with delayed fertilization until the following spring. Pups are born in the summer and litters may include up to five young (Harris et al 2008d). Western Red Bats feed on a variety of insect prey including cicadas, crickets, and beetles. They catch prey in flight by capturing insects in their wing or tail membranes (Harris et al. 2008d).

This species was detected during bat acoustic monitoring at the site and presence is confirmed. With implementation of mitigation measures, the Proposed Project is anticipated to have no effect on this species.

Hoary Bat (Lasiurus cinereus), Western Bat Working Group Medium Priority, Moderate Potential

The Hoary Bat is a relatively large bat with brown to rufous with a white “frosting” on the tips (SBDWG 2004). They are found throughout North, Central and South America but not usually in great densities (SBDWG 2004, NatureServe 2019). The species is found throughout California with the exception of xeric desert habitats in the southeast. The species breeds in inland forest habitat and winters along the coast and in the southern portion of the state. The species engages in seasonal movements which results in sexual segregation during the warmer months (males are found in greater numbers in western portions of the state while the females are more common in the northeast). Hoary Bats migrate between the summer and winter ranges from September through November. Mating occurs during migration or on the wintering grounds. Females give birth to one to four pups in May through July of the following year (Harris et al. 2008b).

Preferred habitat includes a mosaic of forested habitat for roosting and open/edge habitat for foraging. Hoary Bats are insectivorous and feed primarily on moths (usually over water or over the forest canopy). The species roosts solitarily in dense tree foliage typically near water (species requires water for drinking) (SBDWG 2004, Harris et al. 2008b). Threats to the species include deforestation, wind energy developments (common source of mortality for the species), and reduced prey from over application of pesticides (NatureServe 2019).

Although this species was not detected during acoustic monitoring, the potential presence of this species cannot be ruled out. Suitable habitat exists within the PSB and the closest documented occurrence to the Project site is from Humboldt Redwoods State Park (roughly 15 miles west; CBI 2019). With implementation of mitigation measures, the Proposed Project is anticipated to have no effect on this species.

Western Small-footed Myotis (Myotis ciliolabrum), Western Bat Working Group Medium Priority, Present

Western Small-footed Myotis are found in low to mid-elevation arid habitats in California including desert scrub, pine forests, oak and pinyon juniper woodlands, and grasslands with sources of water (streams, water tanks, etc.) (Erickson et al. 2002, Harris et al. 2008f). The species tends to roost in tree cavities, mines, under bridges, in talus fields, in buildings, and under bark (Erickson et al. 2002, SDBWG 2004, Harris et al. 2008f). Hibernation occurs from November through March and Western Small-footed Myotis hibernate singly (SDBWG 2004, Harris et al. 2008f). Western Small-footed

Myotis mate in the fall and females give birth to one pup per year in the late spring/early summer (Erickson et al. 2002, Harris et al. 2008f). The species captures insect prey in flight and feeds on moths, beetles, and flies (Harris et al. 2008f).

This species was detected during bat acoustic monitoring at the site and presence is confirmed. With implementation of mitigation measures, the Proposed Project is anticipated to have no effect on this species.

Long-eared Myotis (Myotis evotis), Western Bat Working Group Medium Priority, Present

The Long-eared Myotis is a medium-sized bat with pale brown colored fur that is lighter on the belly (SBDWG 2004). They are found throughout California and commonly associated with high desert, mixed coniferous/hardwood forests, pinyon-juniper, mesquite scrub, pine/oak woodland, sequoia forests, and residential areas. The species roosts in low densities in trees, rocks, mines, buildings, bridges, and caves. Caves in Northern California serve as winter hibernacula (Erickson et al. 2002).

Females from small maternity colonies during the summer and give birth from one pup from June through July each year (NatureServe 2019). The Long-eared Myotis is a hovering gleaner and feeds on a variety of insects including months, flies, and beetles by plucking prey from foliage or off the ground (Western Bat Working Group 2017).

This species was detected during bat acoustic monitoring at the site and presence is confirmed. With implementation of mitigation measures, the Proposed Project is anticipated to have no effect on this species.

Fringed Myotis (Myotis thysanodes), Western Bat Working Group High Priority, Moderate Potential

The Fringed Myotis is patchily distributed throughout western North America from southern British Columbia to Central America. They are found in a variety of habitat types from riparian, grassland, desert, woodland, and coniferous forest habitat (NatureServe 2019). Preferred habitats in California are considered to be hardwood-conifer, pinyon-juniper, and valley foothill hardwood near water (species requires water for drinking) (Harris et al. 2008a). The species is insectivorous and feeds on moths, beetles, and spiders by hunting (including hover hunting) over water, open habitat, and gleaning from foliage (Harris et al. 2008a, NatureServe 2019).

The species may roost in large colonies of up to two thousand individuals, although large colonies are rare. Roosting habitat includes mines, rocks crevices, cliffs, caves, man-made structures (bridges and buildings), and tree snags (NatureServe 2019). In northern California, the species roosts in tall, dead tree snags in medium stages of decay near water (Weller and Zabel 2001). Fringed Myotis breed in the spring. Gestation is 50 to 60 days. Females give birth to one pup from May through July. The species engages in seasonal migratory movements (NatureServe 2019). Both sexes hibernate together during the winter (Erickson et al. 2002). Hibernation lasts from October through March (Harris et al. 2008a). Primary threats to the species include roost loss and disturbance (in mines or caves), habitat loss or conversion, and reduced prey from over application of pesticides (NatureServe 2019).

Although this species was not detected during acoustic monitoring, the potential presence of this species cannot be ruled out. Suitable habitat exists within the PSB and the closest documented occurrence to the Project site is from Humboldt Redwoods State Park (roughly 15 miles west) (CBI

2019). With implementation of mitigation measures, the Proposed Project is anticipated to have no effect on this species.

Long-legged Myotis (Myotis volans), Western Bat Working Group High Priority, Moderate Potential

The Long-legged Myotis is a medium-sized bat with dark brown fur. The species is widespread throughout western North America from southern Alaska to Central America. Habitat associations include mountainous coniferous forest, grassland, and riparian woodland. In California, the species is present in the coastal, Cascade, and Sierra ranges and is absent for low elevation deserts and the Central Valley in California (Erickson et al. 2002, Harris et al. 2008c). The species feeds on moths, beetles, flies and termites in open habitat areas or water (Erickson et al. 2002, Harris et al. 2008c).

Daytime roosts include tree roosts (cavities and loose bark), rock crevices, cliffs, and buildings. Night roosts and winter hibernacula includes caves and mines (Erickson et al. 2002, NatureServe 2019). Mating during the fall. Females give bird to 1 pup during the June through July (Erickson et al. 2002, NatureServe 2019). Maternity colonies may include up to 500 individuals (Erickson et al. 2002). Threats to the species include habitat loss and conversion, roost disturbance, and reduced prey from over application of pesticides (Erickson et al. 2002, NatureServe 2019).

Although this species was not detected during acoustic monitoring, the potential presence of this species cannot be ruled out. Suitable habitat exists within the PSB and the closest documented occurrence to the Project site is from Humboldt Redwoods State Park (roughly 15 miles west) (CBI 2019). With implementation of mitigation measures, the Proposed Project is anticipated to have no effect on this species.

Yuma myotis (Myotis yumanensis), Western Bat Working Group Low/Medium Priority, Present

The Yuma Myotis is a medium-sized bat with light to dark brown fur and a paler underbelly (NorCalBats 2017). The species is widespread and common throughout western North America from southern British Columbia to southern Mexico (NatureServe 2019). In California, the species is widespread throughout the state except for the desert regions. The species is thought to engage in seasonal and possibly elevational migratory movements (Harris et al. 2008e). The species feeds on moth and insects over water and other open habitat types (NatureServe 2019).

Roosts include bridges, swallow nests, rock crevices, tunnels, tree cavities, and buildings (NatureServe 2019). The species mates during the fall. Females form maternity roosts in April and give birth to one pup between May through July (NatureServe 2019). Maternity roots may include several thousand individuals and are most common in mines and caves (Harris et al. 2008e). Threats to the species includes roost disturbance, roosting habitat loss, and reduced prey from over application of pesticides (NatureServe 2019).

This species was detected during bat acoustic monitoring at the site and presence is confirmed. With implementation of mitigation measures, the Proposed Project is anticipated to have no effect on this species.

5.2.2 Special Status Birds

5.2.2.1 Special Status Nesting Bird Surveys

A total of 64 avian species were detected within the PSB (Appendix D, Table D.2). Most of these species are common and protected under the federal MBTA and CDFW FGC. However, a few avian species detected on the site have a special conservation status, either at the federal or state level. The only federally-listed species detected on site was the Northern Spotted Owl (federally threatened). Other state special-status avian species on the site included the Sharp-shinned Hawk (CDFW Watch List), Cooper's Hawk (CDFW Watch LIST), Flammulated Owl (CDFW Special Animals List), Rufous Hummingbird (USFWS Bird of Conservation Concern (USFWS BCC), CDFW Special Animals List), Northern Goshawk (CDFW SSC), and Olive-sided Flycatcher (CDFW SSC). Breeding activity/status of each species on the site was recorded (Appendix D, Tables D.1 and D.2). Of the above-listed special-status species, Cooper's Hawks and Northern Goshawks likely bred on the site (adults exhibited territorial behavior and young observed on site associating with adults late in the breeding season). Sixty-two dead snags/live trees with complex habitat features were also mapped on site (however, there were likely over two-hundred snags onsite, and budget constraints did not allow for mapping of all habitat trees). These trees had decadence features that may provide nesting habitat for some of the above-listed avian species.

5.2.2.2 Eagle Surveys

No eagles were detected during two protocol-level surveys and four follow-up surveys. Based on historical records and habitat at the project site, it unlikely that Bald Eagles are present or breed onsite, and more suitable habitat exists outside the PSB (forested habitat closer to larger bodies of water, such as the mainstem Eel River). Although no Golden Eagles were detected during surveys, the PSB contains suitable nesting and foraging habitat for the species (while prey base was not formally surveyed, the site supports many Golden Eagle prey species such as Brush Rabbits (*Sylvilagus bachmani*) and Black-tailed Jackrabbit (*Lepus californicus*). In addition, historical records provide evidence for Golden Eagle nesting nearby (e.g., Alderpoint, Miranda, Myers Flat, and Bridgeville) (CDFW 2019).

5.2.2.3 Northern Spotted Owl Surveys

The 15 nighttime calling stations established across the PSB were surveyed for a total of six complete visits per USFWS protocol (USFWS 2012). Date, station number, survey start and end times, species of owl detected, sex of owl (if determined), detection type (audio, visual, or both), time of first response, call type given by owl, compass bearing and detection distance (in miles) and estimated location (in Township, Range, Section, 1/4 and 1/16, or appropriate UTM datum), as well as weather conditions and estimated wind speed were recorded per survey and will be submitted to the CNDDB. The sequence in which these stations were called was varied with each visit so as to prevent possible owl habituation and thus increase the likelihood of detection. Two call stations (Stations #4 and #5) were dropped on the 7/22/2019 visit in order to avoid 'leading' the detected NSO to other parts of the study area (because these stations fell within 0.5 miles of the estimated location of the detected NSO from Station #8) (USFWS 2012).

There were a total of 10 Barred Owl (*Strix varia*) nighttime auditory (and or visual) detections across six stations out of the 15 total. They were detected twice at three of these stations. One Barred Owl

was encountered during the 7/23/2019 follow-up outing. One Sparred Owl (*Strix occidentalis* x *varia*) was detected at Station #3, which also had a Barred Owl detection during another survey. This is evidence that Spotted and Barred Owls are interbreeding in this area. Barred Owls are an invasive species in the western United States having rapidly expanded from their native range in the eastern United States. Their populations have now completely invaded the range of NSOs (Baumbusch 2016). It is hypothesized that a proliferation of hybrid phenotypes may result and eventually eliminate or extirpate spotted owls (Hamer et al. 1994). However, given the relatively small number of detected hybrids over intensive survey efforts, isolating mechanisms between the species are likely normally sufficient to avoid hybridization (Hamer et al. 1994, Kelly and Forsman 2004).

There were a total of four NSO auditory detections from three nighttime calling stations. Estimated locations were generally surrounding historic AC HUM0841 (Figures 7 through 10). However, no NSOs were located during daytime follow-up outings or AC searches. Studies have documented that NSOs are less likely to vocalize in areas where Barred Owls are present because of their agonistic interspecies interactions (Crozier et al. 2006). Thus locating NSOs through nighttime calling and AC searches is becoming more challenging. This historic site is occupied, but NSOs likely lay low, given the presence of numerous Barred Owls. There is suitable breeding and foraging habitat for this species within the PSB based on evaluation of the habitat during site visits.

5.2.2.4 Species Accounts

Cooper's Hawk (Accipiter cooperi), California State Watch List, Present

Cooper's Hawks are year-round residents across most temperate areas in North America. In California, migrants from more northern climes (southern Canada) pass through the state during the fall months (August-November). Some of these northern populations of Cooper's Hawks likely winter in the state. Cooper's Hawks may be found in a variety of forested habitats included deciduous, mixed, or evergreen forests in urban, suburban, or rural areas. Cooper's Hawk populations have increased over the past few decades in urban and suburban areas, likely as a result of readily available prey populations in these habitats (e.g., European Starling and Rock Pigeon flocks). Cooper's Hawks build their nests in any number of tree species including pines, oaks, firs, eucalyptus, etc. Nest site selection is most likely related to dense prey availability in the surrounding area as well as canopy cover and the adjacent habitat structure. Their nests are constructed out of sticks and bark and may be built on top of existing squirrel or other raptor nests. Cooper's Hawks prey on a variety of small bird and mammal species including European Starlings, Mourning Doves (*Zenaida macroura*), Rock Pigeons, Deer Mice (*Peromyscus maniculatus*), squirrels, and hares. (Curtis et al. 2006).

The site is bordered by trees (both onsite and on adjacent properties) that could serve as foraging and breeding habitat for Cooper's Hawks. Cooper's Hawks were detected onsite and the species likely breeds on the site (adults exhibited territorial behavior and young observed on site associating with adults late in the breeding season). With implementation of mitigation measures, the Proposed Project is anticipated to have no effect on this species.

Northern Goshawk (Accipiter gentilis), California State Species of Special Concern, Present

Northern Goshawks are the largest of the three *Accipiter* species found in North America. They breed across North America from Alaska to Newfoundland and south. In California, they breed in

most of the mountainous regions (Siskiyou Mountains south through North Coast Range, from Warner Mountains south through Cascade and Sierra Nevada Mountains to Greenhorn Mountains, the White Mountains, mountains of Kern and Ventura Counties and possibly other southern counties). They are highly associated with forested habitats and occur in both coniferous and deciduous forests. Studies have shown that they typically select the largest tree in the stand, just below the forest canopy, in which to build their nests. They are opportunistic hunters and feed on a variety of birds and mammals, as well as occasionally reptiles and insects. The primary threat to the species is habitat loss and degradation through timber harvest. Additionally, they have been shown to be sensitive to disturbance, and human activity near nest sites has resulted in nest abandonment and failure. Northern Goshawks are designated as a Sensitive Species by the U.S. Forest Service and used as a "management indicator" species because they are potentially sensitive to habitat change. (Squires and Reynolds 1997).

An adult Northern Goshawk and two juveniles were observed during a daytime Northern Spotted Owl follow-up outing in the vicinity of Coleman Creek at the western property boundary, well away from the proposed activity. Northern Goshawks likely breed onsite as adults were seen exhibiting territorial behavior and a young of the year was observed onsite associating with adults late in the breeding season. With implementation of mitigation measures, the Proposed Project is anticipated to have no effect on this species.

Sharp-shinned Hawk (Accipiter striatus), California State Watch List, Present

Sharp-shinned Hawks are year-round residents across most densely forested areas of western and eastern North America. In California, migrants from more northern climes (southern Canada) pass through the state during the fall months (August-November). Some of these northern populations of Sharp-shinned Hawks winter in the state. Sharp-shinned Hawks may be found in a variety of forested habitats including coniferous forests, deciduous forests, woodlots, and transitional/forested edges. They prefer to nest in dense stands of a diversity of tree species. Nests are constructed out of dead twigs and placed against a tree trunk on a horizontal limb. Sharp-shinned Hawks primarily prey on small forest birds and mammals. In more urban/developed areas, Sharp-shinned Hawks hunt at bird feeders. (Bildstein and Meyer 2000).

This species was detected onsite and presence is confirmed. With implementation of mitigation measures, the Proposed Project is anticipated to have no effect on this species.

Golden Eagle (Aquila chrysaetos), California Fully Protected Species, California State Watch List, Moderate Potential

Golden Eagles breed in western North America from Alaska to central Mexico. They are found across a wide range of elevations (sea level to 3,630 m) and prefer open habitats that support their prey base. Golden Eagles typically build nests on cliffs, but nests have also been documented on a wide array of other substrates (in trees, on ground, clay cliffs, river banks, and human-made structures, including windmills, observation towers, nesting platforms, abandoned gold dredges, and electrical transmission towers) (Kochert et al. 2002). Across industrial timberlands in Humboldt County, Golden Eagles have select for large, pre-dominantly Douglas fir trees, in which to build their stick nests. These nest are constructed in areas adjacent to abundant foraging habitat (e.g. open prairies) (Chinnici et al. unpubl. data). Young may remain dependent on their parents for one to eight months after fledgling. Full adult plumage is generally acquired after four years of age, because their

annual molt is incomplete and usually takes two to three years to replace a full set of feathers. They feed primarily on mammals, but also on birds, and occasionally on reptiles and fish.

Golden Eagle populations have declined across western North America with the exception of populations in Alaska and Canada. Humans are responsible for an estimated 70% of deaths either directly or indirectly. The most common causes of death include collisions, electrocution, gunshot, and poisoning. (Kochert et al. 2002).

Although no Golden Eagles were observed in or adjacent to the PSB during dedicated eagle surveys or as incidental observations, suitable breeding and foraging habitat for the species is present onsite, and the potential for occurrence cannot be ruled out. With implementation of mitigation measures, the Proposed Project is anticipated to have no effect on this species.

Marbled Murrelet (Brachyramphus marmoratus), Federally and State Threatened, Low Potential

The federally threatened Marbled Murrelet is a small seabird that nests in coastal, old-growth forests of North America. The species is a year-round resident along the coast from the Alaskan Aleutian islands to Big Sur in California. The northernmost populations of Marbled Murrelets are migratory, while more southern populations likely only engage in small-scale migration movements (Nelson 1997).

Marbled Murrelets spend the majority of their lives in the near-shore marine environments and prefer to forage along rocky coastal areas within 1.2 miles of shore (USFWS 1997). They feed by diving for small fish and invertebrates in coastal waters and bays, but may also forage on rivers and lakes. Murrelets nest in old-growth conifer forests with decadence features such as remnant trees or large branch platforms from normal tree growth, disease, damage, or mistletoe (structure used for nesting). Nest-building is typically initiated around early March with the breeding season spanning from March through September. Murrelets have a slow reproductive rate and produce only one egg per year (Nelson and Peck 1995, USFWS 1997).

Murrelets favor old-growth coniferous forests <50 miles from the coast. Trees with a dbh (diameter at breast height) greater than 19 in are preferred for nesting (81 FR 51348 51370). Stand size is also an important feature for nest site selection with stands greater than 500 acres preferred in California (57 FR 45328-45337). Nest site and nest tree fidelity is common (Nelson 1997). Proximity of nesting habitat to foraging habitat is an important factor in determining murrelet distribution (USFWS 1997).

Loss of habitat due to timber harvesting is a major contributor to the decline of the species. Further, edge effects resulting from clear-cuts adjacent to nest sites may contribute to increased predation rates, as forest edges are preferred by many murrelet predators including jays, crows, ravens, accipiters, squirrels, marten, and fisher. Marbled Murrelet populations are considered to be highly sensitive to forest fragmentation. Other threats include gill-net fishing, marine pollution, and disease (USFWS 1997).

This species was not detected during general avian surveys, although targeted surveys for this particular species were not requested. There is no evidence of use of the project area by Marbled Murrelets (CDFW 2019). The closest records of this species to the PSB are from Humboldt Redwood State Park (roughly 15 linear miles west). No impacts are expected to occur to this species and, therefore, they are excluded from further consideration.

Olive-sided Flycatcher (Contopus cooperi), California State Species of Special Concern, USFWS Birds of Conservation Concern, Present

The Olive-sided Flycatcher is well-known in North America for its unique call: “quick, Three Beers!” The species breeds in coniferous forest edges in Canada and the western U.S. from sea level to the Rockies. They winter in Central America. Olive-sided Flycatchers build cup nests in conifers (but also deciduous trees such as hemlock and willows). Nests are constructed out of twigs, grasses, and pine needles. The species is known to aggressively defend their nesting territories. Olive-sided Flycatcher feeds primarily on flying insects, including bees by catching them via “yo-yo flights.” (Altman and Salabanks 2012).

This species was detected onsite and presence is confirmed. With implementation of mitigation measures, the Proposed Project is anticipated to have no effect on this species.

White-tailed Kite (Elanus leucurus), California Fully Protected Species, Low Potential

White-tailed Kites are year-round residents in most of California west of the Sierras including the majority of the coastal foothills, Central Valley, and some arid regions such as Kern and Inyo Counties. White-tailed Kites prefer open landscapes at low elevations including marshes, grasslands, oak-woodlands, savannahs, and agricultural land. Nests are typically constructed on habitat edges in the upper third portion of a tree or bush. Nests consist of small sticks, grass, hay, and leaves placed in a variety of tree or shrub species including coastal redwoods, Sitka spruce, or brooms. White-tailed Kites feed almost exclusively on small mammals captured via hover hunting. (Dunk 1995).

This species was not detected during general avian surveys onsite, although targeted surveys for this particular species were not requested. The closest records of this species to the PSB are from Whitlow, approximately eight miles to the west (eBird 2019). Habitat onsite may be too mountainous/rugged and too high in elevation to support this species, and most nearby records are located in more coastal environs (eBird 2019). Based on historical records and available habitat, this species has a low potential to occur onsite. No impacts are expected to occur to this species and, therefore, they are excluded from further consideration.

American Peregrine Falcon (Falco peregrinus anatum), California Fully Protected Species, USFWS Birds of Conservation Concern, High Potential

The Peregrine Falcon is one of the world’s most widely distributed raptor species, occurring in urban areas, wetlands, deserts, maritime islands, mountains, tundra, and the tropics. Peregrine Falcons received significant attention during the middle of the 20th century due to precipitous population declines. These population crashes have been attributed to the lethal and sub-lethal effects of the organochlorine pesticide DDT (Dichlorodiphenyltrichloroethane). After DDT was banned in 1972, the Peregrine Falcon started to rebound nationwide.

In western North America, resident populations of Peregrines are found along the coast of California and the majority of the interior of the state, excluding the Central Valley and arid regions in the southeast (White et al. 2002). In California, Peregrines generally prefer open landscapes for foraging and cliffs or buildings for breeding. Nests consist of a scrape in sand, gravel, or dirt on a cliff ledge, artificial nest boxes, or abandoned raptor or corvid nests. Occasionally they will also use coniferous forest tree tops (Wrege and Cade 1977, White et al. 2002). Peregrine Falcons feed on a variety of

avian species including passerines, waterfowl, and shorebirds. They have also been known to take bats, amphibians, fish, and mammals. Prey are taken in flight, off the surface of water, or on land (Sherrod 1978). The Peregrine Falcon is the fastest member of the animal kingdom with diving ("stooping") speeds recorded at speeds of 238 miles per hour (Franklin 1999).

This species was not detected during general avian surveys onsite, although targeted surveys for this particular species were not requested. As suitable habitat for the species exists within and adjacent to the PSB, occurrence onsite cannot be ruled out. With implementation of mitigation measures, the Proposed Project is anticipated to have no effect on this species.

Bald Eagle (Haliaeetus leucocephalus), State Endangered, California Fully Protected Species, USFWS Birds of Conservation Concern, Low Potential

As the national bird, the Bald Eagle is perhaps one of the most well-known raptors in the U.S. It is also one of the well-studied species on the continent. The Bald Eagle is the second largest bird of prey in North America with a wingspan surpassed only by that of the California Condor (Palmer et al. 1988). Bald Eagles are found throughout North America, with year-round residents along both coasts and near large bodies of water such as rivers, lakes, and reservoirs. Seasonal breeding populations occur throughout most of Canada and Alaska, with these populations wintering through the U.S. and Central America. In California, Bald Eagle breeding is restricted primarily to the northern portion of the state, with a few breeding populations along the coast south of San Luis Obispo and on the Channel Islands (Buehler 2000, NatureServe 2019).

Bald Eagles nest in large trees, on cliffs, or on the ground in treeless regions adjacent to lakes, rivers, estuaries, and dams. Platform nests are constructed out of large sticks and lined with grass, moss, down feathers, and other soft vegetation. Bald Eagles are opportunistic feeders, taking fish, waterfowl, mammals, and even carrion during the winter (Buehler 2000).

Bald Eagles received significant attention during the middle of the 20th century due to precipitous population declines. These population crashes have been attributed to the sub-lethal effects of the organochlorine pesticide DDT (Weimeyer et al. 1993). Human persecution is also thought to have historically contributed to population declines through trapping, poisoning, and egg-collecting (Buehler 2000).

No Bald Eagles were detected during two protocol-level surveys and four follow-up surveys. Based on historical records and habitat at the project site, it unlikely that Bald Eagles are present or breed onsite, as more suitable habitat exists outside the PSB (forested habitat closer to larger bodies of water, such as the mainstem Eel River). No impacts are expected to occur to this species and, therefore, they are excluded from further consideration.

Osprey (Pandion haliaetus), California State Watch List, Moderate Potential

Ospreys have a cosmopolitan distribution and their breeding range throughout North America is widespread. The majority of individuals within the breeding range are migratory (except for individuals in temperate southern areas of their range, e.g. in southern Florida, the Caribbean, southern California, and the Baja Peninsula). In California, Ospreys breed throughout the state near various bodies of water including inland near rivers and lakes as well as on the coast near bays, estuaries, and marshes. Specific nest location preferences include: proximity to shallow fish-bearing waters, and a nest site free of predators (usually highly elevated but Ospreys nest on the ground on

predator-free islands). Ospreys build large stick nests on a wide variety of natural and artificial nest substrates, especially trees, but also large rocks or bluffs, as well as nest platforms, towers supporting electrical lines or cell phone relays, and channel markers). Ospreys feed almost exclusively on fish, but anecdotal observations of non-fish prey have been documented. (Bierregaard et al. 2016).

Nesting and foraging habitat for this species exists along Larabee Creek. Breeding Ospreys are easily detectable as they build nests on tree-tops. However, no nests were observed at or near the project site across multiple field surveys. Based on historical records and available habitat, this species has a moderate potential to occur onsite. With implementation of mitigation measures, the Proposed Project is anticipated to have no effect on this species.

Flammulated Owl (Psiloscops flammeolus), California Special Status Species, USFWS Birds of Conservation Concern, Present

Flammulated Owls are small forest owls. They are long-distance migrants and follow prey from their breeding range in the Intermountain West to wintering habitat in Central America. Being solely insectivorous, they feeding primarily on nocturnal arthropods, especially owlet and geometrid moths (Noctuidae and Geometridae), crickets and grasshoppers (Orthoptera), and beetles (Coleoptera). In California, they are found throughout the Cascade, Sierra Nevada, Transverse, Peninsular, as well as interior coastal ranges. They are strict cavity nesters and prefer cavities made by woodpeckers, but will occasionally use natural cavities. They have been documented using nest boxes but relatively rarely. Rather than building any sort of nest, they lay their eggs directly onto the bottom of the cavity or whatever debris may have already been present. Although Flammulated Owls appear to still be common across their range, no data on population growth rates are currently available and there is growing concern about how human activity may influence the species. This concern is largely because their low annual reproductive rates may make their populations more vulnerable to precipitous declines. There is already evidence that the use of dead trees for firewood reduces nesting habitat. (Linkhart and McCallum 2013).

This species was detected multiple times across the PSB during Northern Spotted Owl nighttime surveys, with the most numerous occurrences in early spring. Given the presence of suitable nesting habitat within the PSB, Flammulated Owls could breed onsite. With implementation of mitigation measures, the Proposed Project is anticipated to have no effect on this species.

Rufous Hummingbird (Selasphorus rufus), USFWS Birds of Conservation Concern, Genus Present/Moderate Potential

Rufous Hummingbirds breed in Alaska, Western Canada, and Western North America and winter in Baja, Mexico, and along the Gulf Coast. In California, the breeding range is restricted to northwestern coastal areas into the foothills and Sierras. Females build nests in shrubs and trees. Nests are constructed out of spider silk, bark, moss. Rufous Hummingbirds feed on floral nectar, tree sap, and small insects. The species is extremely territorial, and defends food resources aggressively. (Healey and Calder 2006).

Selasphorus sp. were detected onsite but could not be confirmed to the species level (could be either Rufous or Allen's Hummingbirds). Based on occurrence records, both *Selasphorus sp.* have potential to be present onsite (eBird 2019). With implementation of mitigation measures, the Proposed Project is anticipated to have no effect on this species.

Northern Spotted Owl (Strix occidentalis caurina), Federally and State Threatened, Present

The Northern Spotted Owl is the northwestern-most dwelling subspecies of the Spotted Owl (*Strix occidentalis*) in North America. It is a federally threatened species (55 FR 26114-26194). The range of the Northern Spotted Owl comprises mixed conifer forests from southern British Columbia to Marin County in northern California, with populations as far east as the Cascades. In terms of plumage, this subspecies is slightly darker in coloration and has smaller white spots than the other two *Strix occidentalis* subspecies, the California Spotted Owl and the Mexican Spotted Owl (Oberholser 1915). As with most owl species, males are smaller than females in terms of mass and wing chords (Blakesley et al. 1990).

As a non-migratory subspecies, spotted owls reside in their breeding habitat year-round (Allen and Brewer 1986). The Northern Spotted Owl is somewhat of a specialist species, primarily feeding on small to medium-sized rodents. However, the owls occasionally will also feed upon birds and invertebrates (Thomas et al. 1990). Northern Spotted Owls typically lay up to three eggs per breeding season. The breeding season spans from March through September (Forsman et al. 1984).

The preferred habitat type of the Northern Spotted Owl consists of old growth forests with moderate to high canopy closure, a multi-species canopy with large over-story trees, large trees with numerous decadence features (i.e. broken tops, cavities, and snags), and a significant amount of open space beneath the canopy (USFWS 2008).

Historically, threats to the Northern Spotted Owl included a loss of suitable habitat from logging as well as wildfires and disease. Current threats include timber harvesting and wildfires, as well as competition from Barred Owls and predation. Clear-cutting and even-aged stand forestry management practices in this region also have contributed to a decline in habitat (Thomas et al. 1990). New potential threats may come from West Nile virus, sudden oak death, and loss of genetic variation due to a recent genetic bottleneck (USFWS 2008).

Northern Spotted Owls were detected onsite during nighttime calling surveys and presence is confirmed. With implementation of mitigation measures, the Proposed Project is anticipated to have no effect on this species.

5.2.3 Special Status Reptiles

5.2.3.1 Survey Results

The County of Humboldt letter identifies one species, the Western Pond Turtle, as potentially present. Based on database reviews and past experience in the region, no other special status reptiles are expected to be present. Once the presence of pond turtles was verified, relatively little additional field effort was expended on reptile surveys.

5.2.3.2 Species Accounts

Western Pond Turtle (Emys marmorata), California State Species of Special Concern, Present

Based on molecular analysis, Spinks et al. (2014) proposed recognizing all pond turtles north of San Francisco Bay as *Emys marmorata*; many available literature sources refer to the species as

Actinemys marmorata. Pond turtles occur in a variety of permanent and semi-permanent freshwater aquatic habitats including lakes, rivers, ponds, creeks, and marshes. Breeding can occur on loose soils on south or west facing slopes. The species is frequently observed basking on exposed banks, logs, and rocks. Winter activity is possible but limited to unusually warm, sunny days; normally pond turtles are dormant during winter months on the north coast; dormancy typically involved burrowing into loose substrate above the high water mark (Thompson et al. 2016). Pond turtles have been documented nesting up to 0.5 kilometers from water (CDFW 2019).

Western Pond Turtles (*Emys marmorata*) are relatively common in Larabee Creek where they were observed on most site visits after early May, once air and water temperatures were suitable for activity. Most observations were of one or two individuals basking on fallen logs along the creek margin upstream of the ford north of the main cultivation site (Figure 14). If nesting occurs in this area, it would be expected north of and fairly close to the creek where south-facing slopes are present.

A deteriorated pond turtle carapace was located on the steep slope well below (several hundred feet elevation) and west of the proposed Jelly Bean site. Because this location is a considerable distanced both horizontally and vertically from the nearest suitable aquatic habitat and well beyond maximum known pond turtle dispersal distances, it is believed the carapace was carried to this location by a scavenger.

Although no pond turtles were observed in the remnants of old stock ponds, which tend to be shallow and small, occasional or seasonal presence is possible. None of the stock ponds would be impacted by proposed project activities. Ponds proposed to be constructed as part of the project would be larger and deeper, and could be colonized by pond turtles. Because no work is proposed within 100 feet of the creek, no impacts are anticipated.

5.2.4 Special Status Amphibians

5.2.4.1 Survey Results

Several special status amphibian species are potentially present in or near the PSB. Extensive field surveys were focused on habitats most likely to support the species identified below.

5.2.4.2 Species Accounts

Southern Torrent Salamander (Rhyacotriton variegatus), California State Species of Special Concern, Low Potential

The Southern Torrent Salamander, *Rhyacotriton variegatus*, inhabits small, high gradient headwater streams or cold seeps within late seral stage forests (Thomson et al 2016). Adults are often found in the immediate splash zone of waterfalls, with aquatic larvae under or among cobble or loose gravel substrate. The PSB is near the inland range limits of the species and there are no known records within several miles. Despite intensive sampling of several headwater streams within the property on multiple occasions, no Southern Torrent Salamanders were captured or observed. All areas sampled showed evidence of past sedimentation (probably related to historic logging) and, as a result, there was little available in-stream interstitial space. Most headwater streams on the property were dry by early June, and there are no remaining extensive areas of late seral stage forest. One

perennial stream with suitable habitat, a tributary of Coleman Creek in the southwest part of the site, was extensively sampled but only Pacific Giant Salamander larvae were captured.

Based on limited and mostly poor available habitat, rarity or absence of suitable hydrology within forested parts of the site, the location of the PSB at the inland limits of the known range, and the absence of captures or observations during multiple days of intensive sampling using proven methods, it is believed that Southern Torrent salamanders are not likely to be present within the PSB. We had little difficulty locating Southern Torrent Salamanders on other, more coastal project sites in May 2019, generally requiring less than 30 minutes of sampling to capture both adults and larvae, further reinforcing the probable absence of the species at Hum Sun.

Pacific Tailed Frog (Ascaphus truei), California State Species of Special Concern, Low Potential

Pacific Tailed Frogs are long-lived, small (snout-vent length 2.5-5.1 centimeters) frogs varying in color from olive, gray, brown, to red to match the rocks in their habitat. Their skin is rough. They have a prominent dark eye stripe, a vertical pupil, and a pale yellow or greenish triangle on the snout. The species is named for its unique possession of a tail-like copulatory organ in males. Frogs in the *Ascaphus* genus are the only known frogs to have internal fertilization through copulation (Stebbins 2003, Nafis 2013). In addition to their 'tails', during breeding season males develop small, horny chest pads and darkened palmar and forearm tubercles (Stebbins 2003).

Pacific Tailed Frogs occur across the Pacific Northwest. In northern California, their range extends from the Oregon border south along the coast to Mendocino County and east to Shasta County (AmphibiaWeb 2019). Coastal and inland populations may be separate species. Adults, eggs, and tadpoles inhabit clear, cold, rocky streams in humid forests. Following wet weather, adults may be found in moist woods adjacent to their stream habitats. Rocky substrates are an important habitat feature to provide attachment points for egg masses as well as cover for tadpoles and adults from predation (Stebbins 2003). Tadpole diet consists mostly of diatoms, whereas adults feed on a variety of invertebrates depending on availability. Predators include garter snakes (*Thamnophis spp.)*, giant salamanders (*Dicamptodon* spp.), trout (Salmonidae), sculpins (*Cottus confusus*), dippers (*Cinclus mexicanus*), and hellgrammites (Megaloptera) (AmphibiaWeb 2019).

This species was not observed during field surveys. High quality habitat is scarce onsite as most streams are seasonal. Potential habitat was noted only in the extreme southwest portion of the site in a perennial tributay of Coleman Creek, although extensive searches located only *Dicamptodon tenebrosus* larvae and no tailed frogs. There is no perennial high-gradient stream habitat present close to any of the proposed impact areas. With implementation of mitigation measures, the Proposed Project is anticipated to have no effect on this species.

Northern Red-legged Frog (Rana aurora), California State Species of Special Concern, Present

Northern Red-legged Frogs occur along the west coast of N. America from British Columbia to California. The geographic range split between the Northern and California Red-legged Frog species occurs just south of Elk Creek in Mendocino County where both species overlap (Nafis 2016, AmphibiaWeb 2019). Northern Red-legged Frogs are typically found near freshwater sources (e.g., wetlands, ponds, streams, etc.). However, they can range widely and inhabit damp places far from water. Northern Red-legged Frogs reproduce in water from December to February in Humboldt County, with some breeding occurring as late as March. Preferred egg laying locations are in "vegetated shallows with little water flow in permanent wetlands and temporary pools" (Nafis 2016).

This species was documented on the property (primarily the southwest portion of the property, on mid-slopes above Colman Creek; also two individuals in the central part of the property; Figure 14) during herpetological surveys, and presence is confirmed. These are among the most inland localities currently known for the species in California. Occurrence is localized and strongly correlated with perennial seepage and dense herbaceous cover. None of the observations were in the proximity of proposed project activities. With implementation of mitigation measures, the Proposed Project is anticipated to have no effect on this species.

Foothill Yellow-legged Frog (Rana boylii), California Species of Special Concern (formerly CESA-candidate), Present

Foothill Yellow-legged Frogs are small (snout-vent length 3.7-7.2 centimeters (cm)) brown, gray, reddish, or olive covered frogs. Their skin is grainy rather than smooth and can be spotted or mottled (Nafis 2016). The underside of the hind legs and abdomen of adults is yellow. The species lacks defined dorsolateral folds and a dark facial mask (NatureServe 2019).

At the December 11, 2019 meeting of the California Fish & Game Commission a CESA-listing decision was made for Foothill Yellow-legged Frog. The north coast clade, including populations in the PSB, were not listed and revert to SSC status. All other clades were listed as endangered or threatened. The findings will be formally adopted at the next scheduled meeting (February 2020).

Foothill Yellow-legged Frogs occur from sea level to elevations of 2,130 meters. They range from the Willamette River in Oregon south to the Upper San Gabriel River in California, including the Coast Ranges and Sierra Nevada Foothills (Stebbins 2003, NatureServe 2019). The species prefers partially shaded, perennial streams with rocky substrate, often near riffles. These rivers and streams are typically bordered by chaparral, riparian habitat, mixed conifer forest, or wet meadows. Streams are usually small to mid-size with shallow pools and slow-moving water (CBD 2012). They are also found at river edges, in calm pools and vegetated backwaters (CBD 2012, NatureServe 2019). Rocky, cobble substrate (7.5 cm or larger) are preferred, particularly for egg laying sites (CBD 2012).

Breeding activity typically occurs from March through May with some regional variation (breeding in Northern California is reported to occur from April through June) (USFS 1997). Breeding coincides with a decrease in stream and river flows during the spring, following periods of winter storms and runoff (NatureServe 2019). Adult frogs congregate on river and stream gravel bars during this time, with oviposition occurring in stream and river margins (USFS 1997). Eggs are laid in masses (may include up to 3,000 eggs per mass) and attached to gravel or rocks (NatureServe 2019, USFS 2016, Nafis 2016). Eggs may be covered with a layer of silt, potentially to hide them from predators. Hatching time occurs in 5 to 27 days and is dependent on water temperature (Nafis 2016). Tadpoles are not known to overwinter, and larvae undergo metamorphosis during the summer to early fall (NatureServe 2019, USFS 2016). Fidelity to breeding sites has been reported in this species (USFS 2016). Tadpoles are herbivores and graze on algae and detritus stuck on the surface of rocks and vegetation (Nafis 2016). Tadpoles prefer a diet rich in diatoms to lower quality algae (USFS 2016). Adult frogs feed on terrestrial and aquatic invertebrates including ants, snails, water striders, flies, and beetles (USFS 1997).

Foothill Yellow-legged Frog populations were historically abundant in Oregon and California, but they have declined or disappeared in more southern and inland portions of their range, with notable

population extirpations in southern California (CBD 2012, USFS 2016). Major threats to the species include habitat loss or degradation, introduced predators, aerial pesticide applications, disease, and altered river and stream flow regimes (CBD 2012, NatureServe 2019). Altered stream and flow regimes, related to dam construction and management, can cause high flow releases during the spring and summer. This results in scouring, which washes away eggs and tadpoles from streams and rivers and forces adult frogs on to land, making them more vulnerable to predators (USFS 1997, NatureServe 2019, Nafis 2016). Smaller releases may result in egg stranding and desiccation (CBD 2012). In addition, controlled flows allow for the encroachment of riparian vegetation along river and stream banks, reducing gravel bar habitat for frogs (NatureServe 2019). Foothill Yellow-legged Frogs have also lost significant amounts of habitat to dam construction, intense grazing and logging practices (which causes erosion and increased sediment in stream beds), and urbanization. Climate change may also be contributing to habitat loss (USFS 1997, CBD 2012, USFS 2016). On top of this, introduced predatory fish species and bullfrogs have impacted frog populations (USFS 1997, NatureServe 2019). There is also evidence that air-borne pesticides may be negatively impacting Foothill Yellow-legged Frog populations (NatureServe 2019). Chytrid fungus has been detected in this species and is known to reduce growth in metamorphosed frogs (USFS 1997, NatureServe 2019).

The Foothill Yellow-legged Frog is common in Larabee Creek and was observed on most site visits. Over 30 egg masses were observed just upstream of the ford north of the main cultivation site in mid-May 2019 and had hatched by the end of May; breeding could occur as early as mid-April in some years. Tadpoles are present throughout the summer and newly transformed frogs were observed in the creek in September 2018. Thus the species is present along Larabee Creek throughout the year in one of more life stages. The species was not observed in Coleman Creek, the only other stream large enough to potentially support individual animals. One adult was observed in an isolated pool of an otherwise dry tributary of Larabee Creek in the southern part of the property. Observations are shown on Figure 14.

Because Foothill Yellow-legged Frogs rarely move more than a short distance from water, especially in dry season, and because no work is planned in Larabee Creek, no project-related impacts are anticipated.

5.2.5 Special Status Fish

5.2.5.1 Literature Search Summary

CDFG (2000) noted three fish species within a Larabee Creek sample reach beginning at the Cooper Creek confluence and extending downstream, and within the PSB. Steelhead included 66 young-of-year (0+); six age 1+; and two age 2+. The reach also yielded 76 California Roach (*Lavinia symmetricus)* and one lamprey ammocoete (unidentified to species level). The sample was collected on August 30, 2000 when Larabee Creek within the sample reach was mostly subsurface and consisted of a series of isolated pools. Three additional samples collected downstream of the PSB, including one about 2 km downstream at the Bosworth Creek confluence, also resulted in steelhead and roach captures.

Coleman Creek, which originates on the western part of the PSB, was characterized by CDFG (1999) although the inventory effort was downstream and did have enter within the PSB because of steep terrain and lack of access from the west. Although no fish sampling was done, observers

reported young-of-year salmonids 49 feet above the Eel River confluence well west of the PSB, and age 2+ salmonids in a pool 9,104 feet up the channel from the confluence. This location was described as “further passage by habitat typing crews is not possible due to the steep bedrock walls.” Several 10-foot drops reported above this point likely preclude fish presence higher in the stream.

5.2.5.2 Species Accounts

Pacific Lamprey (Entosphenus tridentatus), California State Species of Special Concern, Moderate Potential

Pacific Lamprey are a widely distributed species of lamprey that ranges from Alaska to Japan in the Pacific Ocean and south to Baja California (NatureServe 2019). Pacific Lamprey are the only anadromous species within the genus (Goodman and Reid 2012). They are a parasitic species of fish with long, eel-like bodies and an oval sucker mouth. Pacific Lamprey rear in freshwater streams before outmigrating to the ocean. They grow to full size in the ocean and then return to freshwater streams, spawn, and die (NatureServe 2019). Lamprey may reside in freshwater for a few months to a few years prior to spawning (Clemens 2013). Peak lamprey spawning has been documented in Humboldt County in April or May (Stillwater Sciences et al. 2016). Females lay eggs on rock, gravel, or sand bottom streams at the head of riffles (NatureServe 2019).

Although CDFG was not able to identify lamprey encountered in Larabee Creek to the species level during a 2000 creek inventory, Pacific Lamprey may be present in the Eel River at any time of the year (CDFG 2000, Stillwater Sciences 2010) and is widespread in Humboldt County. This being the case, the species has moderate potential to occur within the PSB. With implementation of mitigation measures, the Proposed Project is anticipated to have no effect on this species.

Coho Salmon - southern Oregon / northern California ESU (Oncorhynchus kisutch), Federally Threatened, State Endangered, Moderate Potential

The southern Oregon/northern California coast Coho Salmon Evolutionary Significant Unit (ESU) is defined as all Coho Salmon naturally produced in streams between Punta Gorda in northern California, Humboldt County and Cape Blanco in southern Oregon. Adult Coho Salmon enter rivers from late summer to mid-winter with most spawning occurring in early-to mid-winter. Eggs incubate for one to one and a half months during winter. Fry emerge and occupy shallow areas with vegetative cover. Juvenile Coho Salmon rear in freshwater for over a year (some for two years) before migrating to the ocean in spring (Weitkamp et al. 1995). Juveniles and yearlings spend various amounts of time in freshwater/estuary transition zones. Length of stay by an individual averages about one to two months, with spring being the heaviest time of use. Adults typically spend the next two years in the ocean before returning to their home streams to spawn (Wallace 2010).

Marine invertebrates, such as copepods, euphausids, amphipods, and crab larvae, are the primary food sources for Coho Salmon when they first enter saltwater. Fish represent an increasing proportion of the diet as Coho Salmon grow and mature. Freshwater habitat requirements for juvenile Coho Salmon include cool water temperatures (12-14 ºC is optimal), clear water, riparian vegetation that provides shade, clean silt-free gravel for spawning, in-stream large woody debris, availability of food (invertebrates), and overwintering habitat consisting of large off-channel pools with complex cover or small spring-fed tributary streams (Moyle 2002). Coho Salmon from Humboldt

Bay tributaries that rear in the estuary grow larger than their cohorts that reared farther upstream, which suggests that a stream/estuary ecotone is an important overwintering and rearing habitat for juvenile Coho Salmon (Wallace and Allen 2009).

Population declines and extirpations in individual streams and tributaries have occurred due to widespread degradation of freshwater habitats from activities such as timber harvest, road building, grazing and mining activities, urbanization, stream channelization, dam construction, wetland filling or draining, beaver trapping, and water withdrawals and diversions for irrigation. These activities have resulted in changes to channel morphology and substrate, loss and degradation of estuaries, wetlands, and riparian areas, declines in water quality (e.g., elevated pH and water temperatures, reduced dissolved oxygen, altered stream fertility and biological communities, and toxics), altered stream flows, and fish passage impediments such as dams and road crossings (NOAA Fisheries 2011).

The South Fork Eel River serves as the most productive area for salmonids in the Eel River Basin and supports populations of SONCC Coho Salmon. However, Coho Salmon have noticeably declined in the Eel River in the last century, and the population is now estimated to be only 6-15 percent of the 1940 population size (Yoshiyama and Moyle 2010). Coho Salmon are believed to have been extirpated from the Middle Fork drainage (Brown and Moyle 1991, Yoshiyama and Moyle 2010). Peak migration for adult salmon in the river occurs from December to January while peak juvenile migration occurs from April to May. Although no Coho Salmon were detected during CDFG surveys of Larabee and Coleman Creek, Coho Salmon may be present in the Eel at any time of the year (CDFG 1999, CDFG 2000, CDFW 2016b). This being the case, the species has moderate potential to occur within the PSB. With implementation of mitigation measures, the Proposed Project is anticipated to have no effect on this species.

Steelhead (Oncorhynchus mykiss irideus), Federally threatened, California State Species of Special Concern, High Potential

The Northern California Steelhead (northern California DPS) occupies river basins from Redwood Creek in Humboldt County to the Gualala River (near the Mendocino/Sonoma County line). Steelhead spend their adult lives in marine environments, returning to freshwater at the age of four or five to spawn, usually in their stream of origin. Steelhead is the anadromous form of rainbow trout, although steelhead are more similar to Pacific salmon than trout in their ecological requirements. Unlike salmon, Steelhead do not necessarily die after spawning. Eggs are deposited in redds constructed in gravel, and (for winter run fish) hatch after three to 14 weeks in later winter through spring. The hatchlings, or alevins, emerge from the gravel after an additional two to five weeks (Moyle 2002). During the egg and alevin stages, survival depends in part on the presence of clean, well-oxygenated gravel (excessive siltation contributes to mortality at these stages) (Barnhart 1991, Stillwater Sciences 2006). Juveniles remain in fresh water for one or two years before returning to saltwater, with emigration typically occurring from March through June. A second year of growth is thought to contribute to a much higher probability of survival in the open ocean (Stillwater Sciences 2006). Less is known about the life history of summer run Steelhead, although adult fish are believed to enter rivers in May (Yoshiyama and Moyle 2010).

Juvenile steelhead use a variety of in-stream habitats depending on age and size. Smaller fish inhabit shallow, slow moving margins of streams or other open water. Larger juveniles move to deeper water with more cover and vegetation. For upstream migration, steelhead require a minimum

depth of at least seven inches and a maximum stream velocity of 8 feet/second (ft/s). Spawning requires a minimum of 1-3 ft/s velocity, clean substrate, and temperatures of 39 - 49° F (Smith 1973).

In the Northern California DPS, the decline of Steelhead has been attributed to factors such as watershed disturbances, including logging on steep slopes, grazing, road building, water diversions, and severe habitat degradation caused by timber harvest and intensive agricultural practices. These factors have resulted in decreased flows, loss of riparian habitat, channel widening, and increased siltation and water temperatures. Despite this decline, north coast rivers and streams have the greatest amount of Steelhead habitat in California. The most abundant populations of Steelhead are in the Klamath/Trinity River system (Barnhart 1991, Stillwater Sciences 2006).

Spring/summer, fall, and winter run Steelhead occur in the Eel and its tributaries. Steelhead are the most widely distributed salmon in the South Fork Basin (CDFG 1997, Yoshiyama and Moyle 2010, CDFW 2016, Coastal Watershed Planning and Assessment Program 2014). Summer Steelhead enter freshwater in the spring and summer months, hold in the mainstem and Middle Fork Eel River, and then spawn in fall. Both winter-run and summer-run Steelhead are found in the Eel River, although summer Steelhead are rare. Documentation of summer Steelhead in the lower-Eel River is limited to the Van Duzen River. Most Steelhead smolts migrate to sea by June, although juveniles may be present in the estuary all year (Cannata and Hassler 1995, Puckett 1968).

Steelhead numbers in the Eel River watershed have declined considerably in the last century, with present population estimates at about 10% of historic totals (Yoshiyama and Moyle 2010). Threats to this population are considered high based on NMFS CAP (Conservation Action Planning) viability analysis (NOAA Fisheries 2016). Peak spawning in the South Fork Eel occurs in late February but extends through May (Coastal Watershed Planning and Assessment Program 2014).

CDFG surveys of Larabee Creek in August of 2000 revealed 66 YOY steelhead within the creek (CDFG 2000). Salmonids were also documented in Coleman Creek, although not identified to the species level and believed to be limited to areas downstream of the PSB by natural barriers (CDFG 1999). Based on the timing of the Larabee Creek survey, presence of summer run Steelhead cannot be ruled out. Steelhead were documented as present in the past (although not identified to run), and there is a high probability for occurrence onsite. With implementation of mitigation measures, the Proposed Project is anticipated to have no effect on this species.

Chinook Salmon – California Coastal ESU (Oncorhynchus tshawytscha), Federally threatened, Moderate Potential

The California Coast Chinook Salmon (California coastal ESU) are a distinct population of Chinook Salmon that range from Redwood Creek in Humboldt County, south to the Russian River in Sonoma County. California Coast Chinook Salmon spawn and rear in coastal and interior rivers in Northern California. Ocean-type Chinook (fall run) rear for less than one year in freshwater, while stream-type Chinook (spring run) remain in freshwater for one year or more before emigrating to forage in coastal and marine zones of California for two to five years (Healey 1991). Currently, only fall-run Chinook appear to be extant in the DPS. These Chinook Salmon typically migrate to the ocean within their first year from April through July, but have also been observed in Humboldt Bay in the fall (NOAA Fisheries 2007). The ideal temperature range for rearing, smolting, and migrating (seaward) Chinook Salmon appears to be 50° to 55° F (Rich 1997).

The destruction and modification of historic spawning habitat, fish passage barriers, over-harvesting, decreased floodplain connectivity and function, as well as reduced stream flow and predation are considered moderate to very high threats to this ESU. Land use activities (logging, road construction, streambank alterations, etc.), water diversions and overutilization of rivers and streams for recreational purposes are also have contributed to the decline of the ESU. The main factors limiting this Chinook Salmon ESU are low abundance, low distribution, and negative population trends. Predation by pikeminnow in the Eel River and genetic integrity are considered significant threats to the population (NOAA Fisheries 2007).

Adult Chinook enter the Eel River between September and February and wait in pools on the lower river before winter rains/runoff increases river flows. At this point, they migrate upstream to spawning grounds. After spawning, juvenile Chinook will outmigrate at 3 to 6 months. However, they are present in the Eel River Estuary year-round (Coastal Watershed Planning and Assessment Program 2014). Although no Chinook Salmon were detected during CDFG surveys of Larabee and Coleman Creek, various life stages Chinook Salmon may be present in the Eel at any time of the year (CDFG 1999, CDFG 2000, CDFW 2016b).This being the case, the species has moderate potential to occur within the PSB. With implementation of mitigation measures, the Proposed Project is anticipated to have no effect on this species.

5.2.6 Special Status Invertebrates

Obscure Bumble Bee (Bombus caliginosus), California State Special Status Species, Moderate Potential

The project site falls within the current documented range of the Obscure Bumble Bee and includes fog-belt coastal habitat preferred by the species (Hatfield et al. 2014). Preferred plants for foraging (such as *Grindelia sp*, *Baccharis sp*., and *Lupinus sp*.) are present adjacent to the project site. California Department of Fish and Wildlife records have documented the species in Humboldt County (CDFW 2019). In addition, there are known occurrences of this species from Blocksburg (Thorp et al. 1983). Based on the location of the project site, the presence of host plants in the area, and recent documented presence of the species in Humboldt County, the Obscure Bumble Bee has a moderate likelihood of occurring at the project site.

5.2.7 Invasive Wildlife

Feral Pig sign was observed adjacent to the lower part of the Honeyhole site, and there have been multiple reports of pigs by landowners and other individuals. We did not observe any indication of large numbers of feral pigs or particularly large individuals onsite; damage was isolated and not extensive and tracks were of relatively small individuals. A single adult Feral Pig was observed on one camera trap at the western end of the project site. Feral pigs can damage sensitive habitats including but not limited to grasslands and wetlands, and control is encouraged.

Three large adult Bullfrogs (*Lithobates catesbeianus*) were observed in a partially ponded swimming pool basin next to the main house. One bullfrog tadpole was located in the same pool. All were removed from the PSB. Another adult bullfrog was heard calling from Larabee Creek but could not be located. Searches of several small and isolated existing ponds on the PSB did not locate any bullfrogs. Although not abundant in the PSB, the presence of bullfrogs suggests that newly constructed ponds could be colonized and that periodic monitoring and control measures may be

necessary. Bullfrogs prey on a variety of native wildlife including smaller special status frogs such as Northern Red-legged Frog and Foothill Yellow-legged Frog.

6. Avoidance and Mitigation Measures

6.1 Final Environmental Impact Report for the Amendments to Humboldt County Code Regulating Commercial Cannabis Activities (SCH# 2017042022)

Wildlife mitigation measures are included in the Programmatic FEIR (FEIR Table 4-1) (Ascent Environmental 2018) and in some cases are expected to be applicable to individual projects as well. Because surveys included in this report address many of the requirements of the mitigation measures in the programmatic EIR, some of those measures would not need to be repeated.

6.2 Other Recommended Conservation Measures

6.2.1 Nesting Birds

Clearing of shrubs or other vegetation or ground disturbance shall be conducted, if possible, during the fall and/or winter months and outside of the avian nesting season (March 15th – August 15th) for the County of Humboldt. If vegetation removal or ground disturbance cannot be confined to work outside of the nesting season, a qualified ornithologist shall conduct pre-construction surveys within the vicinity of the PSB, to check for nesting activity of native birds and to evaluate the site for presence of raptors and special-status bird species. The ornithologist shall conduct a minimum of one day pre-construction survey within the 7-day period prior to vegetation removal and ground-disturbing activities. If ground disturbance and vegetation removal work lapses for seven days or longer during the breeding season, a qualified ornithologist shall conduct a supplemental avian pre-construction survey before project work is reinitiated.

If active nests are detected within the construction footprint or within 500-feet of construction activities, the biologist shall flag a buffer around each nest. Construction activities shall avoid nest sites until the biologist determines that the young have fledged or nesting activity has ceased. If nests are documented outside of the construction (disturbance) footprint, but within 500-feet of the construction area, buffers will be implemented as needed. In general, the buffer size for common species would be determined on a case-by-case basis in consultation with the CDFW. Buffer sizes will take into account factors such as (1) noise and human disturbance levels at the construction site at the time of the survey and the noise and disturbance expected during the construction activity; (2) distance and amount of vegetation or other screening between the construction site and the nest; and (3) sensitivity of individual nesting species and behaviors of the nesting birds.

If active nests are detected during the survey, the qualified ornithologist shall monitor all nests at least once per week to determine whether birds are being disturbed. Activities that might, in the opinion of the qualified ornithologist, disturb nesting activities (e.g., excessive noise), shall be prohibited within the buffer zone until such a determination is made. If signs of disturbance or distress are observed, the qualified ornithologist shall immediately implement adaptive measures to reduce disturbance. These measures may include, but are not limited to, increasing buffer size,

halting disruptive construction activities in the vicinity of the nest until fledging is confirmed, placement of visual screens or sound dampening structures between the nest and construction activity, reducing speed limits, replacing and updating noisy equipment, queuing trucks to distribute idling noise, locating vehicle access points and loading and shipping facilities away from noise-sensitive receptors, reducing the number of noisy construction activities occurring simultaneously, and/or reorienting and/or relocating construction equipment to minimize noise at noise-sensitive receptors.

6.2.2 Special-status Amphibians

No more than one week prior to commencement of ground disturbance within 50 feet of suitable Northern Red-legged Frog habitat, a qualified biologist shall perform a pre-construction survey for the Northern Red-legged Frog and shall relocate any individuals or egg masses that occur within the work-impact zone to nearby suitable habitat.

In the event that a Northern Red-legged Frog or Foothill Yellow-legged Frog is observed in an active construction zone, the contractor shall halt construction activities in the area where observed and the frogs shall be moved to a safe location in similar habitat outside of the construction zone. FYLF may be moved only if/after a decision is made not to CESA-list the north coast clade of the species; while a candidate or if listed, consultation with CDFW would be required prior to any capture.

6.2.3 Special-status Bats

Bat surveys shall be conducted within seven days prior to construction in any areas where potential roosts or foraging habitat may be disturbed/removed (particularly in the event of any timber harvesting). Surveys shall be conducted by a qualified biologist. Surveys shall include a visual inspection of the impact area and any large trees/snags with cavities or loose bark. If the presence of a bat roost is confirmed, roost tree removal will be prohibited and no activity generating significant noise shall occur within 300 feet of the roost.

Project-related lighting shall be minimized at night, either contained within structures or limited by appropriate reflectors or shrouds and focused on areas needed for safety, security or other essential requirements.

6.2.4 Sonoma Tree Vole

The construction impact area shall be surveyed by a qualified biologist within seven days prior to the start of construction for any tree nests indicative of Sonoma Tree Voles. If any nests suggestive of Sonoma Tree Vole are found, they shall be avoided by a 100-foot buffer during construction activities.

6.2.5 Special Status Mammals

Steep-sided excavations capable of trapping mammals would be ramped or covered if left overnight. No poisons or other potentially injurious materials attractive to mammals would be utilized or left unattended during construction or operation activities.

6.2.6 Salmonids

During project construction, the following actions will be incorporated into the Project to reduce impacts to aquatic habitat to the maximum extent feasible:

- To avoid sediment delivery to a creek where salmonids could be present, ground disturbing work within 100 feet of the creek would terminate by October 15 (or at onset of the rainy season) unless extended in writing by NMFS.
- Work within 300 feet of the creek would cease within 24 hours of significant forecast rainfall (<0.5 inches) and for the duration of the event.
- Surface water shall be directed away from slopes and new cut slopes.
- Stockpiled material will be covered or watered to eliminate excessive dust, as necessary.
- Fiber rolls or similar products will be utilized in appropriate locations to reduce sediment runoff from disturbed soils in receiving waters, as necessary.
- A concrete washout area within the staging area will be designated to clean concrete trucks and tools, if any, as necessary.

6.2.7 Insecticides and Rodenticides

Use of insecticides or rodenticides will not be permitted on the site without prior written approval by CDFW.

7. Summary of Potential Impacts

Appendix G, Section IV of the State of California CEQA Guidelines states that the proposed Project would have a significant impact on biological resources if it would:

A. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service.

B. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service.

C. Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.

D. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites.

E. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

F. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

This section briefly summarizes potential impacts. The discussion is intended to provide information for CEQA review, and a more detailed analysis of subsections B, C, E and F of Section IV – Biological Resources may be conducted as part of the IS/MND.

Based on thorough multi-season field work and the analysis described above, there would be relatively few potential impacts to sensitive wildlife species or their habitats. Mitigation measures, including but not necessarily limited to the conservation measures identified above, would ensure that all potential wildlife-related impacts would be less than significant.

In general, the study area is typical of large rural properties in southeastern Humboldt County. The site retains natural elements including conifer forest, oak woodlands, and grasslands. Past logging and ongoing intensive grazing have altered many habitat types, although again these activities are typical of such properties in the region. The proposed activities would directly or indirectly impact only a very small percentage of the overall study area, and only within a few relatively compact and limited portions of the site. All activities are able to be accessed using the existing unimproved road structure and no new access routes are required.

Rare plants, sensitive habitat, and wetlands are described under separate cover. Impacts in these categories are also expected to be avoided or mitigated to less than significant levels.

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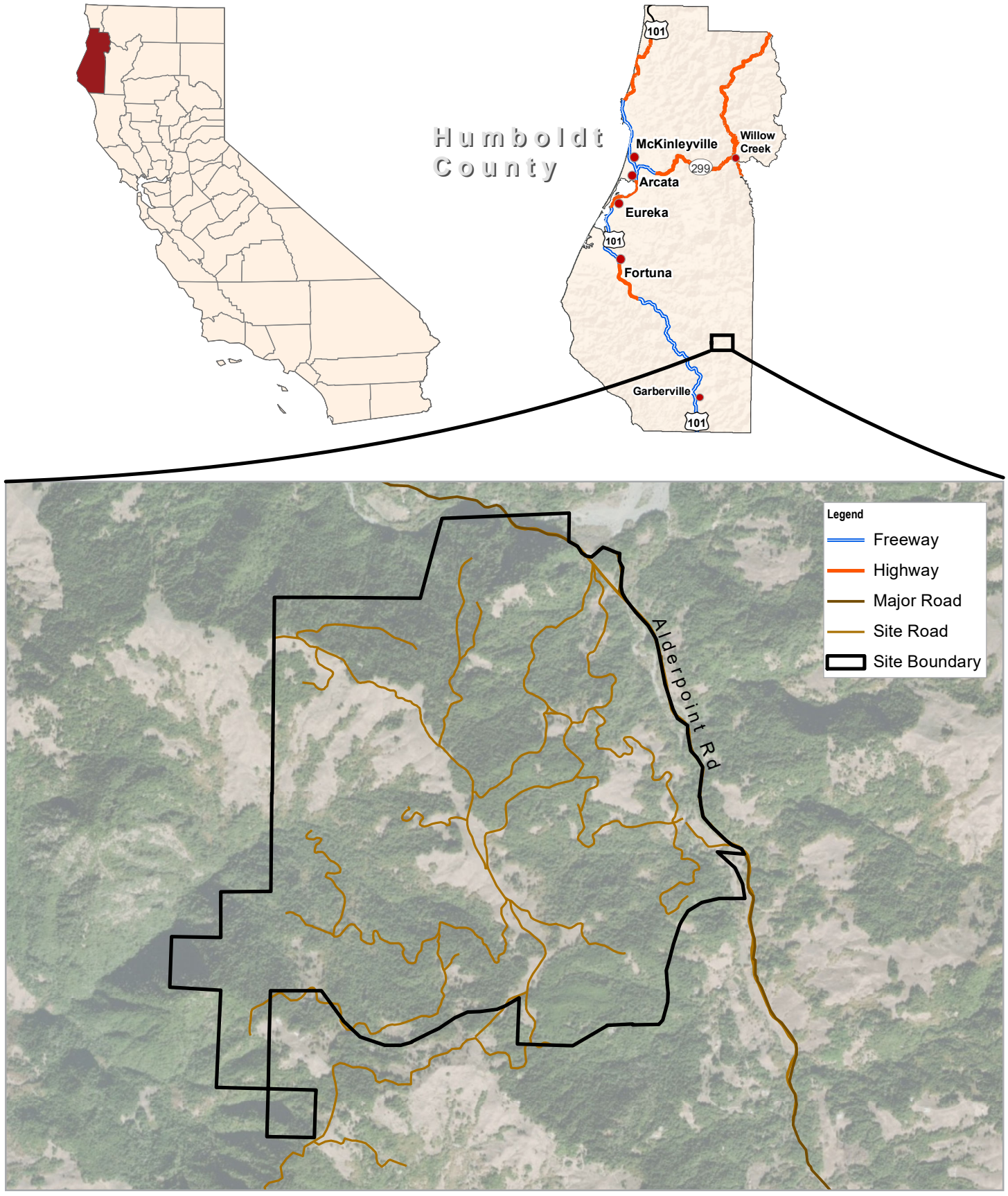
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Appendix A – Figures



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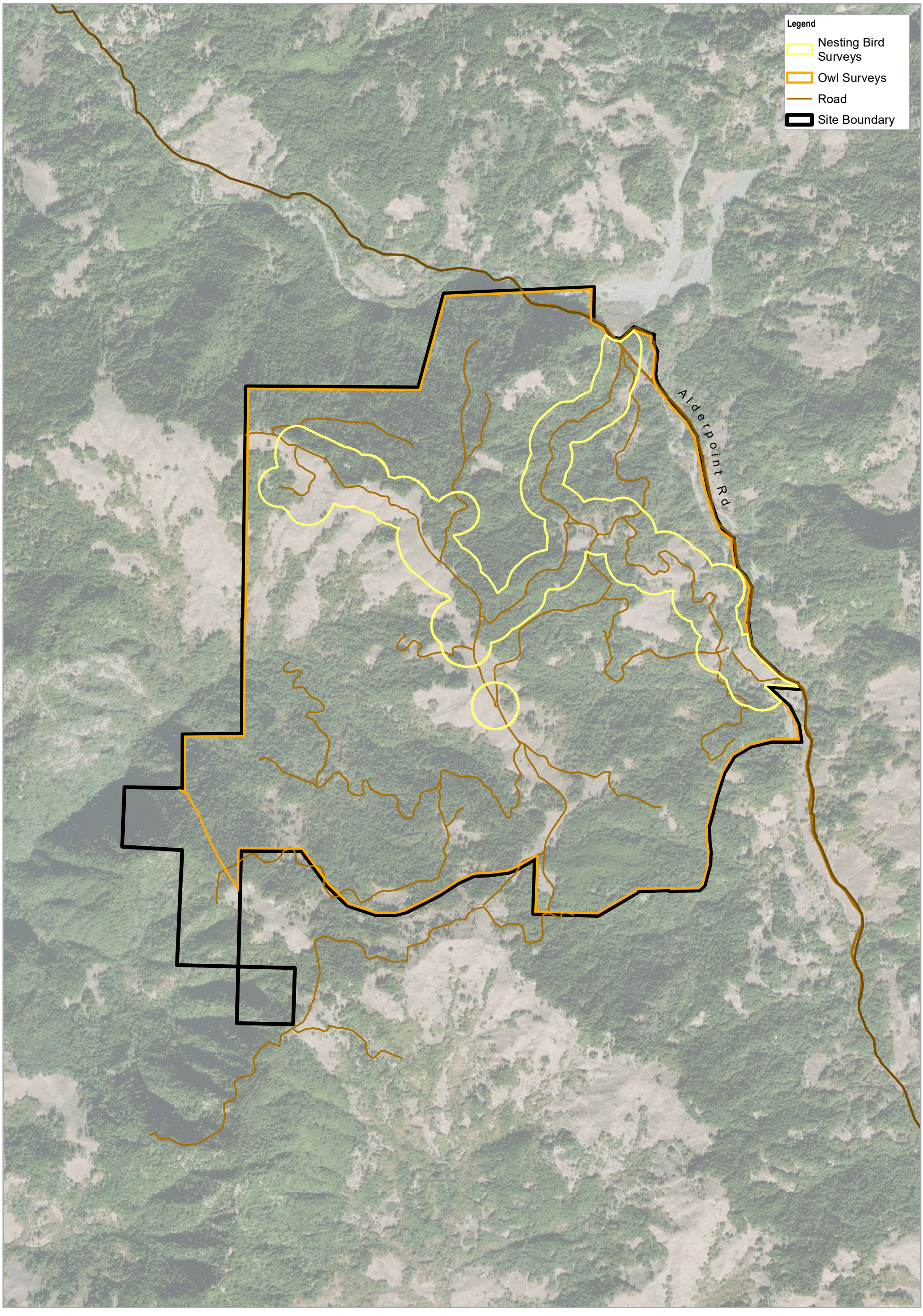
Vicinity Map

Project No. **11185843**
Revision No. **-**
Date **December 2019**

FIGURE 1

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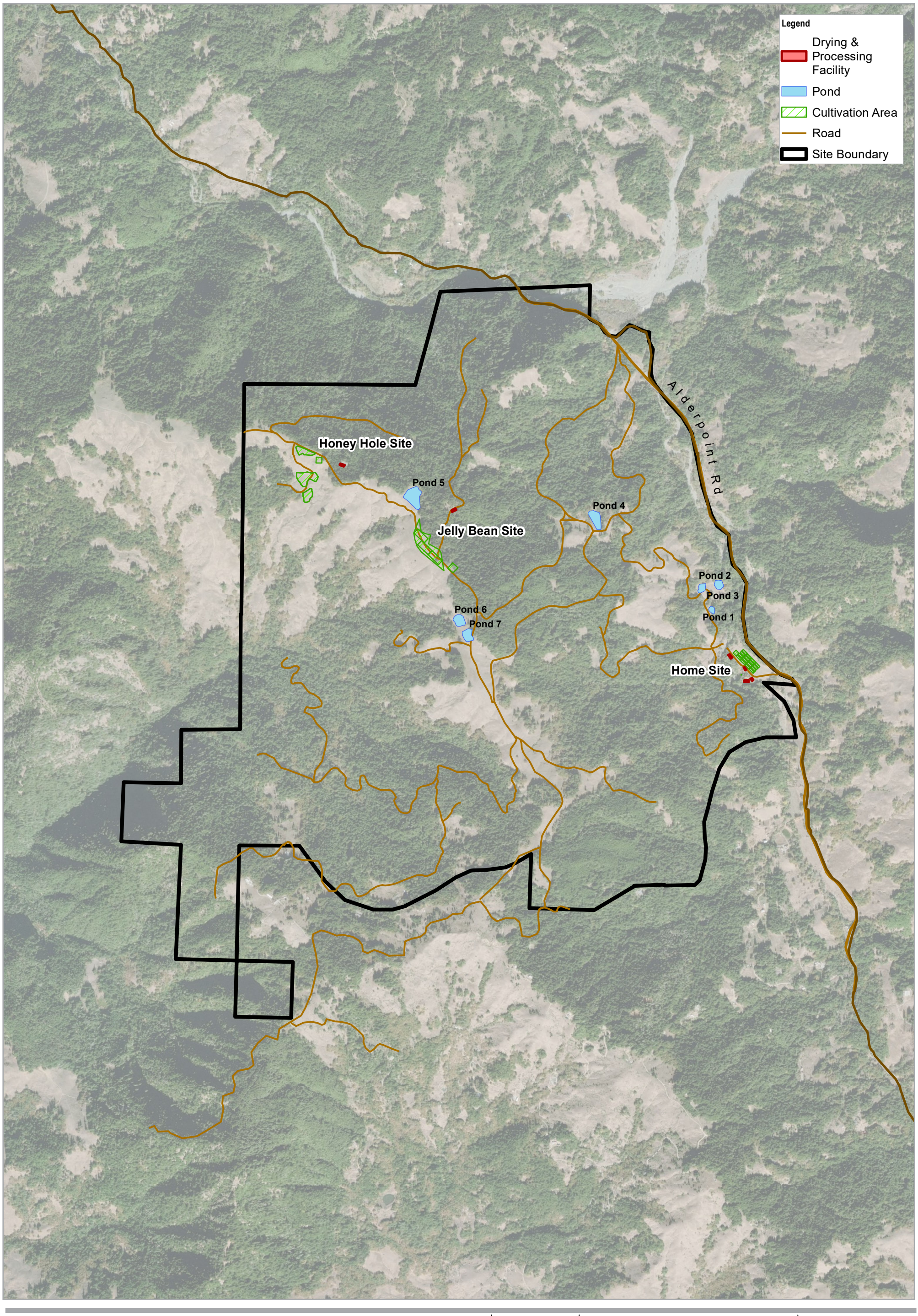
Project Study Boundaries

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FIGURE 2

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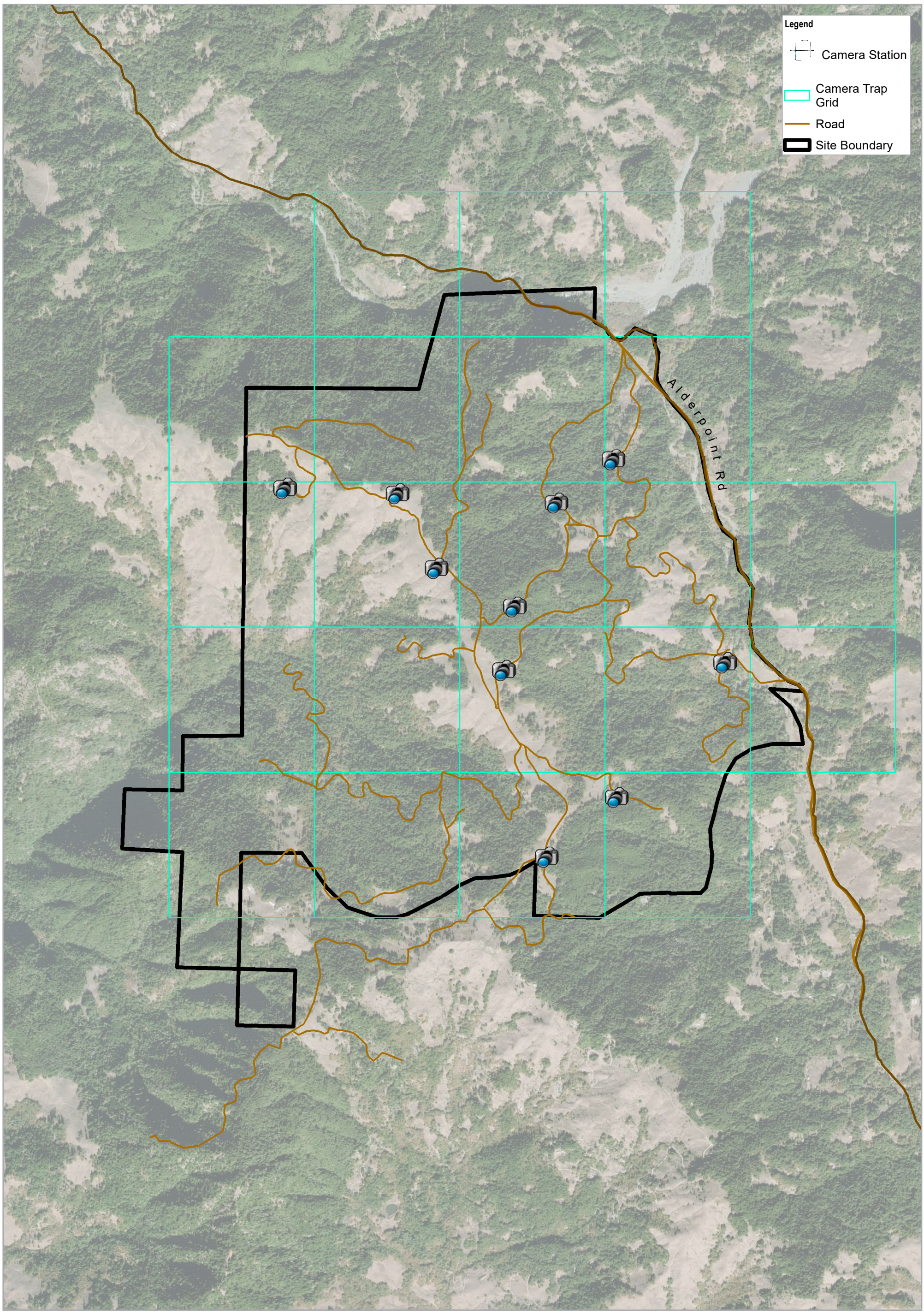
Project Areas

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FIGURE 3

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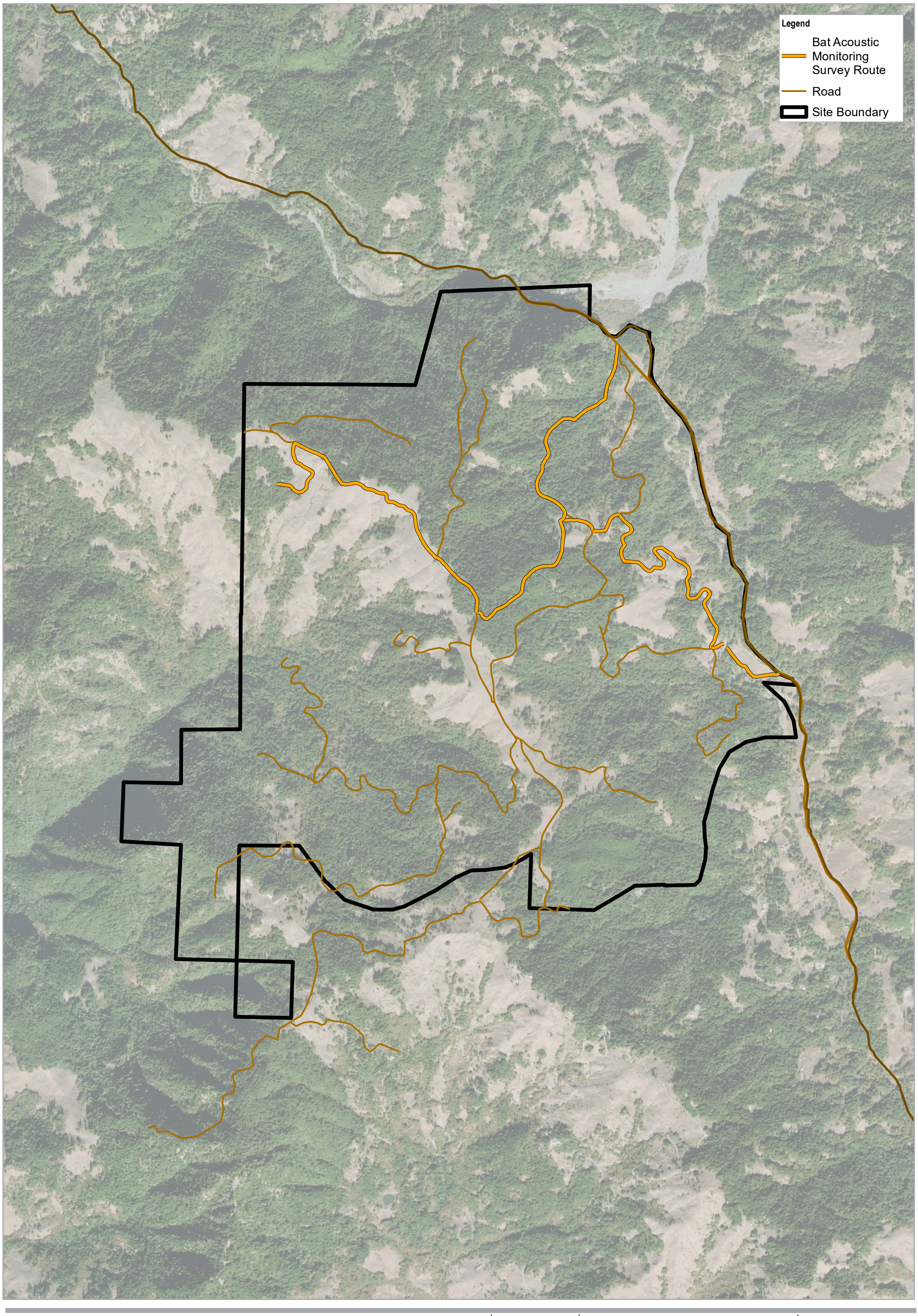
Wildlife Camera Stations

Project No. **11185843**
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FIGURE 4

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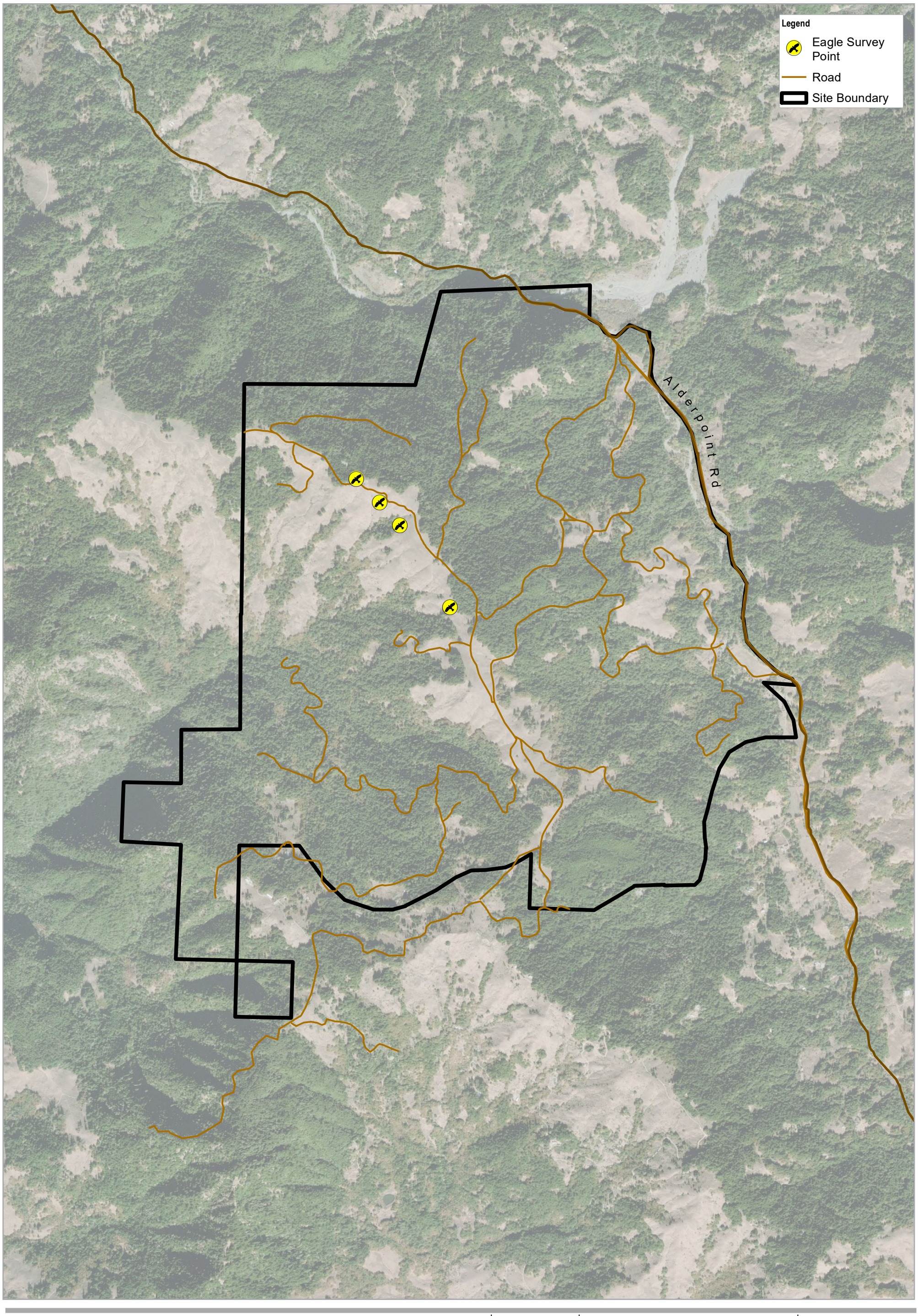
Bat Acoustic Monitoring Survey Routes

Project No. **11185843**
Revision No. **-**
Date **December 2019**

FIGURE 5

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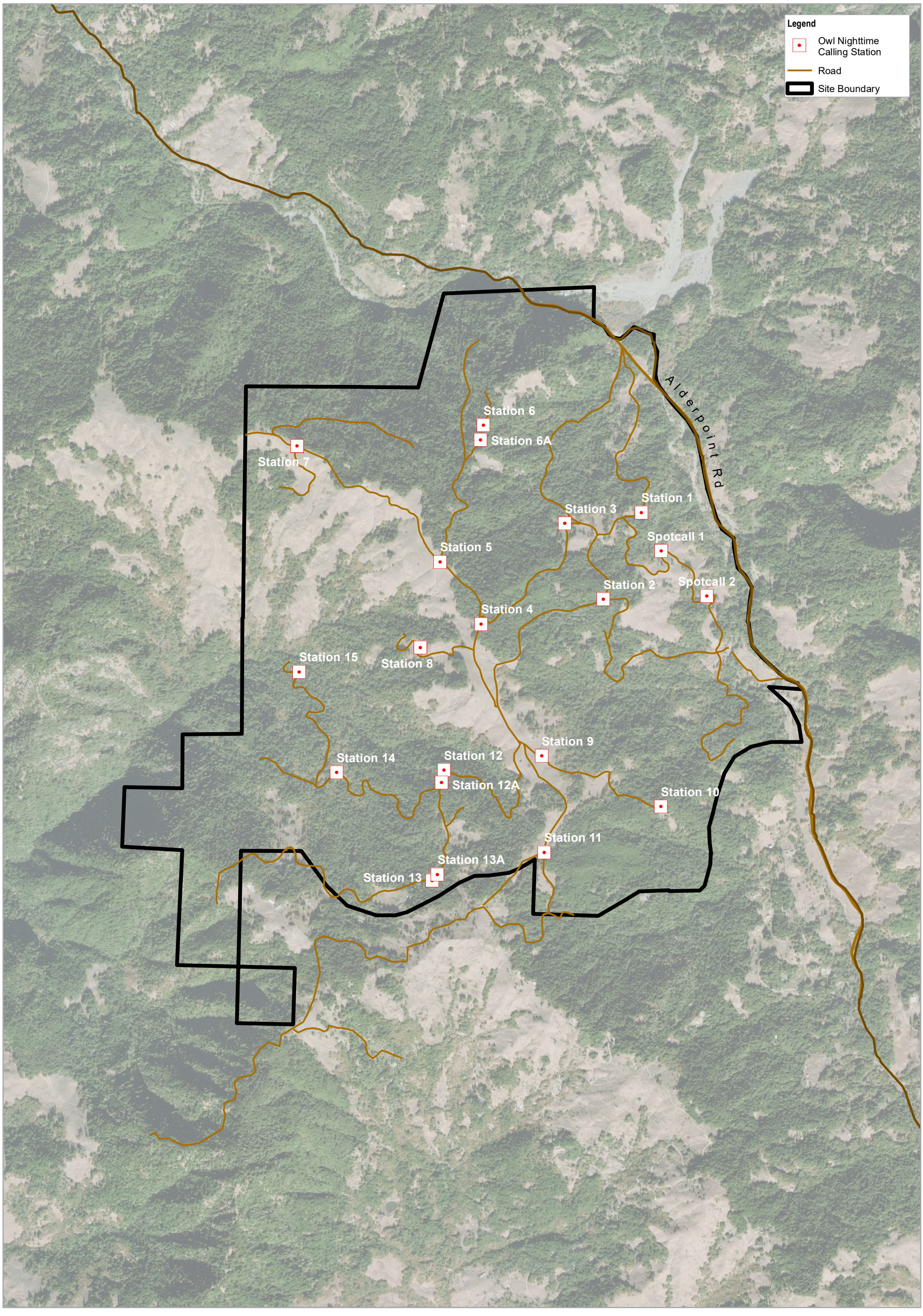
Eagle Survey Points

Project No. **11185843**
Revision No. **-**
Date **December 2019**

FIGURE 6

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Hum Sun Farms
Wildlife Report

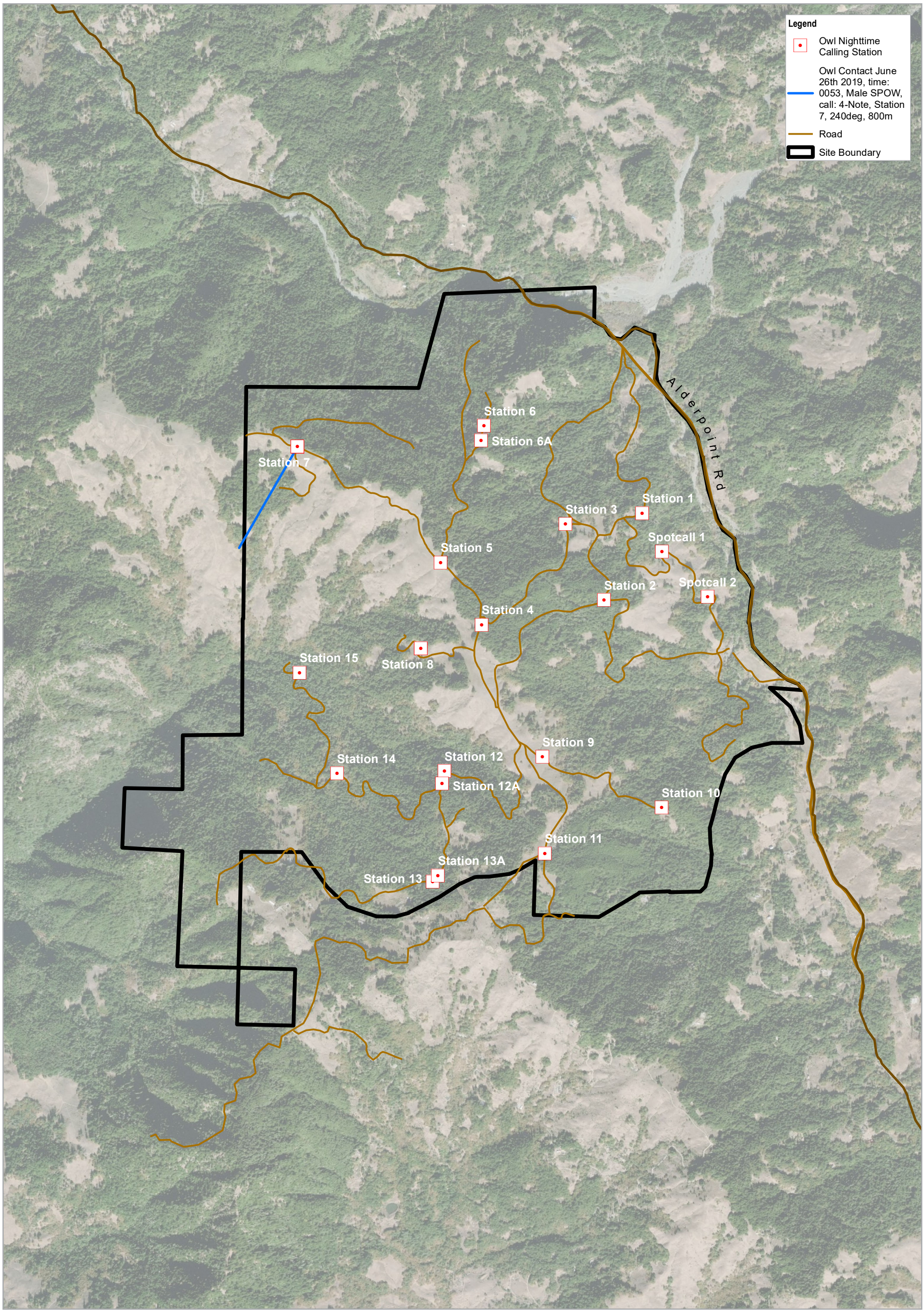
Northern Spotted Owl Nighttime Calling Stations

Project No. **11185843**
Revision No. **-**
Date **December 2019**

FIGURE 7

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Wildlife Report

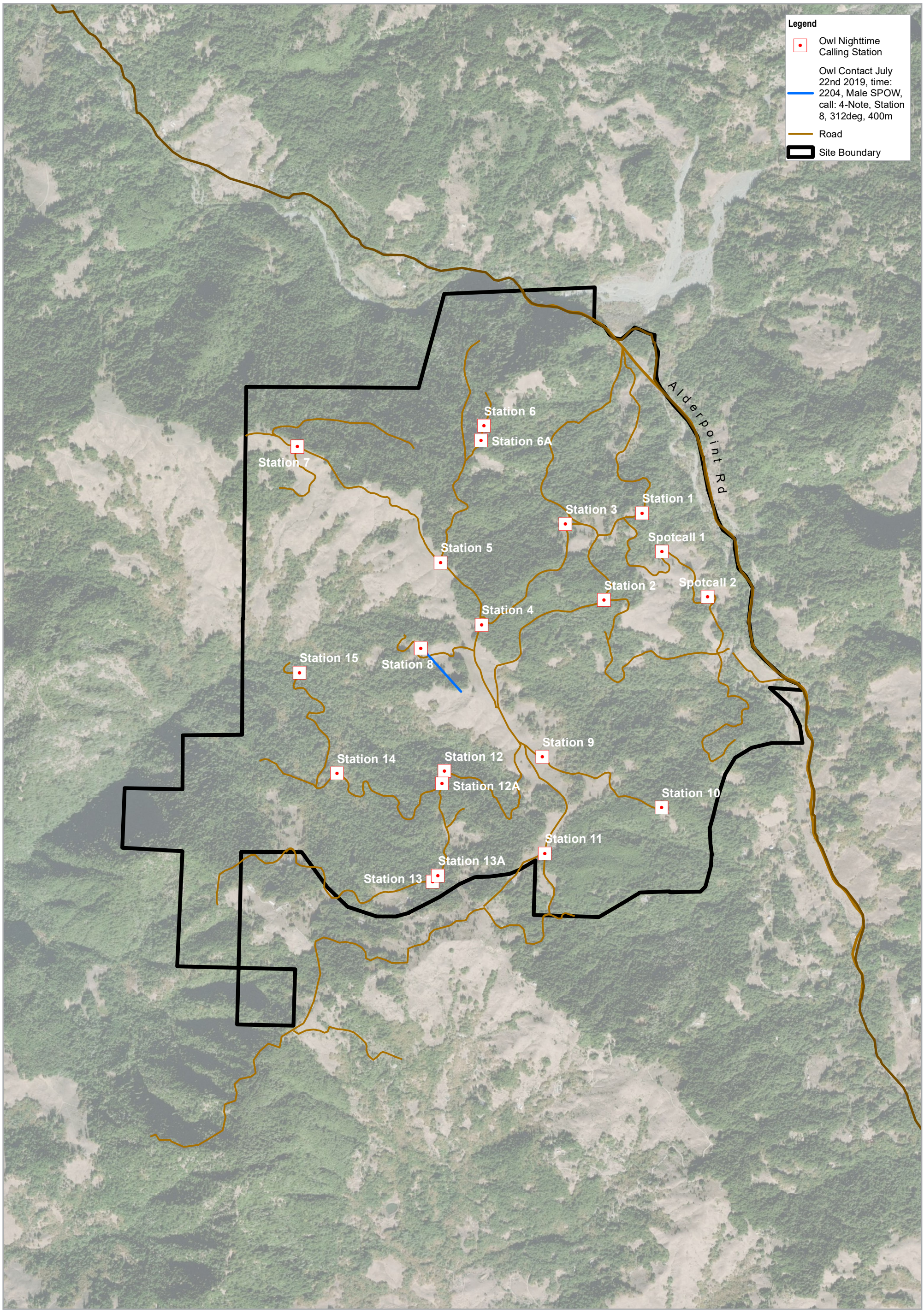
Northern Spotted Owl Nighttime Audio Detection, June 26, 2019

Project No. **11185843**
Revision No. **-**
Date **December 2019**

FIGURE 8

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Wildlife Report

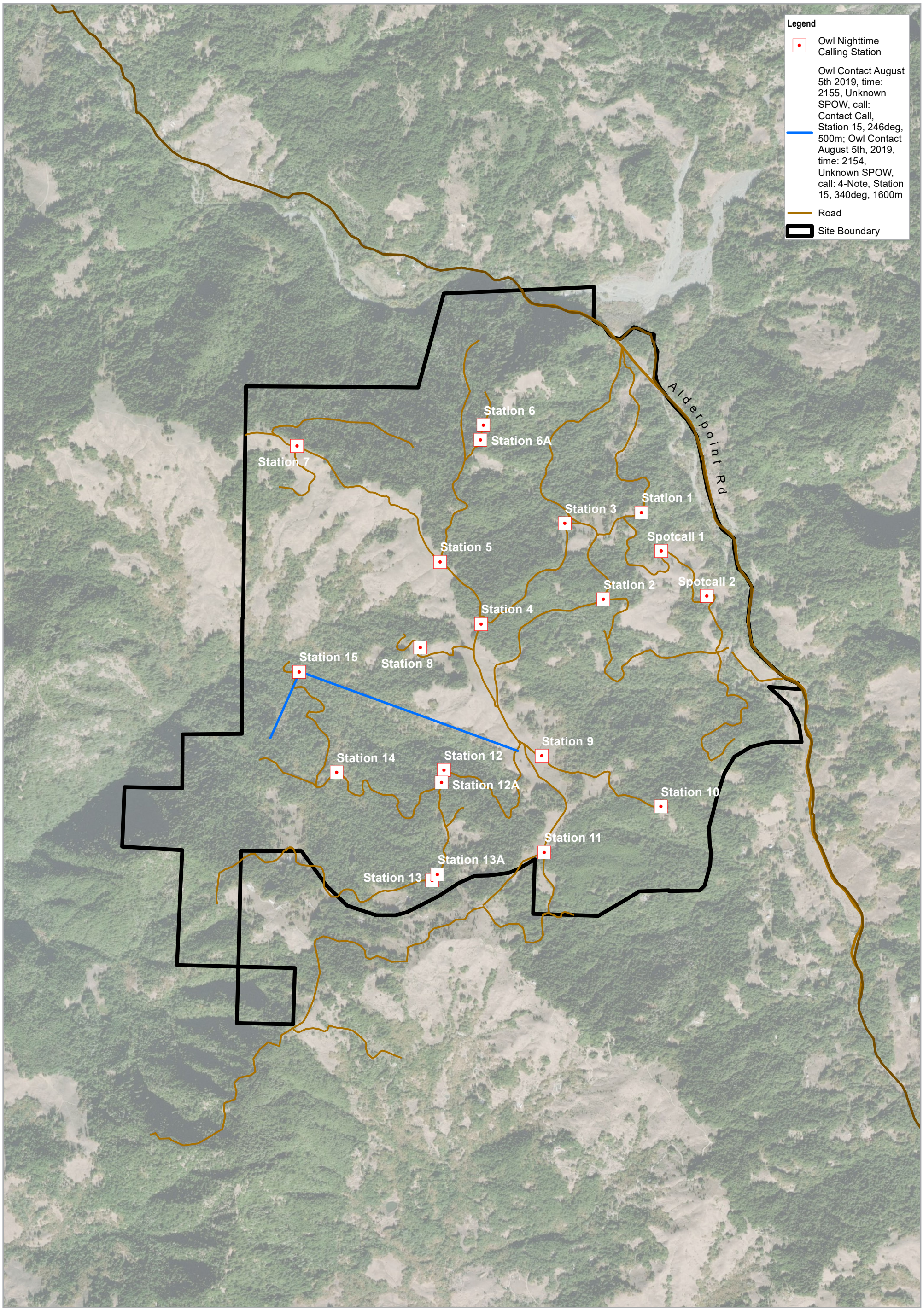
Northern Spotted Owl Nighttime Audio Detection, July 22, 2019

Project No. **11185843**
Revision No. **-**
Date **December 2019**

FIGURE 9

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Hum Sun Farms
Wildlife Report

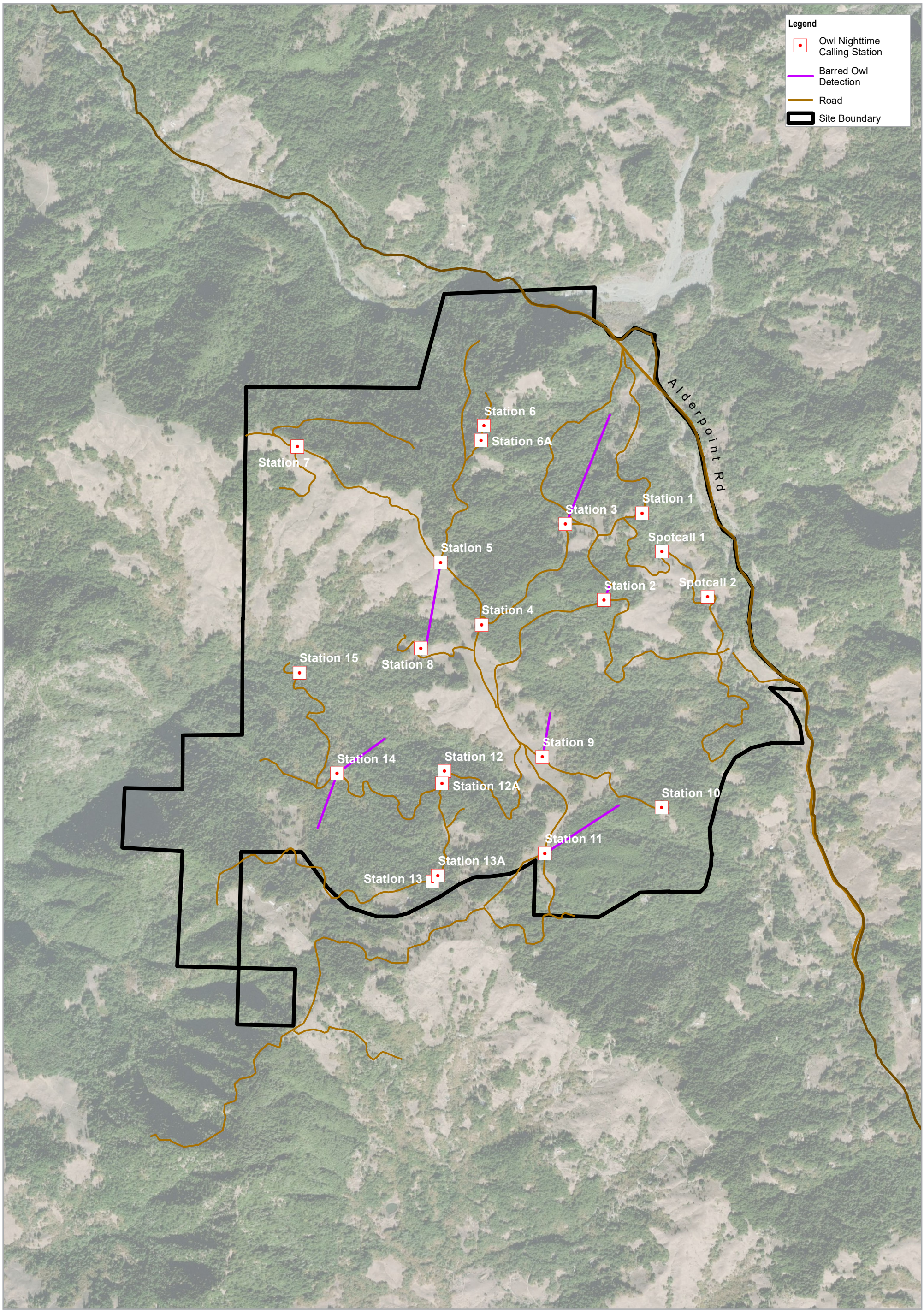
Northerm Spotted Owl Nighttime Audio Detection, August 05, 2019

Project No. **11185843**
Revision No. **-**
Date **December 2019**

FIGURE 10

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Wildlife Report

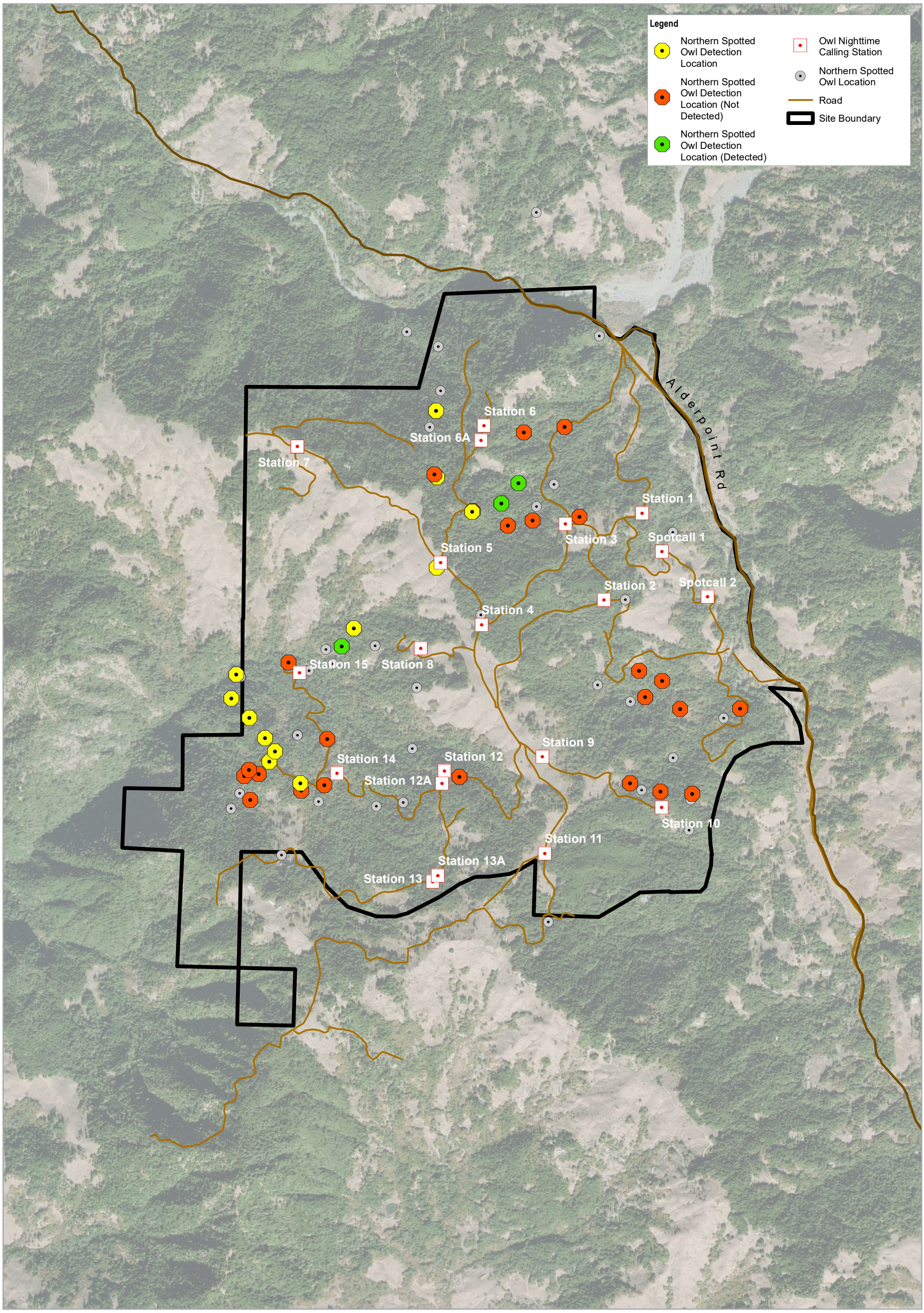
Barred Owl Detections

Project No. **11185843**
Revision No. **-**
Date **December 2019**

FIGURE 11

G:\111\11185843 Hum Sun Farms Development\08-GIS\Maps\Deliverables\Wildlife Report\11185843_WildlifeReport_011_BarredOwlDetections.mxd
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Wildlife Report

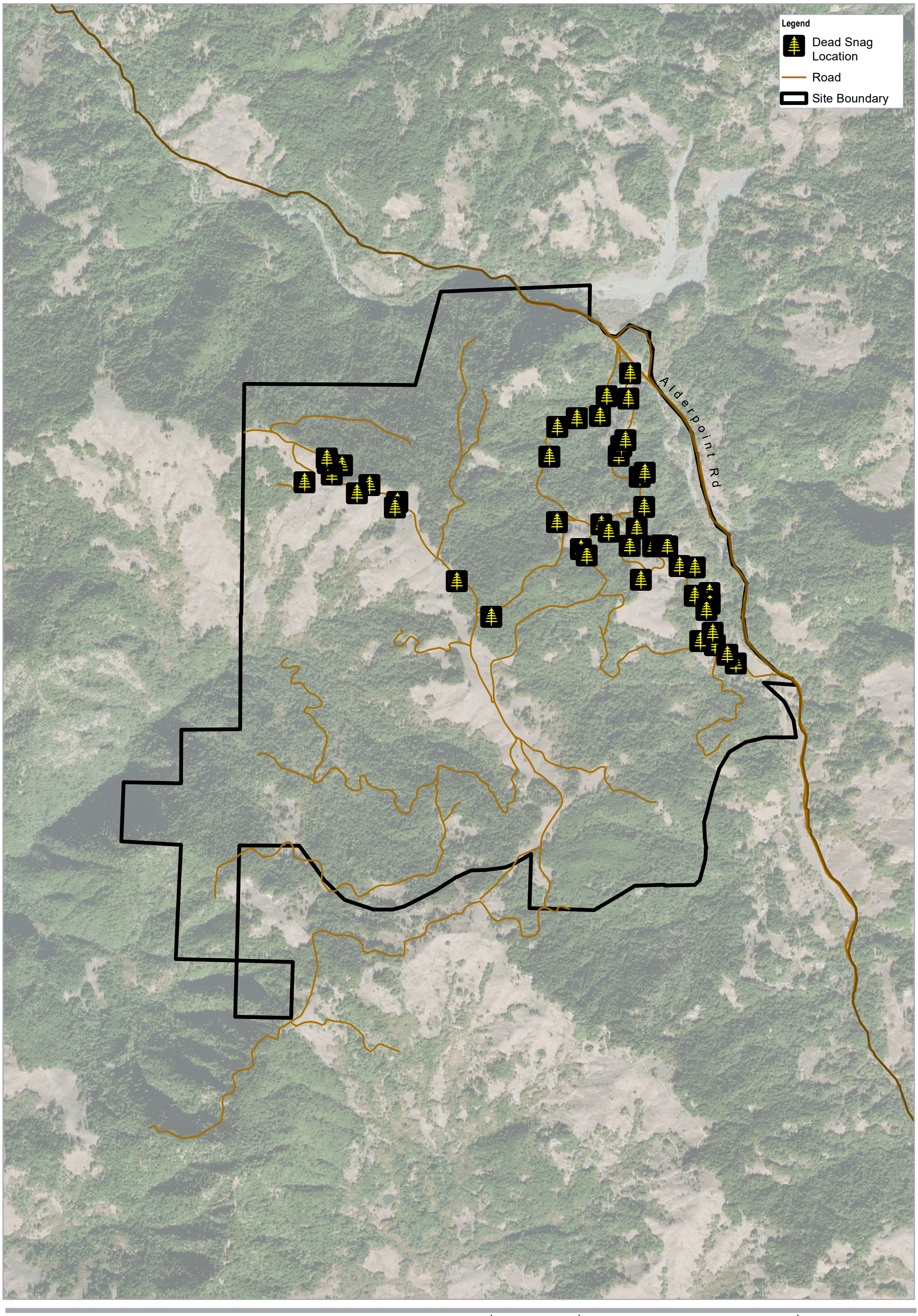
Northern Spotted Owl Activity
Daytime Survey Routes and Spot Calls

Project No. **11185843**
Revision No. **-**
Date **December 2019**

FIGURE 12

G:\111\11185843 Hum Sun Farms Development\08-GIS\Maps\Deliverables\Wildlife Report\11185843_WildlifeReport_012_SpottedOwlActivityDaytimeSurveyRoutesAndSpotCalls.mxd
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Hum Sun Farms
Wildlife Report

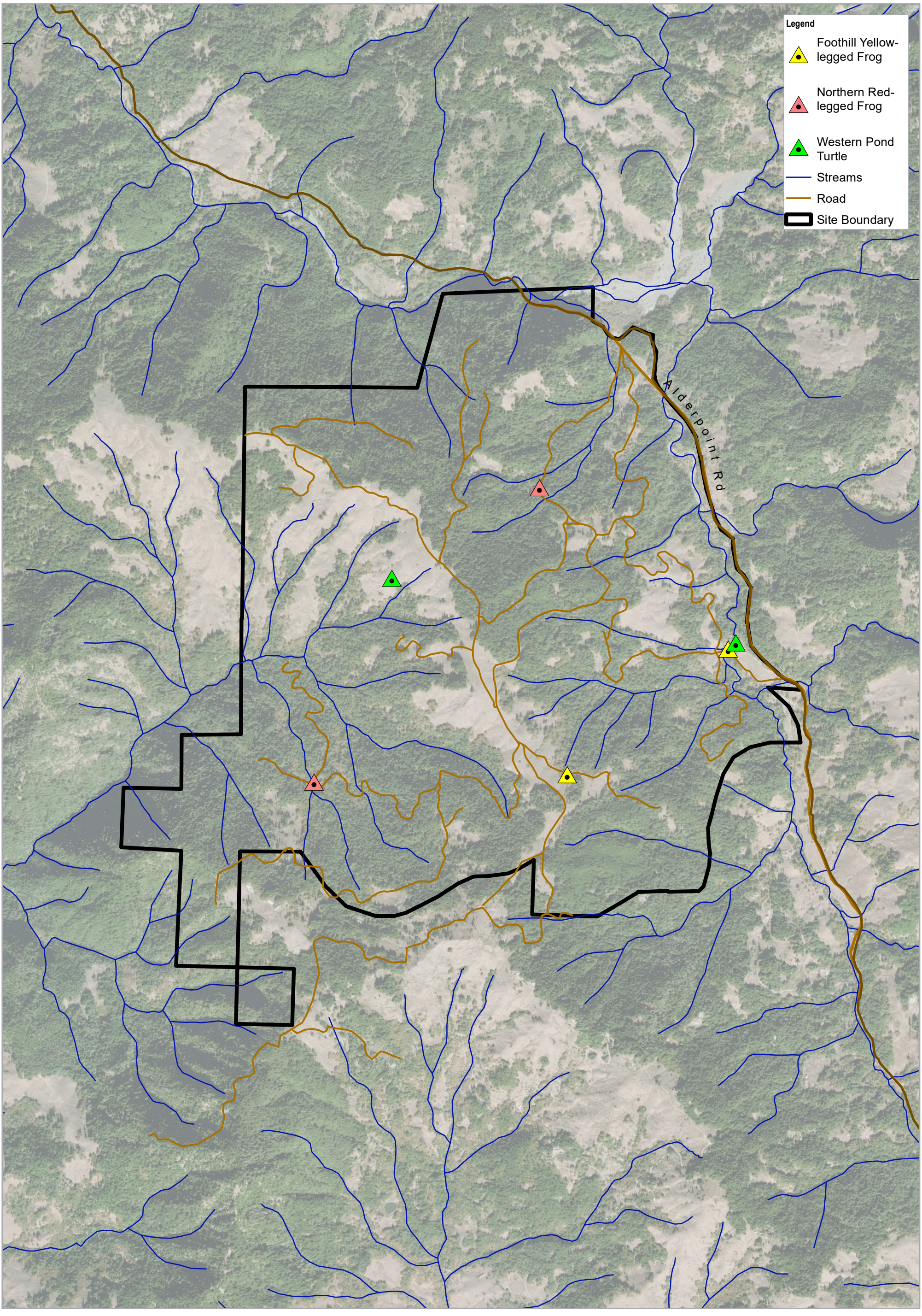
Wildlife Habitat Features

Project No. **11185843**
Revision No. **-**
Date **December 2019**

FIGURE 13

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Print date: 23 Dec 2019 - 16:59

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Hum Sun Farms
Wildlife Report

Special Status Reptile and Amphibian Observations

Project No. **11185843**
Revision No. **-**
Date **December 2019**

FIGURE 14

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Print date: 02 Jan 2020 - 12:10

Data source: ESRI World Basemap Imagery

Appendix B – CNDDB, IPaC, CNPS, NMFS, Combined Database Results Table

Appendix C – Mammalian Species Observed Within the PSB

Table C.1. List of Terrestrial Mammal Species Detected Within the PSB

Common Name	Scientific Name	Animal Encountered	Captured in Photos	Sign Found
Coyote	*Canis latrans*	No	Yes	Yes (scat and tracks)
North American Porcupine	*Erithizon dorsatum*	No	Yes	No
Northern Flying Squirrel	*Glaucomys sabrinus*	Yes	No	No
Black-tailed Jackrabbit	*Lepus californicus*	Yes	No	Yes (scat)
Bobcat	*Lynx rufus*	Yes	Yes	Yes (scat)
Striped Skunk	*Mephitis mephitis*	Yes	No	No
Dusky-footed Woodrat	*Neotoma fuscipes*	No	No	Dens
Columbian Black-tailed Deer	*Odocoileus hemionus columbianus*	Yes	Yes	Yes (scat and tracks)
Raccoon	*Procyon lotor*	No	Yes	No
Mountain Lion	*Puma concolor*	Yes	No	Yes (scat)
Western Gray Squirrel	*Sciurus griseus*	Yes	No	No
Feral Pig	*Sus scrofa*	No	Yes	Yes (tracks and wallows)
Brush Rabbit	*Sylvilagus bachmani*	Yes	No	Yes (scat)
Gray Fox	*Urocyon cinereoargenteus*	No	Yes	Yes
Black Bear	*Ursus americanus*	No	Yes	Yes (scat and tracks)
Douglas Squirrel	*Tamiasciurus douglasii*	Yes	No	No

Table C.2 List of Bat Species Observed Within the PSB

Common Name	Scientific Name	4-Letter Code	Special Status
California Myotis	*Myotis californicus*	MYCA	None
Western Red Bat	*Lasiurus blossevillii*	LABL	CDFW SSC
Brazilian (aka Mexican) Free-tailed Bat	*Tadarida brasiliensis*	TABR	None
Little Brown Bat	*Myotis lucifugus*	MYLU	None
Long-eared Myotis	*Myotis evotis*	MYEV	Western Bat Working Group Medium Priority
Big Brown Bat	*Eptesicus fuscus*	EPFU	None
Western Small-footed Myotis	*Myotis ciliolabrum*	MYCI	Western Bat Working Group Medium Priority
Silver-haired Bat	*Lasionycteris noctivagans*	LANO	Western Bat Working Group Medium Priority
Yuma Myotis	*Myotis yumanensis*	MYYU	Western Bat Working Group Medium Priority

Table C.3 Seasonality of Bat Detections

	Month			
Species	May	June	July	August
MYCA	X	X	X	0
LABL	X	0	0	0
TABR	X	0	0	0
MYLU	0	X	0	0
MYEV	0	X	0	0
EPFU	0	X	X	0
MYCI	0	X	0	0
LANO	0	X	X	X
MYYU	0	X	0	0
X = detected 0 = not detected				

Appendix D – Wildlife Camera Trap Highlighted Photographs

Appendix E – Avian Species Observed Within the PSB

Table E.1 List of Avian Breeding codes, Associated Bird Behavior, and Breeding Status

Breeding Rank	Breeding Code	Description	Breeding Status
1	N	Active nest	Breeding
2	M	Carrying nesting material	Breeding
3	F	Carrying food or fecal sac	Breeding
4	D	Distraction display/feigning	Breeding
5	L	Local young fed by parents	Breeding
6	Y	Local young incapable of sustained flight	Breeding
7	C	Copulation or courtship observed	Breeding
8	T	Territorial behavior	Unconfirmed
9	S	Territorial song or drumming heard	Unconfirmed
10	E	Encountered in study area	Unconfirmed
11	O	Encountered flying over study area	Unconfirmed

Table E.2 List of Avian Species Observed Within the PSB

AOU Code	Common Name	Scientific Name	Special Status	Activity Code
ANHU	Anna's Hummingbird	*Calypte anna*	MBTA Protected	T
TUVU	Turkey Vulture	*Cathartes aura*	MBTA Protected	O
SSHA	Sharp-shinned Hawk	*Accipiter striatus*	CDFW WL (nesting)	E
COHA	Cooper's Hawk	*Accipiter cooperii*	CDFW WL (nesting)	T
RTHA	Red-tailed Hawk	*Buteo jamaicensis*	MBTA Protected	E
RSFL	Northern Flicker	*Colaptes auratus*	MBTA Protected	E
PSFL	Pacific-slope Flycatcher	*Empidonax difficilis*	MBTA Protected	C
STJA	Steller's Jay	*Cyanocitta stelleri*	MBTA Protected	M
CASJ	California Scrub-Jay	*Aphelocoma californica*	MBTA Protected	C
CORA	Common Raven	*Corvus corax*	MBTA Protected	E
CBCH	Chestnut-backed Chickadee	*Poecile rufescens*	MBTA Protected	M
RBNU	Red-breasted Nuthatch	*Sitta canadensis*	MBTA Protected	S
WBNU	White-breasted Nuthatch	*Sitta carolinensis*	MBTA Protected	S
RCKI	Ruby-crowned Kinglet	*Regulus calendula*	MBTA Protected	S
AMRO	American Robin	*Turdus migratorius*	MBTA Protected	L
HOFI	House Finch	*Haemorhous mexicanus*	MBTA Protected	E
PISI	Pine Siskin	*Spinus pinus*	MBTA Protected	O
DEJU	Dark-eyed Junco	*Junco hyemalis*	MBTA Protected	L
WEME	Western Meadowlark	*Sturnella neglecta*	MBTA Protected	S
OCWA	Orange-crowned Warbler	*Oreothlypis celata*	MBTA Protected	S
AUWA	Yellow-rumped Warbler (Audubon's)	*Setophaga coronata*	MBTA Protected	S
WETA	Western Tanager	*Piranga ludoviciana*	MBTA Protected	C
CAVI	Cassin's Vireo	*Vireo cassinii*	MBTA Protected	S
HUVI	Hutton's Vireo	*Vireo huttoni*	MBTA Protected	C
BHGR	Black-headed Grosbeak	*Pheucticus melanocephalus*	MBTA Protected	C

Table E.2 List of Avian Species Observed Within the PSB

AOU Code	Common Name	Scientific Name	Special Status	Activity Code
LAZB	Lazuli Bunting	*Passerina amoena*	MBTA Protected	C
WAVI	Warbling Vireo	*Vireo gilvus*	MBTA Protected	S
CAQU	California Quail	*Callipepla californica*	MBTA Protected	L
SPTO	Spotted Towhee	*Pipilo maculatus*	MBTA Protected	L
RSHA	Red-shouldered Hawk	*Buteo lineatus*	MBTA Protected	E
WITU	Wild Turkey	*Meleagris gallopavo*	MBTA Protected	Y
SPOW	Northern Spotted Owl	*Strix occidentalis*	FT, ST, CDFW SSC	E
SBOH	Sparred Owl	*Strix sp.*	MBTA Protected	E
BDOW	Barred Owl	*Strix varia*	MBTA Protected	E
NOPO	Northern Pygmy-owl	*Glaucidium gnoma*	MBTA Protected	E
WESO	Western Screech-Owl	*Megascops kennicottii*	MBTA Protected	E
NSWO	Northern Saw-whet Owl	*Aegolius acadicus*	MBTA Protected	E
FLOW	Flammulated Owl	*Psiloscops flammeolus*	CDFW Special Animals List (nesting)	E
SWTH	Swainson's Thrush	*Catharus ustulatus*	MBTA Protected	Y
PAWR	Pacific Wren	*Troglodytes pacificus*	MBTA Protected	E
CHSP	Chipping Sparrow	*Spizella passerina*	MBTA Protected	E
OSFL	Olive-sided Flycatcher	*Contopus cooperi*	CDFW SSC	E
WIWA	Wilson's Warbler	*Cardellina pusilla*	MBTA Protected	C
SOGR	Sooty Grouse	*Dendragapus fuliginosus*	MBTA Protected	S
AMCR	American Crow	*Corvus brachyrhynchos*	MBTA Protected	E
WEBL	Western Bluebird	*Sialia mexicana*	MBTA Protected	L
ACWO	Acorn Woodpecker	*Melanerpes formicivorus*	MBTA Protected	E
NRWS	Northern Rough-winged Swallow	*Stelgidopteryx serripennis*	MBTA Protected	O
WEWP	Western Wood-Peewee	*Sturnella neglecta*	MBTA Protected	E
HAWO	Hairy Woodpecker	*Dryobates villosus*	MBTA Protected	E
BRCR	Brown Creeper	*Certhia americana*	MBTA Protected	E
GCKI	Golden-crowned Kinglet	*Regulus satrapa*	MBTA Protected	S
BLPH	Black Phoebe	*Sayornis nigricans*	MBTA Protected	L
RUFU/ALHU	Rufous/Allen's Hummingbird	*Selasphorus sp.*	RUHU: USFWS BCC, CDFW Special Animals List (nesting)	E
WCSP	White-crowned Sparrow	*Zonotrichia leucophrys*	MBTA Protected	E
SOSP	Song Sparrow	*Melospiza melodia*	MBTA Protected	L
MODO	Mourning Dove	*Zenaida macroura*	MBTA Protected	E
BTPI	Band-tailed Pigeon	*Patagioenas fasciata*	MBTA Protected	O
BUSH	Bushtit	*Psaltriparus minimus*	MBTA Protected	E
CALT	California Towhee	*Melozone crissalis*	MBTA Protected	L
LEGO	Lesser Goldfinch	*Spinus psaltria*	MBTA Protected	E
NOGO	Northern Goshawk	*Accipiter gentilis*	CDFW SSC	T
PIWO	Pileated Woodpecker	*Dryocopus pileatus*	MBTA Protected	E
AMKE	American Kestrel	*Falco sparverius*	MBTA Protected	E

SE: State listed as Endangered

ST: State listed as Threatened

SCE: State candidate for listing as Endangered

SCT: State candidate for listing as Threatened

Table E.2 List of Avian Species Observed Within the PSB

AOU Code	Common Name	Scientific Name	Special Status	Activity Code

SCD: State candidate for delisting

FE: Federally listed as Endangered

FT: Federally listed as Threatened

FPE: Federally proposed for listing as Endangered

FPT: Federally proposed for listing as Threatened

FPD: Federally proposed for delisting

FC: Federal candidate species (former Category 1 candidates)

MBTA Protected: Protected under the federal Migratory Bird Treaty Act

CDF S (California Department of Forestry and Fire Protection Sensitive): those species that warrant special protection during timber operations.

CDFW Special Animals List: "Special Animals" is a broad term used to refer to all the animal taxa tracked by the Department of Fish and Wildlife's California Natural Diversity Database (CNDDB), regardless of their legal or protection status.

CDFW FP (California Department of Fish and Wildlife Fully Protected): This classification was the State of California's initial effort to identify and provide additional protection to those animals that were rare or faced possible extinction. Lists were created for fish, amphibians and reptiles, birds and mammals. Most of the species on these lists have subsequently been listed under the state and/or federal endangered species acts.

BLM S (Bureau of Land Management Sensitive): (1) species listed or proposed for listing under the Endangered Species Act (ESA), and (2) species requiring special management consideration to promote their conservation and reduce the likelihood and need for future listing under the ESA, which are designated as Bureau sensitive by the State Director(s). All Federal candidate species, proposed species, and delisted species in the 5 years following delisting will be conserved as Bureau sensitive species."

CDFW SSC (California Department of Fish and Wildlife Species of Special Concern): It is the goal and responsibility of the Department of Fish and Wildlife to maintain viable populations of all native species. To this end, the Department has designated certain vertebrate species as "Species of Special Concern" because declining population levels, limited ranges, and/or continuing threats have made them vulnerable to extinction. The goal of designating species as "Species of Special Concern" is to halt or reverse their decline by calling attention to their plight and addressing the issues of concern early enough to secure their long-term viability.

CDFW WL (California Department of Fish and Wildlife Watch List): The CDFW maintains a list consisting of taxa that were previously designated as "Species of Special Concern" but no longer merit that status, or which do not yet meet SSC criteria, but for which there is concern and a need for additional information to clarify status.

USFWS BCC (U.S. Fish and Wildlife Service Birds of Conservation Concern): The goal of the Birds of Conservation Concern 2008 report is to accurately identify the migratory and non-migratory bird species (beyond those already designated as Federally Threatened or Endangered) that represent our highest conservation priorities and draw attention to species in need of conservation action. This report is available at: http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php.

USFS S (U.S. Forest Service Sensitive): Those plant and animal species identified by a Regional Forester for which population viability is a concern, as evidenced by significant current or predicted downward trends in population numbers or density and/or significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution."

Appendix F – Reptile and Amphibian Species Observed Within the PSB

Common Name	Latin Name	Special Status
Pacific Giant Salamander	*Dicamptodon tenebrosus*	--
Black Salamander	*Aneides flavipunctatus*	--
Arboreal Salamander	*Aneides lugubris*	--
Ensatina	*Ensatina eschscholtzii*	--
Pacific Chorus Frog	*Pseudacris regilla*	--
Northern Red-legged Frog	*Rana aurora*	SSC
Foothill Yellow-legged frog	*Rana boylii*	SSC (formerly CESA-candidate)
Bullfrog	*Rana catesbeiana*	Invasive/non-native
Western Pond Turtle	*Actinemys marmorata*	SSC
Western Fence Lizard	*Sceloporus occidentalis*	--
Western Skink	*Plestiodon skiltonianus*	--
Southern Alligator Lizard	*Elgaria multicarinata*	--
Gopher Snake	*Pituophis catenifer*	--
Common Garter Snake	*Thamnophis sirtalis*	--

Appendix G – Sonoma Tree Vole Nest Photographs



about GHD

GHD is one of the world's leading professional services companies operating in the global markets of water, energy and resources, environment, property and buildings, and transportation. We provide engineering, environmental, and construction services to private and public sector clients.

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Golden Eagle Survey Report

Humboldt County APNs:
217-055-022, 217-051-001, 217-062-003, 217-052-001, 217-253-001, 217-214-001, 217-061-001
Blocksburg, California

Prepared for:
Hum Sun LLC

Prepared by:
Michelle McKenzie
Natural Resources Management Corporation
1434 Third Street
Eureka, CA 95501

February 2021

Introduction

The purpose of this report is to provide results for Golden Eagle (*Aquila chrysaetos)* surveys conducted at the above listed APNs for Hum Sun LLC, in 2021. The Golden Eagle (GOEA) is a Fully Protected species on the Watch List for the California Department of Fish and Wildlife (CDFW), and a Bird of Conservation Concern for the US Fish and Wildlife Service (USFWS). Surveys were conducted as required by Humboldt County Planning and Building Department, Cannabis Service Division. There is optimal GOEA foraging and nesting habitat on the project parcels. According the CDFW historic records for wildlife, the California Natural Diversity Database (CNDDB), the nearest known historic GOEA nest is located approximately 4 miles west of the project parcels, adjacent to the mainstem Eel River (Figure 1).

Project Site

The project parcel is located north of the community of Blocksburg, in Humboldt County, California (Figure 1). This ranch currently, and historically, supports cattle grazing. The legal description for the parcels is T02S, R01E, Section 28, HB&M. The site address 30855 Alderpoint Drive, Blocksburg, California.

Field Surveys

Wildlife biologist Thomas Kirk conducted GOEA surveys at 2 survey locations (points) that ensured visual coverage of at least a one-mile radius around the project areas on the parcels. In general, the 'viewshed' covered by the survey station location was greater than one mile (Figure 2). Due to the exceptionally clear days during surveying the highest peaks in all directions were detectable. To avoid missing small areas of view obscured by nearby trees, and to maintain alertness, the surveyor would slowly walk to alternate views within 50 meters of the GPS station location over the course of the survey period. This method, described in Pagel et al, is accepted as a way to achieve complete inventory of all potential habitat.

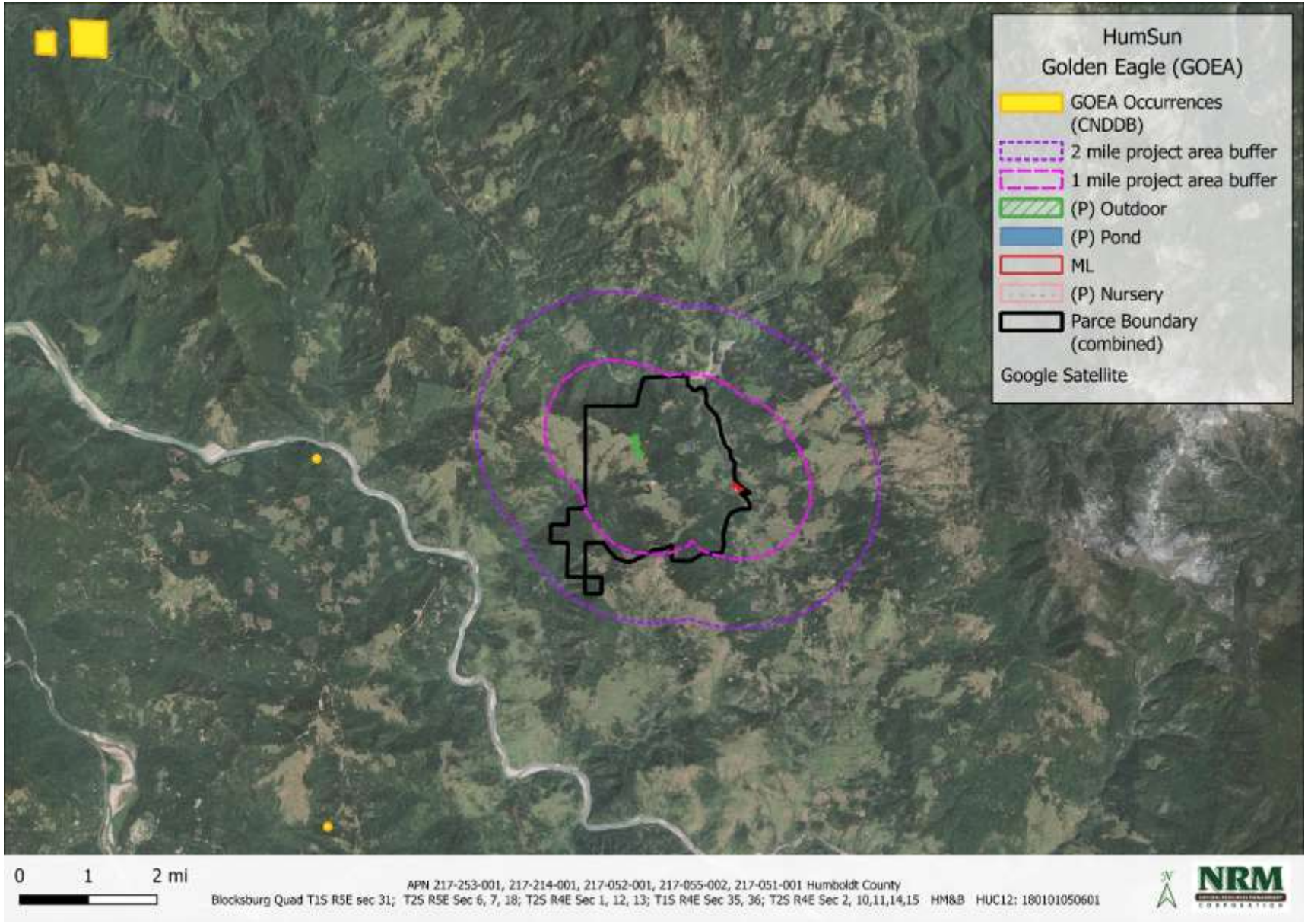


Figure 1. Vicinity map with nearest locations of historic CNDDB records for Golden Eagle

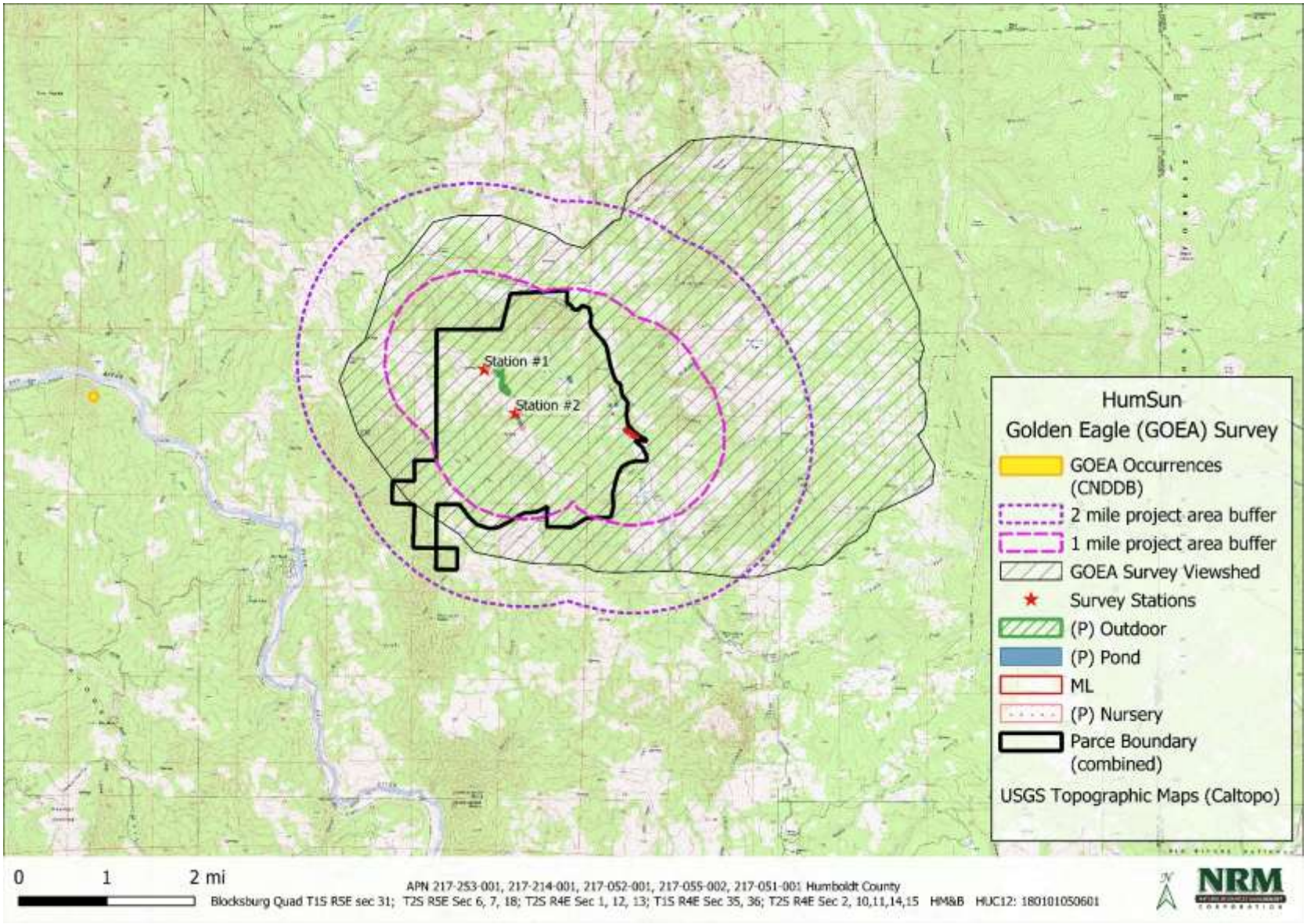


Figure 2. NRM GOEA survey station map with viewshed extent

Adult GOEA are most conspicuous when performing aerial courtship displays; eagle pairs tend to become more secretive once incubation of eggs begins (Driscoll 2010, Pagel et al 2010). In California, courtship at territories is expected to start from late December (Pagel et al) to January (Driscoll), and continue through mid-February. In correspondence with the Humboldt County Planning Department about a similar project, it was determined that their recommendation of 2 surveys during the courtship season to determine occupancy would be adequate.

In 2021, NRM conducted 2 surveys each at 2 stations, for a duration of 4 hours each. This results in 16 total survey hours. Surveys were performed at Station 1 on February 4 and February 17, and at Station 2 on February 5 and February 16. Surveys were conducted in the morning and early afternoon, during periods of dry weather (Appendix A).

A project on adjacent parcels requiring GOEA surveys is located east of these project parcels, with the one-mile buffer of both parcels overlapping in the Larabee Creek watershed (Figure 3). This shared viewshed will provide coverage of this watershed that survey points on the Hum Sun parcels did not, as well provide additional GOEA survey data for the general area.

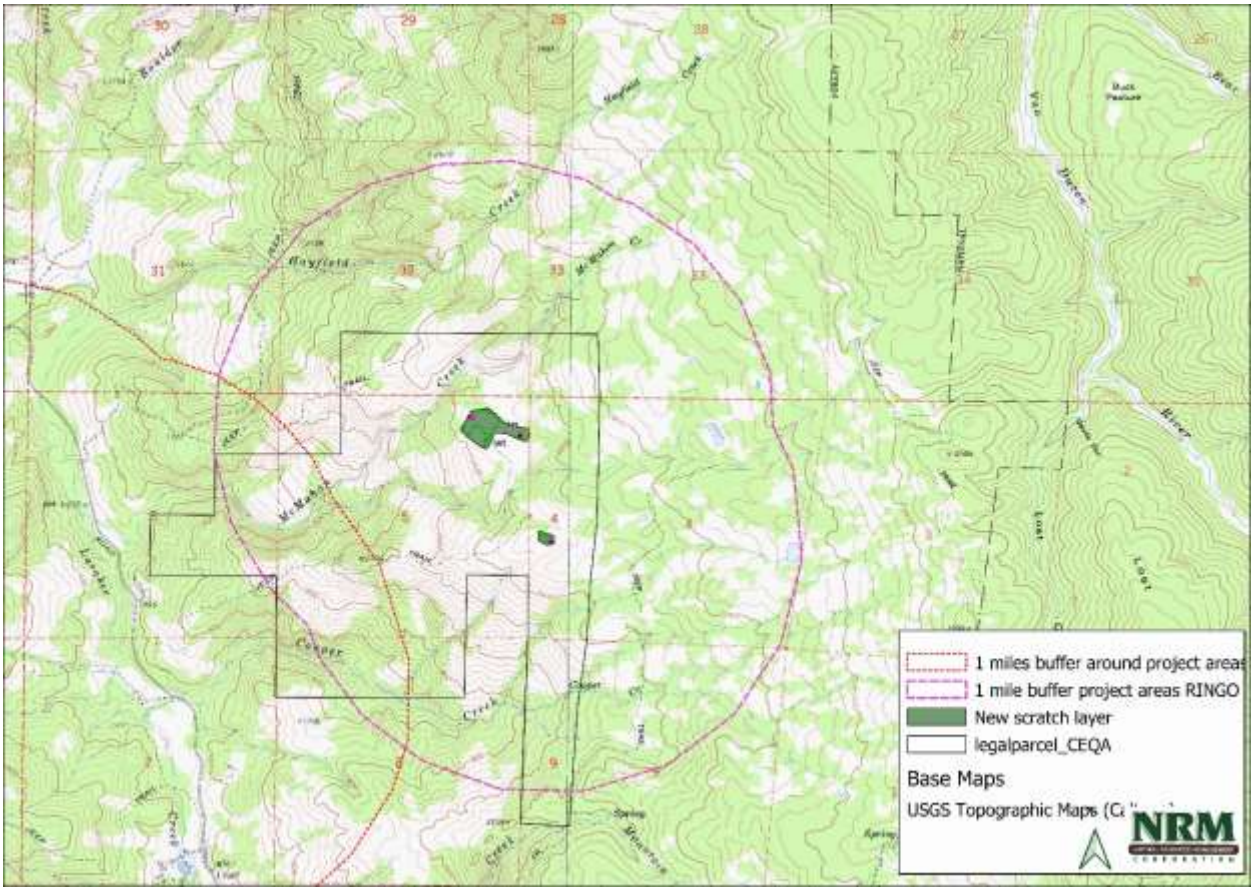


Figure 3. Neighboring parcels with 1-mile buffer around Hum Sun (left) encompassing Larabee Creek watershed

In 2019, GHD performed surveys for eagles at 4 stations of varying durations, with no detections (Figure 4). On March 18, there were 2 stations surveyed for 4 hours from mid-morning to late afternoon. On April 11, May 10, May 29, and June 11, observational stationary surveys were conducted for 2 to 3 hours; it is unclear at which stations. These surveys were conducted during nestling season when adults are less conspicuous, as opposed to courtship season.

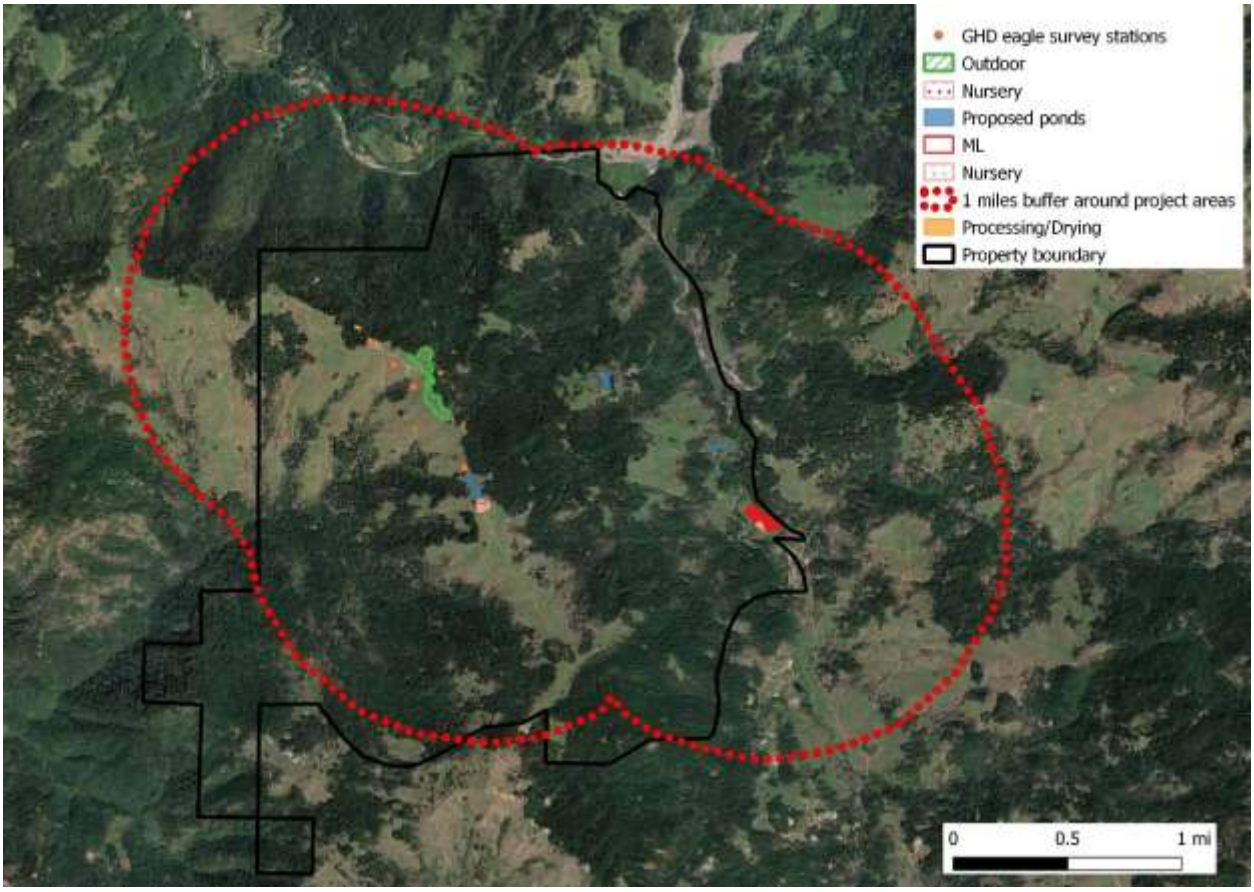


Figure 4. GOEA survey stations from previous surveys in 2019 (GHD)

Results and Discussion

No Golden Eagles were detected during the surveys conducted for this species at Hum Sun Ranch, including GHD (2019) and NRM (2021). Additionally no Golden Eagles were detected during the courtship surveys in 2021 on the adjacent project parcel. The most commonly observed species was the red-tailed hawk (RTHA), which was observed pair soaring on several occasions, suggesting proper timing for raptor courtship.



Photo 1. Looking northwest from Station 1



Photo 2. Looking west towards the Kings Range from Station 1



Photo 3. Looking east from Station 2

Literature Cited

Driscoll, D.E. 2010. Protocol for golden eagle occupancy, reproduction, and prey population assessment. American Eagle Research Institute, AZ. 55pp.

Pagel, J.E., D.M. Whittington, and G.T. Allen. 2010. Interim Golden Eagle technical guidance: inventory and monitoring protocols; and other recommendations in support of eagle management and permit issuance. Division of Migratory Bird Management, US Fish and Wildlife Service. 26pp.

Appendix A. GOEA Survey Forms

NRM

Golden Eagle (GOEA) Breeding Area Occupancy Survey Form

American Eagle Research Institute Survey Protocol (Driscoll 2010):
At least 4 surveys, 4 separate days, for 4 hours each
During courtship flight/pair bonding/pre-egg laying: January-February
Surveys are conducted after 1000 and located at vantage points for a 2-mile radius around the project area

Additional Information:

Surveys to determine occupancy are best conducted during courtship and before egg laying (February-March), when adults become more secretive. Courtship flight consists of 'pair soaring' around the breeding area, and 'undulations' of U-shaped flights (deep drop with folded wings/rapid upward climb). It is common for GOEA to move among alternate nests in different years.

Survey the area using as many points necessary to ensure coverage of the entire radius, certain to include points providing observer the ability to scan from the highest elevation possible and view the largest percentage of sky. It is important to scan ridge tops, just below ridgetops, and open sky for raptors utilizing thermals.

Vehicles must be parked under tree canopy to provide aerial cover. Surveyor should wear clothing to match surroundings and conceal survey equipment with camouflage material.

Date: 2/4/2021	**Surveyor:** T. Kirk	**SURVEY #:** 1
Wind Speed/Direction: 0-5mph	**% Cloud Cover:** 30 high clouds	**Temperature (F):** 55-65
Survey START: 1045	**Survey FINISH:** 1445	**Survey TOTAL:** 4hr
Area (USGS 7.5 topo map/Client): Blocksburg / Hum Sun		
Station #1	**DESCRIPTION** (Mark location in GPS and include approximate mileage or landmark) Past hairpin to highest point on parcel near water tanks	
	RESULTS (Include all raptor or vulture species observed, particularly those utilizing thermals) 1046: AMKE flew over forest to S 1116: RTHA soaring thermals to W 1150: wind picking up out of W 10-15mph 1210: wind gusts up to 20mph 1254: RTHA soaring above ridge to SE 1306: RTHA calling with pileated woodpecker from forest to NW 1316: RTHA that was calling now seen/positive ID 1331: cloud cover reduced to 10% high clouds 1350: AMKE landed in nearby tree 1400 AMKE observed through scope approximately ½ mile to N Other species: common raven pileated woodpecker western bluebird (flock of 6)	

NRM

Golden Eagle (GOEA) Breeding Area Occupancy Survey Form

American Eagle Research Institute Survey Protocol (Driscoll 2010):
At least 4 surveys, 4 separate days, for 4 hours each
During courtship flight/pair bonding/pre-egg laying: January-February
Surveys are conducted after 1000 and located at vantage points for a 2-mile radius around the project area

Additional Information:

Surveys to determine occupancy are best conducted during courtship and before egg laying (February-March), when adults become more secretive. Courtship flight consists of 'pair soaring' around the breeding area, and 'undulations' of U-shaped flights (deep drop with folded wings/rapid upward climb). It is common for GOEA to move among alternate nests in different years.

Survey the area using as many points necessary to ensure coverage of the entire radius, certain to include points providing observer the ability to scan from the highest elevation possible and view the largest percentage of sky. It is important to scan ridge tops, just below ridgetops, and open sky for raptors utilizing thermals.

Vehicles must be parked under tree canopy to provide aerial cover. Surveyor should wear clothing to match surroundings and conceal survey equipment with camouflage material.

Date: 2/5/2021	**Surveyor:** T. Kirk	**SURVEY #:** 1
Wind Speed/Direction: 0-5 mph	**% Cloud Cover:** 10 high clouds; valley fog	**Temperature (F):** 55+
Survey START: 1100	**Survey FINISH:** 1500	**Survey TOTAL:** 4hr
Area (USGS 7.5 topo map/Client): Blocksburg / Hum Sun		
Station #2	**DESCRIPTION** (Mark location in GPS and include approximate mileage or landmark) At hairpin / GPS'd	
	RESULTS (Include all raptor or vulture species observed, particularly those utilizing thermals) 1135: AMKE flew overhead 1140: fog burning off 1155: RTHA soaring N to S 1209: RTHA soaring S to N 1219: RTHA pair flying S to N 1319: RTHA pair riding thermals to N 1330: winds picking up out of N 10-25 mph 1402: soaring pinpoint of a raptor disappearing over ridge to S 1412: RTHA (3) soaring thermals over Eel River corridor 1420: lost them in the sun 1425: RTHA flying low out of S 1445-1450: RTHA (3) picked up again in scope Other species: common raven Stellar's jay western bluebird (flock of 8)	

NRM

Golden Eagle (GOEA) Breeding Area Occupancy Survey Form

American Eagle Research Institute Survey Protocol (Driscoll 2010):
At least 4 surveys, 4 separate days, for 4 hours each
During courtship flight/pair bonding/pre-egg laying: January-February
Surveys are conducted after 1000 and located at vantage points for a 2-mile radius around the project area

Additional Information:

Surveys to determine occupancy are best conducted during courtship and before egg laying (February-March), when adults become more secretive. Courtship flight consists of 'pair soaring' around the breeding area, and 'undulations' of U-shaped flights (deep drop with folded wings/rapid upward climb). It is common for GOEA to move among alternate nests in different years.

Survey the area using as many points necessary to ensure coverage of the entire radius, certain to include points providing observer the ability to scan from the highest elevation possible and view the largest percentage of sky. It is important to scan ridge tops, just below ridgetops, and open sky for raptors utilizing thermals.

Vehicles must be parked under tree canopy to provide aerial cover. Surveyor should wear clothing to match surroundings and conceal survey equipment with camouflage material.

Date: 2/16/2021	**Surveyor:** T. Kirk	**SURVEY #:** 2
Wind Speed/Direction: 10mph/N	**% Cloud Cover:** 40	**Temperature (F):** 50-55
Survey START: 1115	**Survey FINISH:** 1515	**Survey TOTAL:** 4hr
Area (USGS 7.5 topo map/Client): Blocksburg / Hum Sun		

Station #2	**DESCRIPTION** (Mark location in GPS and include approximate mileage or landmark) see station map: parked in trees, hiked up to hairpin
	RESULTS (Include all raptor or vulture species observed, particularly those utilizing thermals) 1121: RTHA soaring over meadow S to W 1136: RTHA in thermals over ridge to W 1157: RTHA pair circling, then flying to N 1202: RTHA flying to N 1213: RTHA soaring to W 1230: wind picking up to 15 mph gusts 1304: RTHA pair flying over ridge to N 1313: RTHA flying S to N 1327: COHA (Cooper's hawk) flying N to S, disappearing over ridge 1335: cloud cover down to 15% 1337: TUVU (turkey vulture) soaring overheard to NE 1452: TUVU flying S to N; cloud cover to 50%, wind gusts to 20 mph Other species: common raven American robin Stellar's jay northern flicker

NRM

Golden Eagle (GOEA) Breeding Area Occupancy Survey Form

American Eagle Research Institute Survey Protocol (Driscoll 2010):

At least 4 surveys, 4 separate days, for 4 hours each

During courtship flight/pair bonding/pre-egg laying: January-February

Surveys are conducted after 1000 and located at vantage points for a 2-mile radius around the project area

Additional Information:

Surveys to determine occupancy are best conducted during courtship and before egg laying (February-March), when adults become more secretive. Courtship flight consists of 'pair soaring' around the breeding area, and 'undulations' of U-shaped flights (deep drop with folded wings/rapid upward climb). It is common for GOEA to move among alternate nests in different years.

Survey the area using as many points necessary to ensure coverage of the entire radius, certain to include points providing observer the ability to scan from the highest elevation possible and view the largest percentage of sky. It is important to scan ridge tops, just below ridgetops, and open sky for raptors utilizing thermals.

Vehicles must be parked under tree canopy to provide aerial cover. Surveyor should wear clothing to match surroundings and conceal survey equipment with camouflage material.

Date: 2/17/2021	**Surveyor:** T. Kirk	**SURVEY #:** 2
Wind Speed/Direction: 0-5 mph	**% Cloud Cover:** 50 high clouds	**Temperature (F):** 55-59
Survey START: 1100	**Survey FINISH:** 1500	**Survey TOTAL:** 4hr
Area (USGS 7.5 topo map/Client): Blocksburg / Hum Sun		

Station #1	**DESCRIPTION** (Mark location in GPS and include approximate mileage or landmark) see station map; past hair pin to highest point near water tanks plus 50m radius
	RESULTS (Include all raptor or vulture species observed, particularly those utilizing thermals) 1215: AMKE flying, landed in snag to NW 1235: RTHA soaring to E 1236-1242: AMKE perched in nearby tree 1245: RTHA perched in large snag to W 1255: AMKE landed in treetop to S 1318: RTHA perched again in same snag 1324: RTHA took flight, circling high in thermals 1330: TUVU (turkey vultures) (7) circling to E 1333: RTHA (2) circling far to E 1345: wind up to 5-10 mph; TUVU flying to N along ridge 1354: RTHA circling to E 1357: RTHA perched on large snag nearby 1407: AMKE hunting in this meadow 1422: RTHA (2) disappeared over ridge to W 1425: TUVU flying over ridge to E 1426: RTHA over same ridge 1436: TUVU flying E to W Other species: common ravens, Stellar's jay, pileated woodpecker, western bluebird, northern flicker

Appendix 2L

Golden Eagle Survey Report 1

Appendix 2M

Golden Eagle Survey Report 2

Golden Eagle Survey Report

Humboldt County APNs:
217-055-022, 217-051-001, 217-062-003, 217-052-001, 217-253-001, 217-214-001, 217-061-001
Blocksburg, California

Prepared for:
Hum Sun LLC

Prepared by:
Michelle McKenzie and Thomas Kirk
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1434 Third Street
Eureka, CA 95501

March 2022

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CORPORATION

Introduction

The purpose of this report is to provide results for Golden Eagle (*Aquila chrysaetos)* surveys conducted at the above listed APNs for Hum Sun LLC, in 2022. The Golden Eagle (GOEA) is a Fully Protected species on the Watch List for the California Department of Fish and Wildlife (CDFW), and a Bird of Conservation Concern for the US Fish and Wildlife Service (USFWS). Surveys were conducted as required by Humboldt County Planning and Building Department, Cannabis Service Division. There is optimal GOEA foraging and nesting habitat on the project parcels. According the CDFW historic records for wildlife, the California Natural Diversity Database (CNDDB), the nearest known historic GOEA nest is located approximately 4 miles west of the project parcels, adjacent to the mainstem Eel River (Figure 1).

Project Site

The project parcel is located north of the community of Blocksburg, in Humboldt County, California (Figure 1). This ranch currently, and historically, supports cattle grazing. The legal description for the parcels is T02S, R01E, Section 28, HB&M. The site address 30855 Alderpoint Drive, Blocksburg, California.

Field Surveys

There are 2 widely accepted protocols for determining GOEA presence or occupancy, although neither provide detailed methods for project-based surveys for presence in a forested environment, but in general both stress the best time for observation of this species is during courtship season. The Protocol for Golden Eagle Occupancy, Reproduction, and Prey Population Assessment by D. Driscoll for the American Eagle Research Institute (2010) requires 4 surveys "totaling at least 4 hours in duration". We considered this total survey time inadequate, and conducted each survey for a duration of 4 hours, as suggested by The Interim Golden Eagle Technical Guidance: Inventory and Monitoring Protocols; and Other Recommendations in Support of Golden Eagle Management and Permit Issuance by J. Pagel and others, for the US Fish and Wildlife Service (2010), which suggest at least 2 surveys per season.

Wildlife biologists Thomas Kirk and Michelle McKenzie conducted GOEA surveys at 2 survey locations (points) that ensured visual coverage of at least a one-mile radius around the project areas on the parcels. In general, the 'viewshed' covered by the survey station location was greater than one mile (Figure 2). Due to the exceptionally clear days during surveying the highest peaks in all directions were detectable. To avoid missing small areas of view obscured by nearby trees, and to maintain alertness, the surveyor would slowly walk to alternate views within 50 meters of the GPS station location over the course of the survey period. This method, described in Pagel et al, is accepted as a way to achieve complete inventory of all potential habitat.

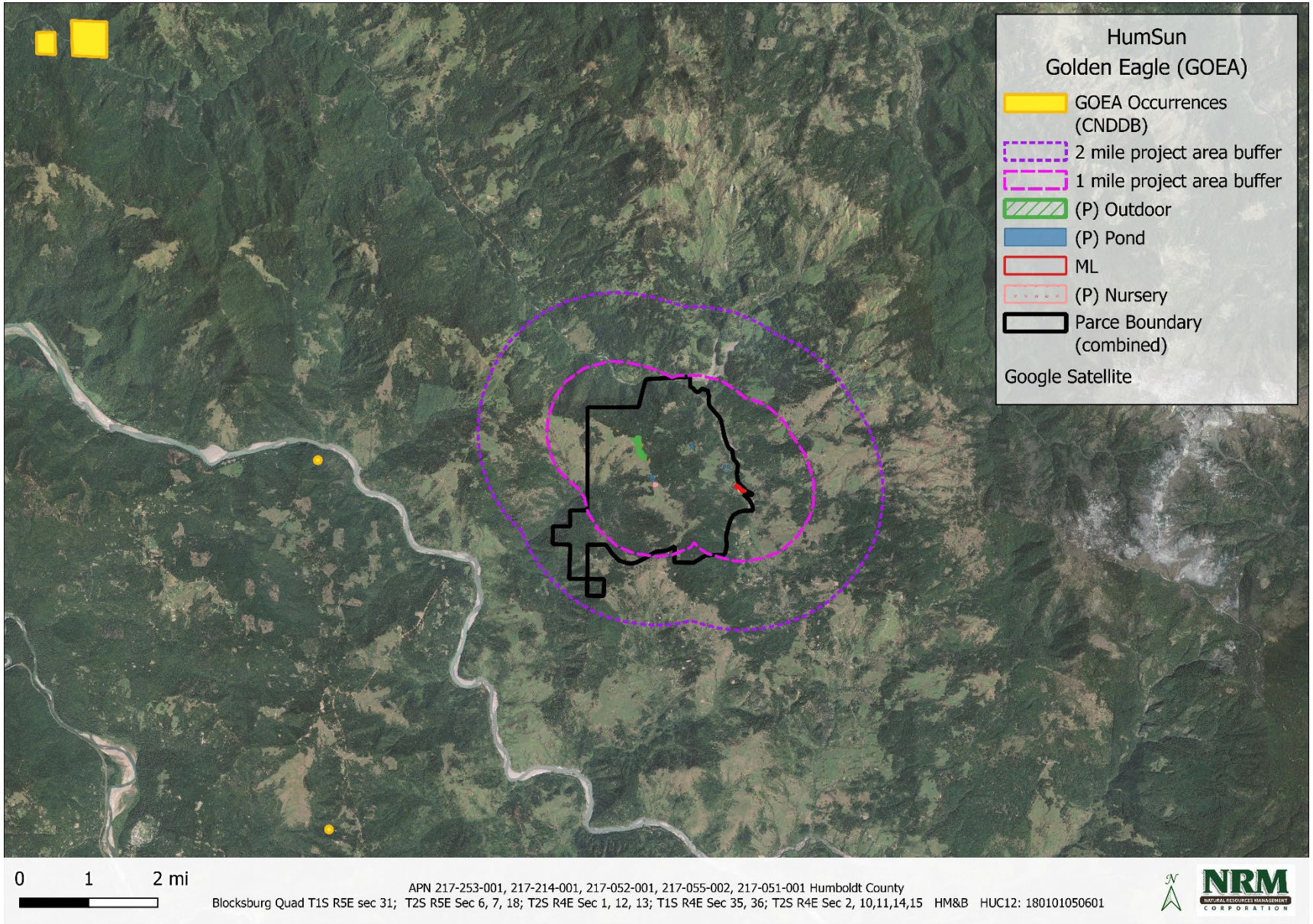


Figure 1. Vicinity map with nearest locations of historic CNDDB records for Golden Eagle

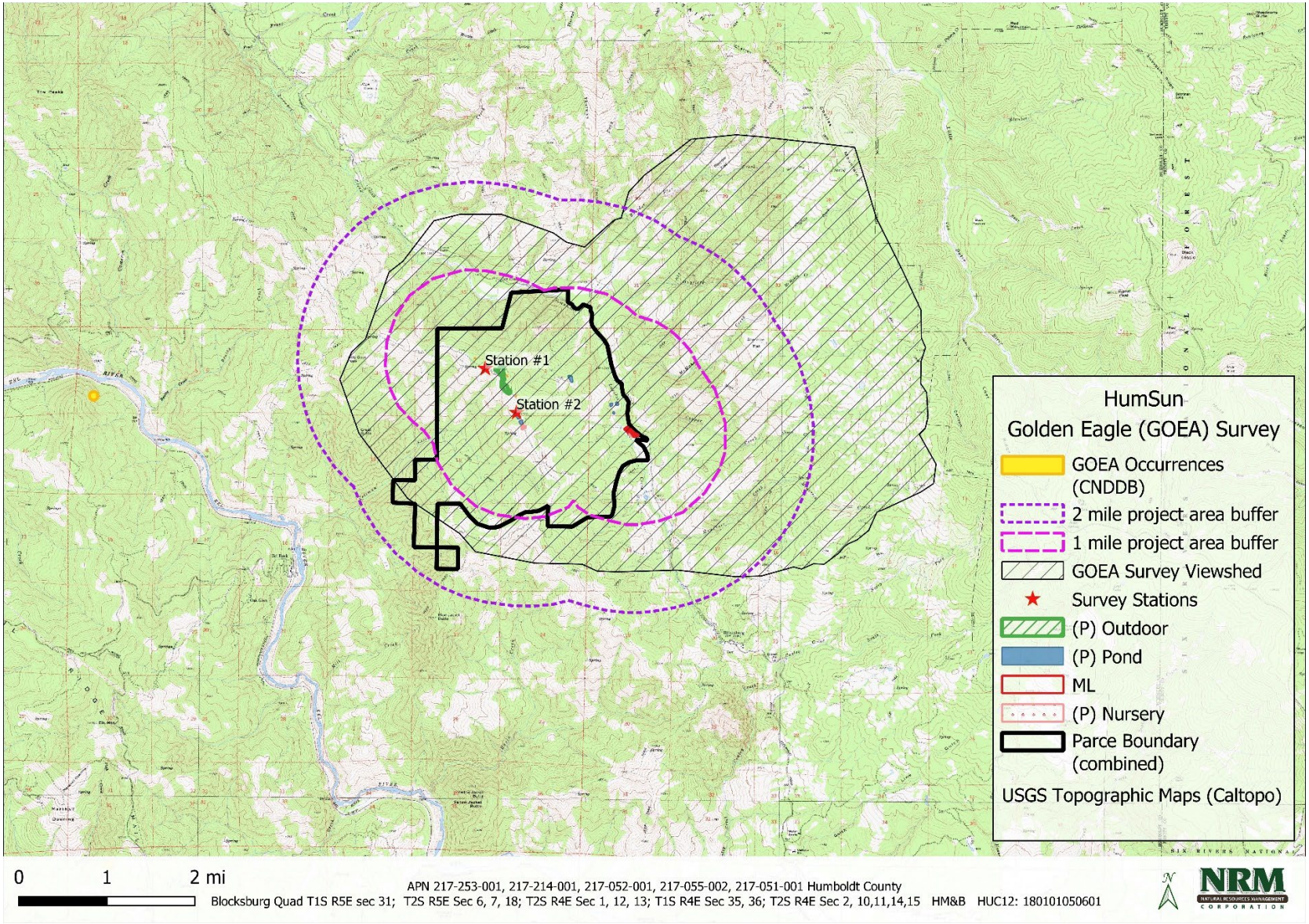


Figure 2. NRM GOEA survey station map with viewshed extent

Adult GOEA are most conspicuous when performing aerial courtship displays; eagle pairs tend to become more secretive once incubation of eggs begins (Driscoll 2010, Pagel et al 2010). In California, courtship at territories is expected to start from late December (Pagel et al) to January (Driscoll), and continue through February. Surveys were conducted per the Driscoll protocol, requiring a total of 4 surveys. In 2021, NRM conducted 2 surveys each at 2 stations, for a duration of 4 hours each. This resulted in 16 total survey hours.

This same effort was expended in 2022, and during the last survey (second survey at Station 1, February 18) an adult GOEA flew over the biologist. Flying from east southeast along the ridge, then circling, riding thermals before disappearing from view to the west (Figures 3, 4), the eagle appeared to simply fly over. Due to this observation, 2 additional surveys were conducted at this station to observe any eagle territorial behavior in the vicinity.

In 2022, surveys were conducted at each station twice, for 4 hours each, with a 7-day interval between. Surveys occurred mid-morning during periods of dry weather (Appendix A). The first survey was at Station 2 on February 10. At this time a large raptor sighting greater than 1 mile from the station was observed, and was noted as a potential GOEA or RTHA. The following day, on February 11, Station 1 was surveyed with no eagle detections. The second set of surveys occurred on February 17 at Station 2, and February 18 at Station 1 (with GOEA detection). Two additional surveys at Station 1 occurred on February 25 and March 7, with no additional GOEA observations. This resulted in a total of 24 survey hours over a period of 4 weeks.

Results and Discussion

There is optimal foraging and nesting habitat present on the parcels for GOEA (Photos 1-3), however, the only observation was of a single bird that appeared to be moving through the area and was not observed again during an additional 8 survey hours. The most commonly observed species was the red-tailed hawk (RTHA), which was observed pair soaring on several occasions, suggesting proper timing for raptor courtship.

Below are Figures 3 and 4. In Figure 3, the view is of the GOEA flight pattern arriving from east southeast. In Figure 4, the view is of the GOEA flight pattern as it climbed on thermals before it flew past and headed in a westerly direction.

VIEW TO (ESE)

FLYING IN

South



VIEW TO (W)

FLYING OUT

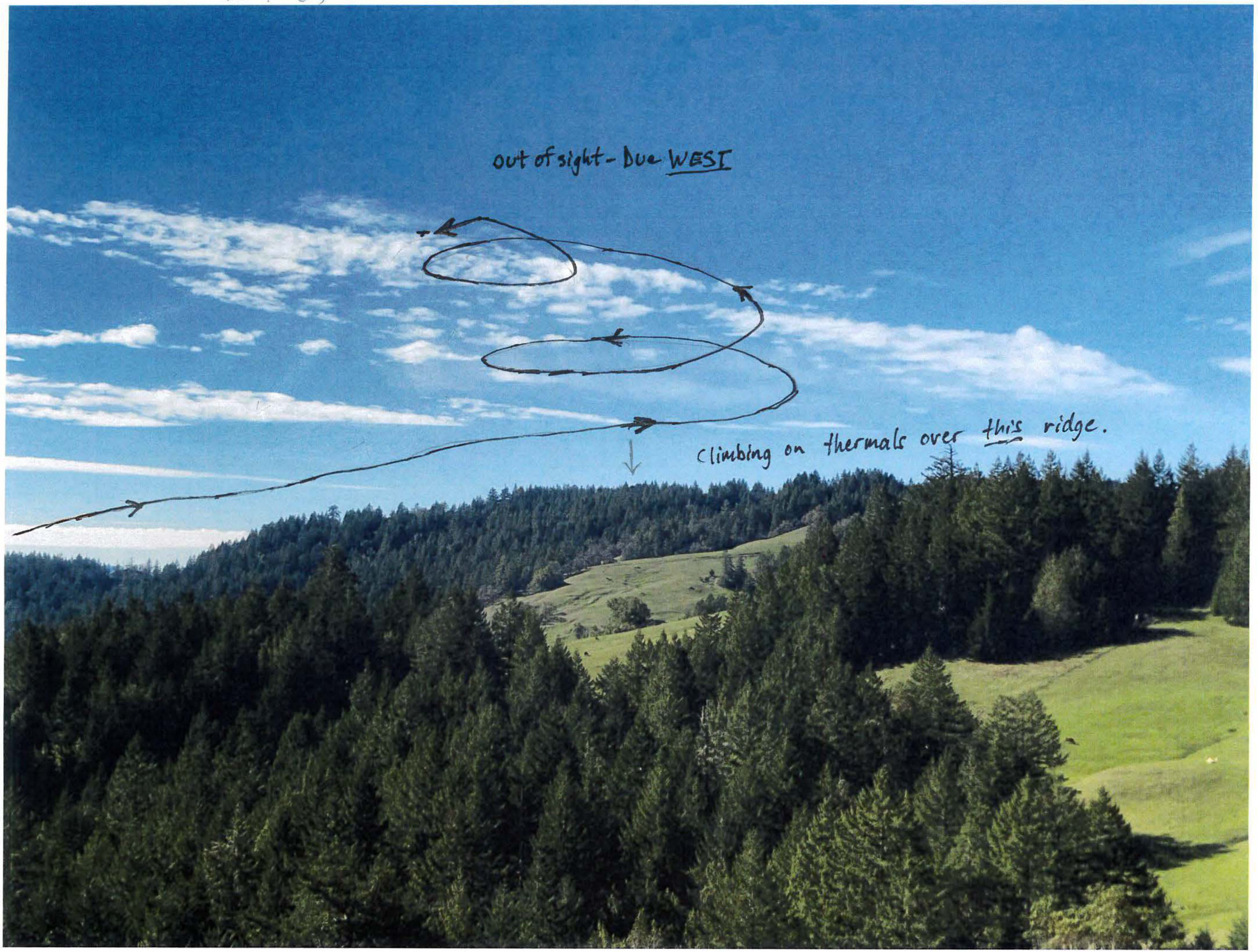




Photo 1. Looking northwest from Station 1



Photo 2. Looking west towards the Kings Range from Station 1



Photo 3. Looking south from Station 2

Literature Cited

Driscoll, D.E. 2010. Protocol for golden eagle occupancy, reproduction, and prey population assessment. American Eagle Research Institute, AZ. 55pp.

Pagel, J.E., D.M. Whittington, and G.T. Allen. 2010. Interim Golden Eagle technical guidance: inventory and monitoring protocols; and other recommendations in support of eagle management and permit issuance. Division of Migratory Bird Management, US Fish and Wildlife Service. 26pp.

Appendix A. GOEA Survey Forms from February – March 2022

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Golden Eagle (GOEA) Breeding Area Occupancy Survey Form

USFWS / American Eagle Research Institute Survey Protocol (Driscoll 2010):
At least 4 surveys, 4 separate days, for 4 hours each
During courtship flight/pair bonding/pre-egg laying: January-February
Surveys are conducted after 1000 and located at vantage points for a 2-mile radius around the project area

Additional Information:

Surveys to determine occupancy are best conducted during courtship and before egg laying (February-March), when adults become more secretive. Courtship flight consists of 'pair soaring' around the breeding area, and 'undulations' of U-shaped flights (deep drop with folded wings/rapid upward climb). It is common for GOEA to move among alternate nests in different years.

Survey the area using as many points necessary to ensure coverage of the entire radius, certain to include points providing observer the ability to scan from the highest elevation possible and view the largest percentage of sky. It is important to scan ridge tops, just below ridgetops, and open sky for raptors utilizing thermals.

Vehicles must be parked under tree canopy to provide aerial cover. Surveyor should wear clothing to match surroundings and conceal survey equipment with camouflage material.

Date: FEB 10, 2022	**Surveyor:** M. MCKENZIE	**SURVEY #:** 1
Wind Speed/Direction: 0-5 (S)	**% Cloud Cover** 0 – 10%	**Temperature (F):** 68-72° F
Survey START: 1040	**Survey FINISH:** 1440	**Survey TOTAL:** 4 HRS
Area (USGS 7.5 topo map/Client): HUMSUN FARMS BLACKSBURG		

Station #	DESCRIPTION (Mark location in GPS and include approximate mileage or landmark)
2	AT EDGE OF OPEN GRASSLAND @ (S) END OF RIDGE

RESULTS (Include all raptor or vulture species observed, particularly those utilizing thermals)

1045	WEBL (4) PACIFIC TREE FROGS CALLING (~40±)
1048	RTHA CALLING - NOT SEEN
1052	AMKE
1108	CORA (2)
1115-30	STJA, HAWI (?), NOFL, AMRO
1248	UNKNOWN, ROBUST 2-NOTE CALL, OWL-LIKE IN QUALITY .. NO IDEA!
1315	BREEZE PICKING UP
1318	CORA; RBNU
1325	TUVU (3) IN VALLEY to (SE)
1330	RTHA? GOEA? VERY DISTANT SOARING BIRD - APPEARS LARGE BUT HARD TO DETERMINE AT THIS DISTANCE. RISING THERMALS TO (N) THEN OUT OF SIGHT W/IN 2 MINUTES.

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Station #2	**DESCRIPTION** (Mark location in GPS and include approximate mileage or landmark)
	RESULTS (Include all raptor or vulture species observed, particularly those utilizing thermals)
1358	RTHA (2) SOARING TO (NW). UNCLEAR IF SAME BIRD(S) AT 1330 DISAPPEARED BEHIND RIDGE >2MI?
1405	CORA (4)
1420	SUMMER FROGS SHUT OFF!
1435	HOT, QUIET, BREEZY
1440	SURVEY FINISH. SUSPECTED GOEA SIGHTING TOO FAR IN DISTANCE TO CONFIRM. RTHA PAIR SEEN ~20 MINUTES LATER, IN SIMILAR AREA, BUT CLOSER.

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Golden Eagle (GOEA) Breeding Area Occupancy Survey Form

USFWS / American Eagle Research Institute Survey Protocol (Driscoll 2010):
At least 4 surveys, 4 separate days, for 4 hours each
During courtship flight/pair bonding/pre-egg laying: January-February
Surveys are conducted after 1000 and located at vantage points for a 2-mile radius around the project area

Additional Information:
Surveys to determine occupancy are best conducted during courtship and before egg laying (February-March), when adults become more secretive. Courtship flight consists of 'pair soaring' around the breeding area, and 'undulations' of U-shaped flights (deep drop with folded wings/rapid upward climb). It is common for GOEA to move among alternate nests in different years.

Survey the area using as many points necessary to ensure coverage of the entire radius, certain to include points providing observer the ability to scan from the highest elevation possible and view the largest percentage of sky. It is important to scan ridge tops, just below ridgetops, and open sky for raptors utilizing thermals.

Vehicles must be parked under tree canopy to provide aerial cover. Surveyor should wear clothing to match surroundings and conceal survey equipment with camouflage material.

Date: 11 FEB 2022	**Surveyor:** T. KIRK	**SURVEY #:** 1
Wind Speed/Direction: 0-5 mph (S)	**% Cloud Cover** start 10% end 25%	**Temperature (F):** 55-65°
Survey START: 10:05	**Survey FINISH:** 14:05	**Survey TOTAL:** 4 hrs. 0 minutes.
Area (USGS 7.5 topo map/Client):		HUM SUM FARMS

Station # 1	**DESCRIPTION** (Mark location in GPS and include approximate mileage or landmark) in open grassland, at (N) end of ridge.
	RESULTS (Include all raptor or vulture species observed, particularly those utilizing thermals)
10:05	Initial scan - no raptors.
10:10	Northern flicker - calling from forest to (N).
10:12	Steller's Jays - calling from forest to (N).
10:31	Raven - soaring over ridge far to the (W).
10:44	Pileated Woodpecker - calling from forest to (W).
10:45	Pacific chorus frogs - calling from the draw to (W).
10:48	American Kestrel - flying to the (S) ½ out of sight.
10:50 - 11:21	No bird activity.
11:22	Raven - calling from far below (SW).
11:34	Turkey Vulture - soaring to (NW) ½ gone.
11:40	Scan all snags & tall trees w/ Spotting Scope = No raptors
12:05	Nuthatch - calling from forest to (SE).
12:08	American Kestrel - flies in from (E), lands in tree to (S) - calling.
12:11	American Kestrel - flies around grassland, lands in nearby tree.

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Station #	DESCRIPTION (Mark location in GPS and include approximate mileage or landmark)
1	
	RESULTS (Include all raptor or vulture species observed, particularly those utilizing thermals)
12:15	Pileated woodpecker – calling from forest below.
12:20	Stellar's jay – calling from forest.
12:30	American Kestrel – perches in large PSME (NE) obs. w/ spotting scope.
12:34	2nd American Kestrel – perches on same limb w/ her mate. – greeting call.
12:44	American Kestrel (female) – drops down into forest (E) – other side of the ridge.
12:45	Scan all snags / tall trees w/ spotting scope = No raptors obs.
12:47	American Kestrel (male) – drops into forest, following his mate.
12:49	" – back on his perch
12:58	Red-tailed hawk – flies in from (SE) – lands in tree closer to Station 1.
13:07	American Kestrel – drops down into forest (E) again.
13:15	Red-tailed hawk – flying away, circling to (SE).
13:18	Red-tailed hawk (another one) farther away, also circling up and out of sight to (SE).
1318 – 1346	No bird activity.
13:47	American Kestrel (pair) – flying to (W).
13:50	Scan all snags / tall trees w/ spotting scope = No raptors.
1405	Red-tailed hawk – circling far to (SE).
1410	END SURVEY – NO GOEA observed.

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Golden Eagle (GOEA) Breeding Area Occupancy Survey Form

USFWS / American Eagle Research Institute Survey Protocol (Driscoll 2010):

At least 4 surveys, 4 separate days, for 4 hours each

During courtship flight/pair bonding/pre-egg laying: January-February

Surveys are conducted after 1000 and located at vantage points for a 2-mile radius around the project area

Additional Information:

Surveys to determine occupancy are best conducted during courtship and before egg laying (February-March), when adults become more secretive. Courtship flight consists of 'pair soaring' around the breeding area, and 'undulations' of U-shaped flights (deep drop with folded wings/rapid upward climb). It is common for GOEA to move among alternate nests in different years.

Survey the area using as many points necessary to ensure coverage of the entire radius, certain to include points providing observer the ability to scan from the highest elevation possible and view the largest percentage of sky. It is important to scan ridge tops, just below ridgetops, and open sky for raptors utilizing thermals.

Vehicles must be parked under tree canopy to provide aerial cover. Surveyor should wear clothing to match surroundings and conceal survey equipment with camouflage material.

Date: 17 FEB 2022	**Surveyor:** T. KIRK	**SURVEY #:** 2
Wind Speed/Direction: 0-5 mph (W)	**% Cloud Cover** start 0% end 65%	**Temperature (F):** 56°
Survey START: 10:10	**Survey FINISH:** 14:10	**Survey TOTAL:** 4 hrs 0 minutes
Area (USGS 7.5 topo map/Client): HUM SUM FARMS		

Station # 2	**DESCRIPTION** (Mark location in GPS and include approximate mileage or landmark) open grassland, near ridge line
	RESULTS (Include all raptor or vulture species observed, particularly those utilizing thermals)
10:10	Initial scan - No raptors; survey started at Northern most obs. point.
10:20	Stellar's jays - calling from forest below (W).
10:17	Northern flicker - call from forest to (W).
10:30	Nuthatch calling from forest to (S).
10:34	Western blue birds (pair) - in tree to (NW).
10:40	scan all snags & tall trees w/spotting scope = No raptors.
10:41	Stellar's jays - calling from (W).
10:50	Pileated woodpecker - calling from forest to (W). also Stellar's jays
11:05	Pileated woodpecker - " " Northern flicker.
11:11	Stellar's Jays, Northern flicker, (W) Nuthatch (S).
11:17	No birds flying along ridge to (E), yet ...
11:26	Pileated woodpecker - calling from (W).
11:30	Northern flicker - seen in spotting scope - in snag (SW). (pair on breed...

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Station #1	DESCRIPTION (Mark location in GPS and include approximate mileage or landmark)
	RESULTS (Include all raptor or vulture species observed, particularly those utilizing thermals)
11:32	Pileated woodpecker – drumming / calling from forest to (S).
11:33	Stellars Jays – calling from forest below (SW), Nuthatch (S).
	– No raptor activity obs.
11:38	Pacific chorus frog – calling from pond to (SE), Pileated drumming (S).
11:40	– scan all snags & tall trees w/ Spotting Scope = No raptors
11:55	Ravens (2) pair – flying from (NW),
12:02	Northern flickers – calling (SW), Nuthatch (S) and stellars Jays (W).
12:05	Hike over to Southernmost observation point
12:10	Initial scan at (S) op = No raptors
12:12	Stellars Jays in forest to (NW).
12:13 – 12:35	No bird activity.
12:36	Raven – flying to (S) – calling.
12:40	Red-tailed hawk – flies in from (S), lands in nearby tree – obs. w/ Spotting Scope pos ID.
12:42	Red-tailed hawk flies from tree, pestered by American Kestrel – both flew off to (SE), other side of ridge.
12:45	Red-tailed hawk – soaring to (S) – circling away.
12:47	Ravens (pair) – flying from (E) to (W) & gone.
12:59	Pileated woodpecker – calling from (W), again @ 13:09 "Drumming"
13:13	2nd Pileated woodpecker – 'Drumming' from (S), other one calling (W).
13:15	Scan all snags & tall trees w/ Spotting Scope = No raptors
13:18	Pileated woodpecker – flies from (W) to snag – obs. in spotting scope.
13:24	Pileated woodpecker – flies from snag to (SE) – into forest.
13:25	Raven – flies overhead from (NW) to (SE).
	Hike over to Northern observation point.
13:30	Dark-eyed juncos (20+), at small pond...
13:35	Pacific chorus frog – calling from below pond.
13:35 – 13:55	No bird activity.
13:55	Stellars Jays – calling from (W).
14:04	Northern flicker – calling from forest to (W).
14:07	American Crows – calling from (W).
14:10	END SURVEY – No Golden eagles observed.

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CORPORATION

Golden Eagle (GOEA) Breeding Area Occupancy Survey Form

USFWS / American Eagle Research Institute Survey Protocol (Driscoll 2010):
At least 4 surveys, 4 separate days, for 4 hours each
During courtship flight/pair bonding/pre-egg laying: January-February
Surveys are conducted after 1000 and located at vantage points for a 2-mile radius around the project area

Additional Information:

Surveys to determine occupancy are best conducted during courtship and before egg laying (February-March), when adults become more secretive. Courtship flight consists of 'pair soaring' around the breeding area, and 'undulations' of U-shaped flights (deep drop with folded wings/rapid upward climb). It is common for GOEA to move among alternate nests in different years.

Survey the area using as many points necessary to ensure coverage of the entire radius, certain to include points providing observer the ability to scan from the highest elevation possible and view the largest percentage of sky. It is important to scan ridge tops, just below ridgetops, and open sky for raptors utilizing thermals.

Vehicles must be parked under tree canopy to provide aerial cover. Surveyor should wear clothing to match surroundings and conceal survey equipment with camouflage material.

Date: 18 FEB 2022	**Surveyor:** T. KIRK	**SURVEY #:** 2
Wind Speed/Direction: 0-8 mph (S)	**% Cloud Cover** start 0% end 25%	**Temperature (F):** 51°f
Survey START: 10:00	**Survey FINISH:** 14:00	**Survey TOTAL:** 4 hrs. 0 min.
Area (USGS 7.5 topo map/Client): HUMSUM FARMS		

Station #	DESCRIPTION (Mark location in GPS and include approximate mileage or landmark)
1	open grassland, on ridge line.

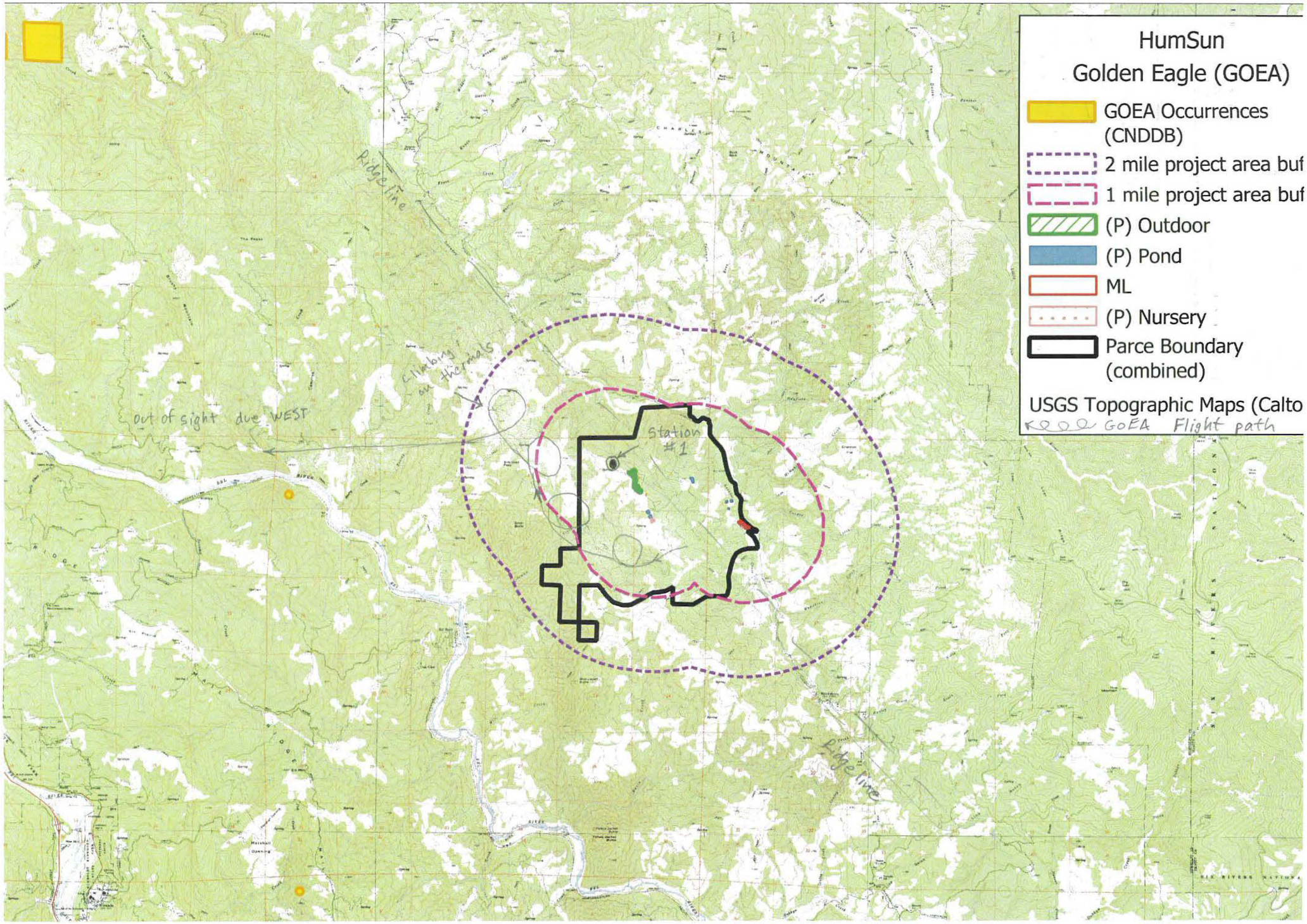
	RESULTS (Include all raptor or vulture species observed, particularly those utilizing thermals)
10:00	Start survey
10:00	American Kestrel (male) - flies in from forest (NE), lands in tall PSME to (S).
10:02	Initial scan - No soaring raptors
10:03	American crow - calling from below (S)
10:04	Stellar's jays - from (S) & (W) - below.
10:05	Nuthatch - calling from ridge (NW).
10:10	American Kestrel (pair) & young (NE) - all perched on same limb (PSME) w/ broken top.
10:19	- Scan all snags & tall trees - No raptors, except AMKE.
10:25	Red-tailed hawk - flies in & perches in tree (S) - large (PSME). - obs. in spotting scope (immature RT hawk) pos. ID.
10:29	Red-tailed hawk - flies farther (S) - lands in tree.
10:34	- Scan = No soaring birds along ridgelines.
10:35	American Kestrel (female) - still perched (NE) - off perch @ 10:40.
10:43	Raven - flies in from (NW) - calling & gone to (SE).
10:50	Pacific chorus frog - calling from below (SW).

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Station #a 1	DESCRIPTION (Mark location in GPS and include approximate mileage or landmark)
	RESULTS (Include all raptor or vulture species observed, particularly those utilizing thermals)
10:54	Pileated woodpecker - calling & 'Drumming' from (SW) - from forest below, also Stellar's Jay's & American crow.
10:58	- More 'Drumming' - also Northern flicker (S).
11:00	American Kestrel - calling from far below (SW).
11:01	- Scan trees & ridgelines = Nada.
11:04	Pileated woodpecker - calling (S).
11:09	American Kestrel - calling from far below (SW).
11:17	Stellar's jays - calling from ridgeline (NE)
11:18 - 11:47	No bird activity.
11:47	Red-tailed hawk - soaring to (SE) - circling around to (E) & gone.
12:00	Red-tailed hawk - same general area as above.
12:04	- Scan snags & trees - obs. Red-tailed hawk (different one) (S).
12:04 - 12:12	Red-tailed hawk - on same perch tree as at 10:25.
12:12	" " - drops out of sight.
12:17	Stellar's jays - calling from below (SW).
12:20	American Kestrel (female) - back on perch branch on ridge (NE). - Calling.
12:25	American Kestrel (juv). - flying from tree to tree - ridgeline (NE).
12:28	- Scan trees & ridgelines = Large hawk - perched in snag far to (W)
12:38	Raven - calling, flies in from (SE). └ obs. in spotting scope - preening.
12:28 - 12:57	Red-tailed hawk - flies from snag far to (W) - heading (S) & out of sight behind trees.
13:13	Golden eagle - flies in from (ESE), soaring and circlin flew past Station #1 flying to the (W) - along the ridge. continued obs. flying higher and circling up, riding thermals.
13:23	Golden eagle - flies out of sight - far to (W).
13:35	Red-tailed hawks (pair) - perched on large snag to far (W). same snag - sitting together
13:38	Red-tailed hawk - flies from snag, down into forest
13:39	Raven - flies in from (SE) - calling.
13:40 - 14:00	No bird activity. Red-tailed hawk - still perched on snag.
14:00	END SURVEY

GOEA Detection

Golden eagle detection @ 13:13.



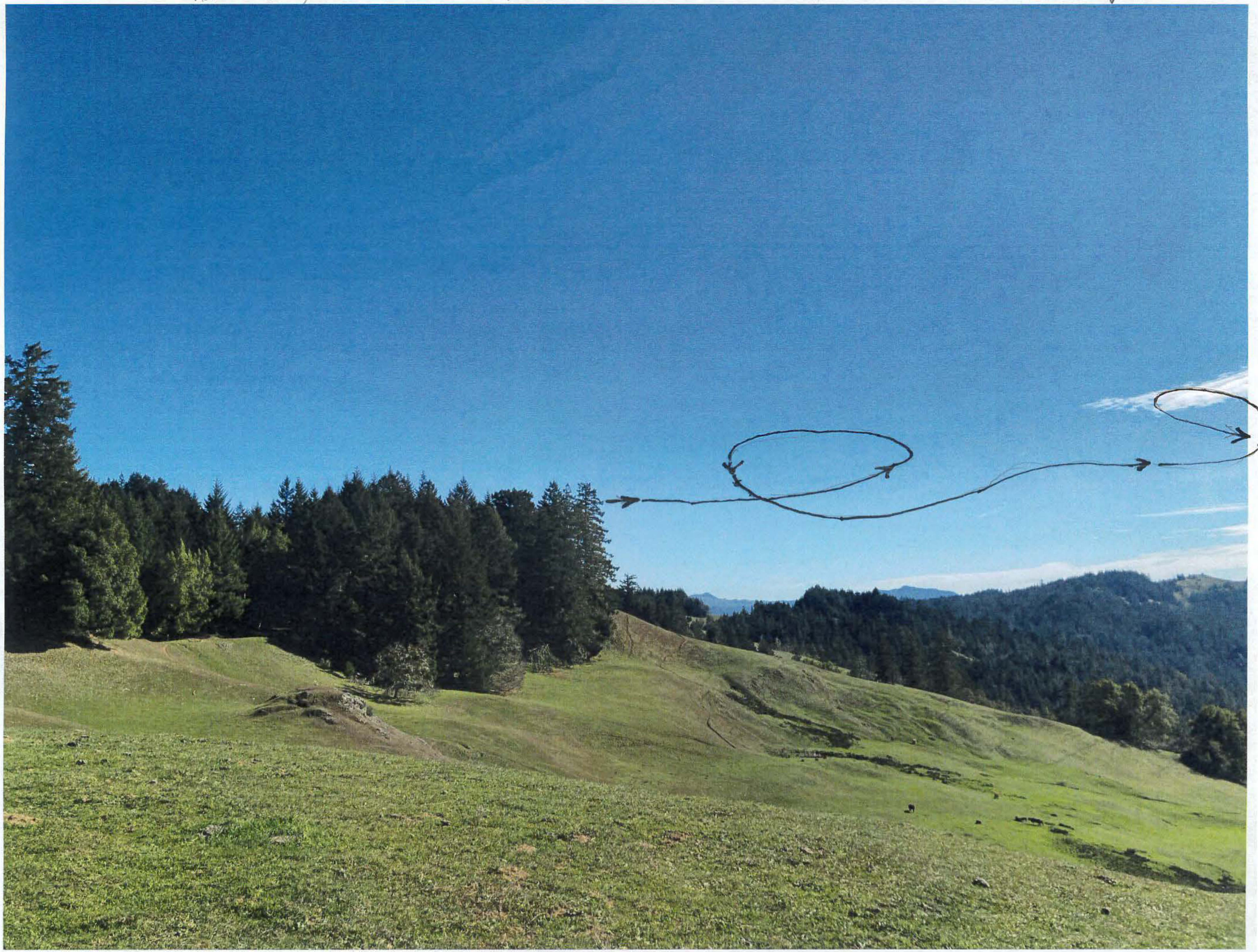
APN 217-253-001, 217-214-001, 217-052-001, 217-055-002, 217-051-001 Humboldt County
Blocksburg Quad T1S R5E sec 31; T2S R5E Sec 6, 7, 18; T2S R4E Sec 1, 12, 13; T1S R4E Sec 35, 36; T2S R4E Sec 2, 10,11,14,15 HM&B HUC12: 180101050601

T.KIRK 2/21/2022

VIEW TO (ESE)

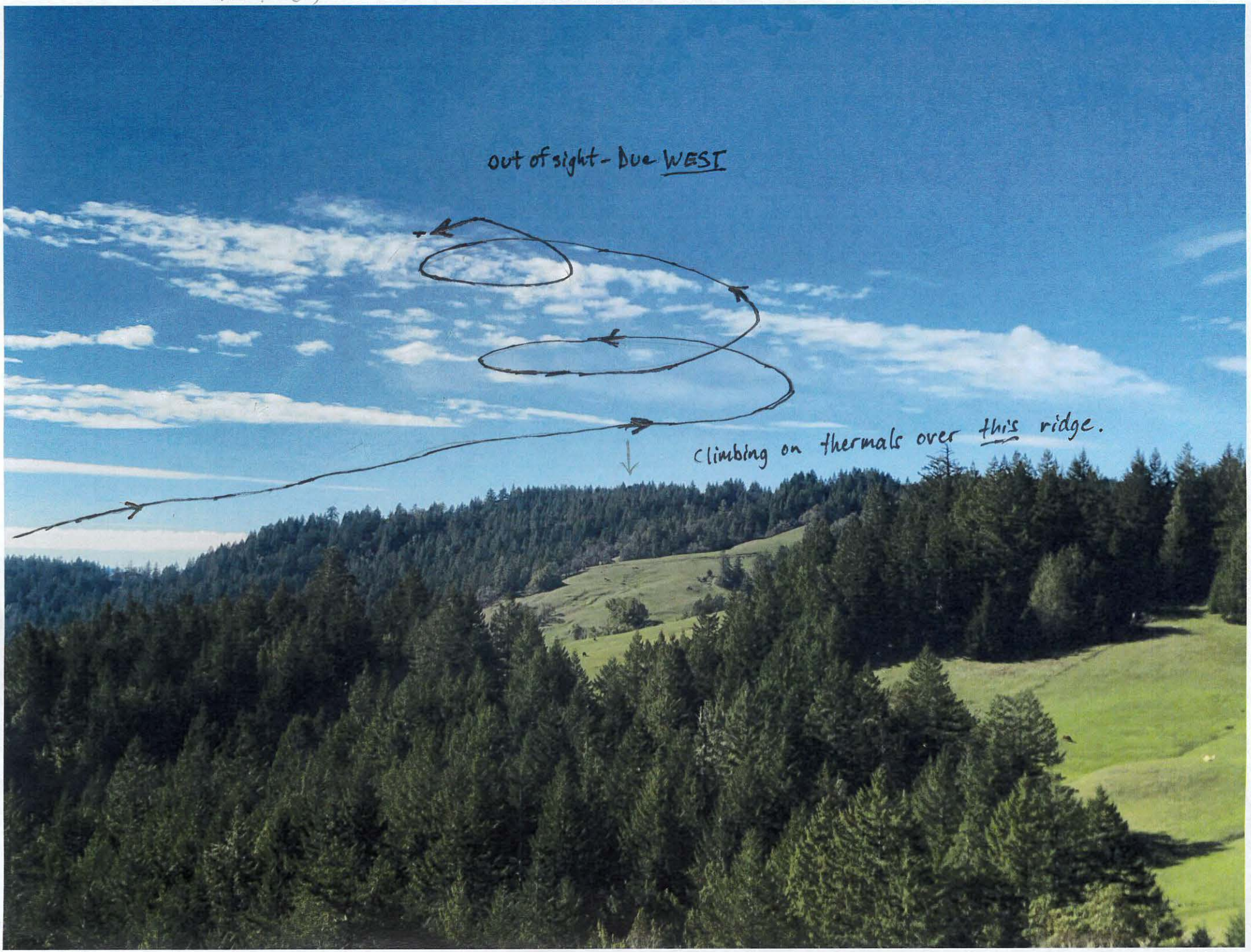
FLYING IN

South



VIEW TO (W)

FLYING OUT



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Additional Information:

Surveys to determine occupancy are best conducted during courtship and before egg laying (February-March), when adults become more secretive. Courtship flight consists of 'pair soaring' around the breeding area, and 'undulations' of U-shaped flights (deep drop with folded wings/rapid upward climb). It is common for GOEA to move among alternate nests in different years.

Survey the area using as many points necessary to ensure coverage of the entire radius, certain to include points providing observer the ability to scan from the highest elevation possible and view the largest percentage of sky. It is important to scan ridge tops, just below ridgetops, and open sky for raptors utilizing thermals.

Vehicles must be parked under tree canopy to provide aerial cover. Surveyor should wear clothing to match surroundings and conceal survey equipment with camouflage material.

Date: 25 FEB 2022	**Surveyor:** T. KIRK	**SURVEY #:** 3
Wind Speed/Direction: 0-5 mph (W)	**% Cloud Cover** start 5%, end 20%	**Temperature (F):** 45-50°
Survey START: 10:05	**Survey FINISH:** 14:05	**Survey TOTAL:** 4hrs. 0 minutes
Area (USGS 7.5 topo map/Client): HUM SUM FARMS		

Station #	DESCRIPTION (Mark location in GPS and include approximate mileage or landmark)
1	open grassland, on ridge.

RESULTS (Include all raptor or vulture species observed, particularly those utilizing thermals)

10:05	START SURVEY - Initial scan = Turkey vultures (2)
10:06	American Kestrel - calling from (N) flying (W) to (E) & gone.
10:10	Raven - flying to perched (SE).
10:11	Stellar's Jay - calling from forest below (W).
10:25	Red-tailed hawk - perched in large snag to (W).
10:35	Red-tailed hawk obs. in spotting scope - pos ID - drops down into forest below.
10:40	-Scan all snags / trees = NO raptors.
10:46	Nuthatch - calling from (SE).
10:51	Band-tailed pigeons (18) - flying from (NW) to (SE) & gone.
10:59	Red-tailed hawk - soaring over ridge far to (W).
11:05	Nuthatch - calling from (SE).
11:05-11:35	No bird activity.
11:45	Stellar's Jays - calling from (N). & Raven

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Station # 1	DESCRIPTION (Mark location in GPS and include approximate mileage or landmark)
	RESULTS (Include all raptor or vulture species observed, particularly those utilizing thermals)
11:45	American Kestrel (pair) - perched in PSME to (S).
11:47	American Kestrel - drops into forest below - hunting ... (S).
11:50	2nd American Kestrel - drops into forest below (S).
11:51	Raven - flying (SE) to (NW).
11:52	American Kestrel - flying to (W).
11:53	Red-tailed hawk - soaring over ridge, far to (W).
11:58	Ravens - flying past station 1 - from (NW) to (SE).
12:11	Raven - calling, flying to (E).
12:20	American Kestrel - flying to (W), circling below.
12:23	" " - flew over my location.
12:28	American Kestrel - perched in Oak (S), (male) eating - obs. in spotting scope.
12:30	2nd American Kestrel - perched along ridge (E) - (female).
12:31	- scan all snags / tall trees = No raptors.
12:36	American Kestrel - flies from below to (W).
12:37	Red-tailed hawk - flies in from (S), lands in tall PSME to (S).
12:42	" " - obs. in spotting scope, flies to another tree to (SE).
	- wind increasing (10 mph) out of (S).
12:57	American Kestrel - flying to (S) - hunting over grasslands.
12:59	Red-tailed hawk - back on perch tree, then takes flight.
13:01	Red-tailed hawk - circles in from (SE) = pair flies together ⅔ flies over ridge ⅓ gone (E).
13:03	- scan all snags / tall trees = No raptors.
13:13	Red-tailed hawk - flies into snag far to (W) - perches on branch
13:16	- scan to (S) - No raptors. - obs. in spotting scope - Pos ID.
13:22	Ravens (pair) - flying from (SE).
13:30	Red-tailed hawk - still perched in snag far to (W).
13:41	American crows - calling from below (SW).
13:44	Nuthatches - calling from (N).
13:50	American crows - calling again...
13:57	- Pacific chorus frog - calling from (SW)
13:59	Red-tailed hawk - perched, drops down into forest.
14:05	END SURVEY - No Golden eagles observed.

NRM
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Vehicles must be parked under tree canopy to provide aerial cover. Surveyor should wear clothing to match surroundings and conceal survey equipment with camouflage material.

Date: 7 March 2022	**Surveyor:** T. KIRK	**SURVEY #:** 4
Wind Speed/Direction: 5-10 mph (NW)	**% Cloud Cover** start 40% end 5%	**Temperature (F):** 50 - 57°
Survey START: 10:05	**Survey FINISH:** 14:05	**Survey TOTAL:** 4 hrs 0 minutes
Area (USGS 7.5 topo map/Client): Hum Sum Farms		

Station #	DESCRIPTION (Mark location in GPS and include approximate mileage or landmark)
1	open grassland, on ridgeline

RESULTS (Include all raptor or vulture species observed, particularly those utilizing thermals)

10:05 Initial scan - No raptors.
10:06 Raven calling - from (SW), Stellar's jays - also
10:08 Nuthatches calling from (S).
10:15 Northern flicker - calling from forest below (SW).
10:21 - Pacific chorus frogs (many) - calling from (S).
10:25 Meadow lark - calling from below (SW).
10:30 Scan all snags / tall trees w/ spotting scope = Nada
10:31 Stellar's jays - calling from forest below (W).
10:35 Nuthatches - calling (S).
10:40 No birds obs. flying so far ...
10:41 Slatey Grouse - booming (E), Northern flicker (drumming) - (S).
10:52 American crows - calling from below (SW).
11:01 Ravens - flies in from (W) - Pair & over ranch to (S). - soaring.
11:04 Pac slope fly catchers - calling from below (SW) - slatey grouse -

Station # 1 — HUM SUM FARMS GOEA Survey #4:

11:07 Slatey Grouse 'booming' & Stellar's Jays - calling from (W) & (N).
11:11 - scan ridge lines, snags & tall trees for raptors = No raptors.
11:13 Raven (pair) - flies in from (SE), circling in front of station 1.
11:14 Stellar's Jay's - calling from (SW) - Meadow lark - "singing".
11:20 Stellar's Jay's - " - 'Booming' Grouse.
11:21 - scan ridgelines, snags & tall trees: American Kestrel - flies up from below (SW).
11:22 - 11:51 - No bird activity. and over my location.
11:52 American Kestrel - flies in from (E) and over to (W).

Note: From 10:05 → 12:05 No raptors obs. along ridge lines...

12:05 Cooper's Hawk - flying on thermals (far to W) - obs. during 'ridge scan'
- circling up & flew to (NW).
12:16 Raven - flies up from (SW) and over ridge (NE) & then back to (SW).
12:20 Nuthatches - calling from (S).
12:38 Red-tailed Hawk (pair) - flying at ridgeline (SE), one flying w/ legs hanging down, circling to (E) & gone.
12:40 - 13:05 NO BIRD ACTIVITY...
13:06 American crows - calling from (SW).
13:18 Raven - flying to (NE) & down draw
13:19 Turkey vulture - flies in from (NE) to (SW) & gone.
13:20 American Crows - calling from below (SW).
13:28 Turkey vulture (same one) - soaring / circling to (SW).
13:30 - scan all ridge lines, snags & tall trees = Red-tailed hawk flying above ridge (far to W).
13:43 Red-tailed hawk - soaring (far to SW) - soaring over far ridge.
13:50 - wind now out of the (S) 5-10 mph.
13:51 American crows & stellar's jay's - calling from (SW).
14:01 Turkey vulture - flies in from (SE), soaring past & gone to (W).
14:05 END SURVEY - NO Golden eagles observed.

└ American Kestrel flies in, lands in tree to (S).

Appendix 2N

2022 Northern Spotted Owl Report

2022 Northern Spotted Owl (NSO) Report
Hum Sun3 LLC – 12856-CUP

Prepared for:
Hum Sun3 LLC

Prepared by:
Natural Resources Management Corporation
1434 Third Street
Eureka, CA 95501

September 7, 2022

Introduction

HumSun 3 LLC submitted an application for a Conditional Use Permit ("CUP") pursuant to Humboldt County's Commercial Medical Marijuana Land Use Ordinance, for a new cannabis cultivation operation in the Blocksburg area of the County. The Project (Project") is located on the west side and adjacent to Alderpoint Road, approximately 3.75 miles south from the intersection of Gold Ridge Lane and Alderpoint Road, on the properties known as 30855 and 31215 Alderpoint Road, and further described as Assessor's Parcel Numbers (APN) 217-253-001, 217-214-001, 217-052-001, 217-055-002, and 217-051-001, (collectively the "Property"). The entire Property is 1,766 acres.

There are 3 historic Northern Spotted Owl (NSO) Activity Centers (HUM0841, HUM0514, HUM1095) whose home ranges (1.3 mile radius of AC) overlap the Property of Hum Sun3 LLC (Figure 1). In order to establish presence/absence and current activity of NSO, NSO surveys have been conducted over the Property using the revised (2012) USFWS NSO survey protocol ('the protocol'). The protocol is used in order to ensure a high probability of locating resident NSO and identifying owl territories that may be impacted by a proposed development or activity.

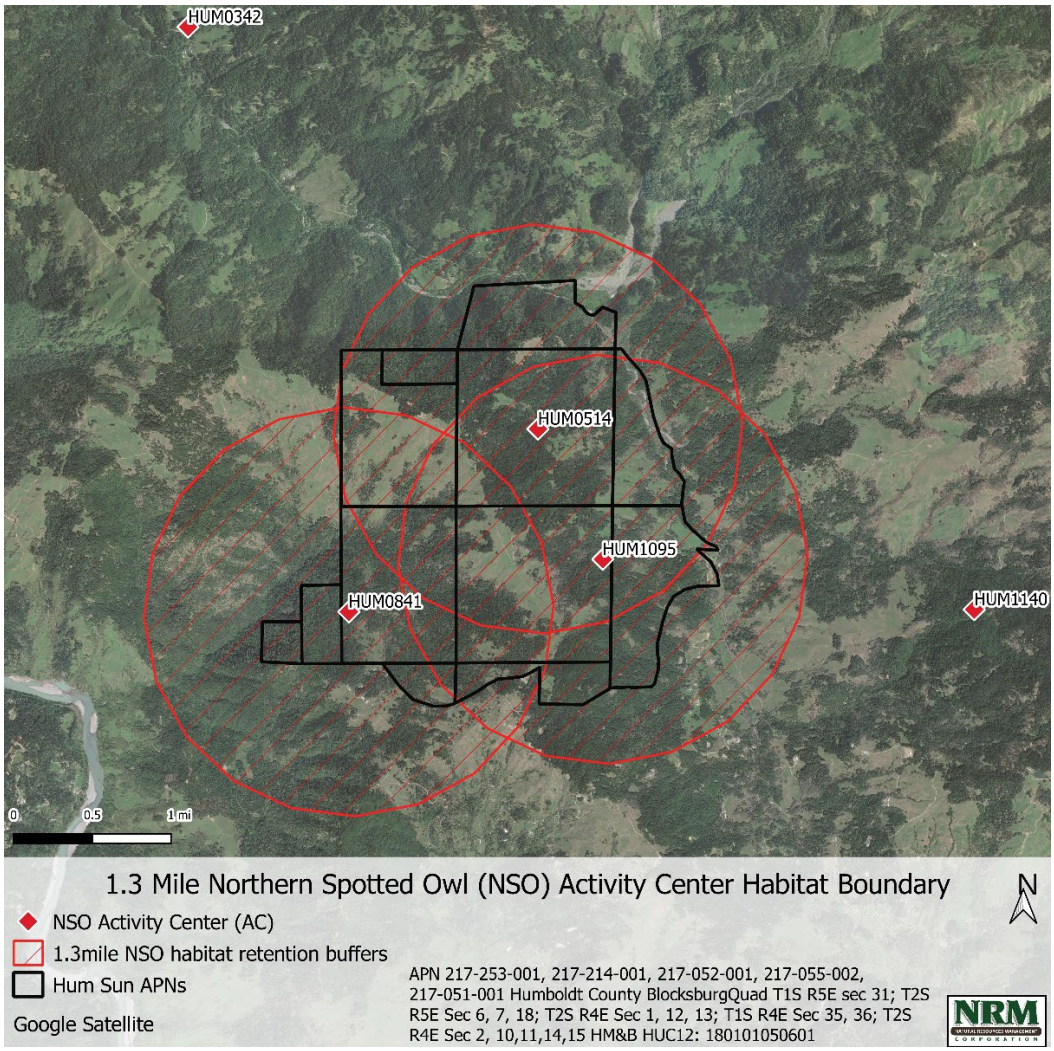


Figure 1. Activity Centers within 1.3 miles of HumSun 3 LLC project ownership

Summary of Known Survey Results

2022

The 2022 survey effort was conducted by NRM and included night calling visits and historic Activity Center (AC) searches. NRM performed 6 night calling visits between April 26 and July 28 2022 with calling at 15 stations per visit. The night calling visits resulted in no NSO responses. AC searches, however, resulted in the positive identification of one juvenile NSO and 1 adult NSO near AC HUM0841.

Barred owls (Strix varia) were detected 2 times during the 2022 NSO survey effort. A barred owl was detected once (auditory detection), at station #11 during a nighttime survey (visit #2 on May 17 2022). Another Barred Owl detection (visual detection) occurred during the AC search of HUM0841.

2019

Previous NSO surveys for Hum Sun (GHD, 2019 Wildlife Resources Report) resulted in a total of 4 NSO detections from 3 night calling stations around AC HUM0841. No NSO were detected during 2019 AC searches.

There were 10 total detections of Barred Owl during 2019; these were nighttime auditory (and or visual) detections occurring at 6 six stations (some stations recorded multiple detections). Additionally, there was 1 detection at Station #3 of a Sparred Owl (Strix occidentalis x varia).

CNDDB Records

The available history (CNDDB NSO Report, generation date 8/25/2022) of HUM0514 ranges from 2003 to 2014. The last recorded positive NSO detection of an NSO pair at HUM0514 was 2014. The history of HUM0841 ranges from 1996 to 2014. The last recorded positive NSO detection of an NSO pair at HUM0841 was 2013; multiple detections of NSO adults were recorded in 2014. The history of HUM1095 ranges from 2013 to 2014. The last recorded positive NSO detection of an NSO pair at HUM1095 was 2014

2022 Nighttime calling

Nighttime Calling Data sheets in Attachment A.

15 nighttime calling stations were established by GHD in 2019. GHD describes station placement within the property boundary as involving the careful consideration of potential background noises (proximity to streams), general topography, historic Activity Centers (ACs), historic NSO detections, and overall coverage of the historic NSO's core habitat area (1.3 mile radius from AC). The 2022 nighttime surveys, performed by NRM, adopted the 15 nighttime calling stations established by GHD. See Figure 2 for call station layout in relation to historic ACs and their associated core habitat area.

Digitally recorded spotted owl calls (4-note and 5-note calls, barking calls, and contact whistle both normal and agitated) were broadcast from the night calling stations using a FOXPRO ® electronic caller. At least 10 minutes was spent at each station, with pauses taken between calling to listen for potential spotted owl responses. This listening time was extended if an owl was detected or the survey conditions were slightly compromised (e.g., windy). Calling was discontinued if a spotted owl was detected.

NRM performed 6 night calling visits between April 26 and July 28 2022; 15 stations were called per visit with the exception of visits 5 and 6. These visits occurred after the AC searches were conducted. In order to avoid harassment of the 2 NSO detected during the AC HUM0841 AC search, the night calling stations close to the detection point, station #14 and station #15, were dropped from the survey.

All night visits occurred on the same date with the exception of visits 5 and 6 which split station calling over 2 consecutive nights. The night calling visits resulted in no NSO responses.

Table 1. Summary of Hum Sun 2022 Night Calling Responses

Night Visit	Date	Station #	Positive NSO response?
1	4/26/2022	#2-5,7	no
	4/26/2022	#1,6,8-15	no
2	5/17/2022	#1-7	no
	5/17/2022	#8-15	No (BDOW Station #11)
3	6/7/2022	#1-7	no
	6/7/2022	#8-15	no
4	6/16/2022	#1-7	no
	6/16/2022	#8-15	no
5	7/19/2022	#1-5, 7,9,11-13	no
	7/20/2022	#6,8,10	no
6	7/27/2022	#2,4,5,7-9,11-13	no
	7/28/2022	#1,3,6,10	no

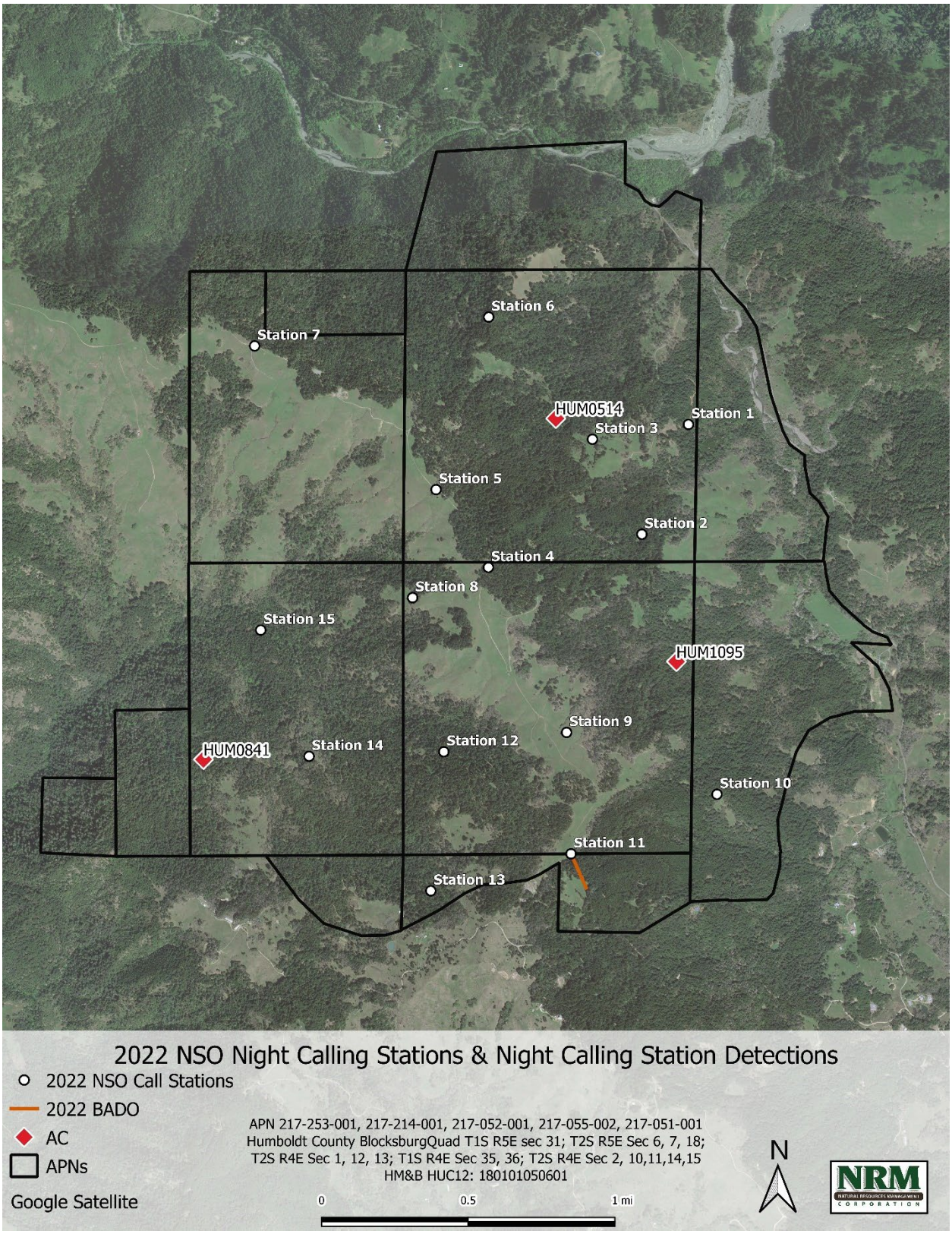


Figure 2. 2022 HumSun3 LLC Night Calling Station Map with 2022 detections. No NSO detections during night calling recorded.

2022 Follow-up Outings

Because there were no nighttime survey detections of NSO, no additional daytime follow-up outings were conducted.

2022 Activity Center Searches

AC Search data sheets and Maps in Attachment B.

The three ACs (HUM0841, HUM0514, HUM1095) were searched by NRM in 2022. For each AC search, NRM performed a daytime surveys involving a visual search of potential spotted owl habitat within the general vicinity (approximately a 0.5-mile radius) of the mapped historic AC. The AC search surveyor used a FOXPRO® electronic caller with recorded spotted owl calls to try to elicit a NSO response.

AC HUM1095 and AC HUM0514 were searched with no owls detected. AC HUM0841 was searched with 3 owl detections: 1 Barred owl (auditory detection), 1 juvenile/fledgling NSO (visual detection), and 1 adult NSO (visual detection) (Figure 3). 1 mouse was offered (2x) to the juvenile NSO, but the owl showed no interest in the mouse. A mousing was attempted for the adult NSO, but the adult flew away before the mouse could be offered.

Table 2. Summary of 2022 AC Search Results

AC #	Date	Positive NSO response? Yes/No Description	Mousing? Yes/No Result?	Other owl?
HUM1095	6/21/2022	No		
HUM0514	6/24/2022	No		
HUM0841	6/27/2022	Yes 1 Juvenile/fledgling NSO 1 Adult NSO	Yes 'no interest'	Yes 1 Barred Owl

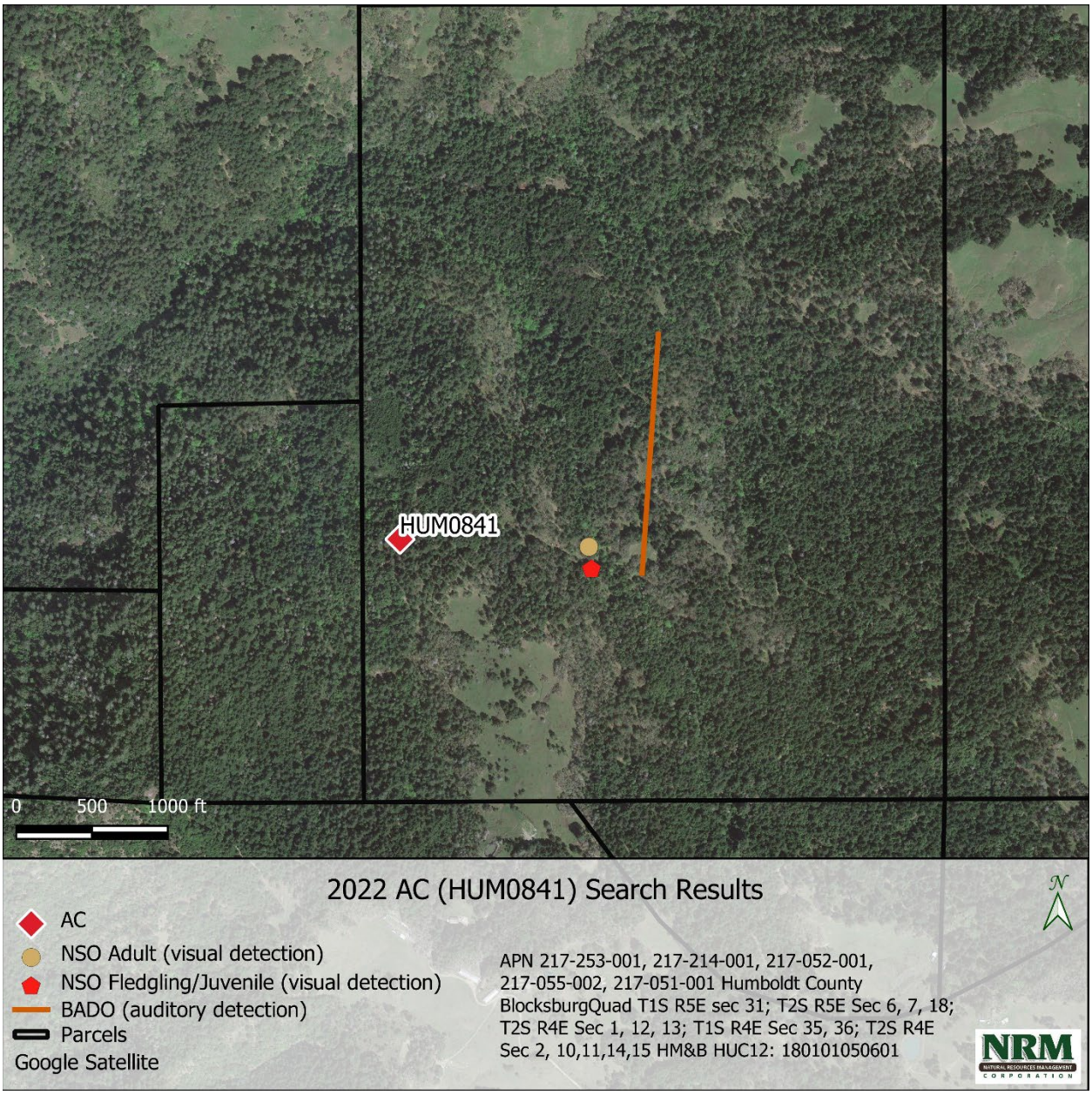


Figure 3. Map of HUM0841 AC search result: 2 visual detections of NSO (1 fledgling/juvenile & 1 Adult) and 1 auditory detection of a Barred Owl.

Attachment A: 2022 Nighttime Calling Data

NSO Night Calling Survey Form

Date: 4/26/2022	**Surveyor:** Sydney Martin	**Landowner:** Hum Sun
Sunset: 20:07	**Visit No:** 1	**NSO AC No: HUM**
(24 hour)	Six Pass or Spot Surveys:	(Note if survey associated with an AC)
Weather		
Temperature (F): ~ 50°F	**Moon:** Quarter	**% Cloud Cover:** 10%
	(full, half, quarter, new)	(increments of 10)
Wind: Calm	**Precipitation:** None	**NOTE:** inclement weather and/or wind >10 mph that inhibits surveyor's ability to hear responses will invalidate survey
(calm, light, moderate, strong)	(none, mist, fog, drizzle, rain)	

Station	Time Start	Time Stop	Total Time	No Response (write NR)	Owl Response and Notes				
					Species	Response time (24hr)	Sex/age	Distance (ft)	Bearing (0-360)
15	19:58	20:08	10 min	NR					
14	20:14	20:24		NR					
13	20:46	20:56		NR					
12	21:01	21:15		NR					
11	21:16	21:26		NR					
10	21:35	21:45		NR					
9	21:48	21:58		NR					
8	22:04	22:14		NR					
6	22:27	22:37		NR					
1	22:48	22:58		NR					

4-letter Code	Species
NSO or NSOW	northern spotted owl
BADO	barred owl
BANO	barn owl
FLOW	flammulated owl
GHOW	great horned owl
NOPO	northern pygmy owl
NSWO	northern saw whet owl
WESO	western screech owl

NSO Night Calling Survey Form

Date: 4/26/2022	**Surveyor:** EJC	**Landowner:** Humm Kapl
Sunset: 8:07	**Visit No:** 1	**NSO AC No: HUM**
(24 hour)	Six Pass or Spot Surveys:	(Note if survey associated with an AC)
Weather		
Temperature (F): ~50	**Moon:**	**% Cloud Cover:** 0
	(full, half, quarter, new)	(increments of 10)
Wind: light	**Precipitation:** 0	**NOTE:** inclement weather and/or wind >10 mph that inhibits surveyor's ability to hear responses will invalidate survey
(calm, light, moderate, strong)	(none, mist, fog, drizzle, rain)	

Station	Time Start	Time Stop	Total Time	No Response (write NR)	Owl Response and Notes				
	PM	PM			Species	Response time (24hr)	Sex/age	Distance (ft)	Bearing (0-360)
2	8:13	8:23	10	NR					
3	8:34	8:44	10	NR					
4	9:31	9:41	10	NR					
5	9:44	9:54	10	NR					
7	10:01	10:11	10	NR					

4-letter Code	Species
NSO or NSOW	northern spotted owl
BADO	barred owl
BANO	barn owl
FLOW	flammulated owl
GHOW	great horned owl
NOPO	northern pygmy owl
NSWO	northern saw whet owl
WESO	western screech owl

NSO Night Calling Survey Form

Date: 9/17/2022	**Surveyor:** JRC	**Landowner:** Hum Sum
Sunset: 2028 (24 hour)	**Visit No:** 2 Six Pass or Spot Surveys:	**NSO AC No:** HUM (Note if survey associated with an AC)
Weather		
Temperature (F): ~50°F	**Moon:** Full (full, half, quarter, new)	**% Cloud Cover:** 50 (increments of 10)
Wind: Moderate (calm, light, moderate, strong)	**Precipitation:** None (none, mist, fog, drizzle, rain)	**NOTE:** inclement weather and/or wind >10 mph that inhibits surveyor's ability to hear responses will invalidate survey

Station	Time Start	Time Stop	Total Time	No Response (write NR)	Owl Response and Notes				
					Species	Response time (24hr)	Sex/age	Distance (ft)	Bearing (0-360)
7	2040	2050	10	NR					
5	2059	2109	10	NR					
4	2113	2123	10	NR					
2	2130	2140	10	NR					
3	2145	2155	10	NR					
1	2208	2218	10	NR					
6	2242	2252	10	NR					← got as close as possible

4-letter Code	Species
NSO or NSOW	northern spotted owl
BADO	barred owl
BANO	barn owl
FLOW	flammulated owl
GHOW	great horned owl
NOPO	northern pygmy owl
NSWO	northern saw whet owl
WESO	western screech owl

NSO Night Calling Survey Form

Date: 5/17/2022	Surveyor: Sydney Martin	Landowner: Hum Sum
Sunset: 20:28	Visit No: 2	NSO AC No: HUM
(24 hour)	Six Pass or Spot Surveys: Spot	(Note if survey associated with an AC)
Weather		
Temperature (F): ~50°F	Moon: Full	% Cloud Cover: 50%
	(full, half, quarter, new)	(increments of 10)
Wind: Light	Precipitation: None	NOTE: inclement weather and/or wind >10 mph that inhibits surveyor's ability to hear responses will invalidate survey
(calm, light, moderate, strong)	(none, mist, fog, drizzle, rain)	

Station	Time Start	Time Stop	Total Time	No Response (write NR)	Owl Response and Notes				
					Species	Response time (24hr)	Sex/age	Distance (ft)	Bearing (0-360)
15	20:18	20:28	10 min	NR					
14	20:32	20:42		NR					
12	20:48	20:58		NR					
13	21:02	21:12		NR					
11	21:25	21:35			BDOW	21:31	Unknown	~50 ft	141°
10	21:41	21:51		NR					
9	21:53	22:03		NR					
8	22:08	22:18		NR					

4-letter Code	Species
NSO or NSOW	northern spotted owl
BADO	barred owl
BANO	barn owl
FLOW	flammulated owl
GHOW	great horned owl
NOPO	northern pygmy owl
NSWO	northern saw whet owl
WESO	western screech owl

NSO Night Calling Survey Form

Date: 6/7/2022	**Surveyor: Sydney Martin**	**Landowner:** Hum Sun
Sunset: 20:46	**Visit No:** 3	**NSO AC No: HUM**
(24 hour)	Six Pass or Spot Surveys: Six	(Note if survey associated with an AC)
Weather		
Temperature (F): ~50°F	**Moon:** Half	**% Cloud Cover:** 30%
	(full, half, quarter, new)	(increments of 10)
Wind: Calm	**Precipitation:** None	**NOTE:** inclement weather and/or wind >10 mph that inhibits surveyor's ability to hear responses will invalidate survey
(calm, light, moderate, strong)	(none, mist, fog, drizzle, rain)	

Station	Time Start	Time Stop	Total Time	No Response (write NR)	Owl Response and Notes				
					Species	Response time (24hr)	Sex/age	Distance (ft)	Bearing (0-360)
15	20:42	20:52	10 mins	NR					
14	20:56	21:06		NR					
12	21:11	21:21		NR					
13	21:24	21:34		NR					
11	21:42	21:52		NR					
10	21:59	22:09		NR					
9	22:12	22:22		NR					
8	22:26	22:36	↓	NR					

4-letter Code	Species
NSO or NSOW	northern spotted owl
BADO	barred owl
BANO	barn owl
FLOW	flammulated owl
GHOW	great horned owl
NOPO	northern pygmy owl
NSWO	northern saw whet owl
WESO	western screech owl

NSO Night Calling Survey Form

Date: 7/7/2022	**Surveyor:** Jarred R Cole	**Landowner:** Hum Sun
Sunset: 2042	**Visit No:** 3	**NSO AC No:** HUM
(24 hour)	Six Pass or Spot Surveys: 6 pass	(Note if survey associated with an AC)
	Weather	
Temperature (F): 58°	**Moon:** quarter	**% Cloud Cover:** 0%
	(full, half, quarter, new)	(increments of 10)
Wind: Calm	**Precipitation:** None	**NOTE:**
(calm, light, moderate, strong)	(none, mist, fog, drizzle, rain)	

Station	Time Start	Time Stop	Total Time	No Response (write NR)	Owl Response and Notes				
					Species	Response time (24hr)	Sex/age	Distance (ft)	Bearing (0-360)
6	2042	2052	10	NR					
3	2055	2105	10	NR					
2	2110	2120	10	NR					
4	2126	2136	10	NR					
5	938	2148	10	NR					
7	2206	2216	10	NR					
1	2226	2236	10	NR					

4-letter Code	Species
NSO or NSOW	northern spotted owl
BADO	barred owl
BANO	barn owl
FLOW	flammulated owl
GHOW	great horned owl
NOPO	northern pygmy owl
NSWO	northern saw whet owl
WESO	western screech owl

NSO Night Calling Survey Form

Date: 6/16/2022	**Surveyor: Sydney Martin**	**Landowner:** Hum Sun
Sunset: 20:50	**Visit No:** 4	**NSO AC No: HUM**
(24 hour)	Six Pass or Spot Surveys: Six	(Note if survey associated with an AC)
Weather		
Temperature (F): ~ 50°F	**Moon:** Full	**% Cloud Cover:** 100 %
	(full, half, quarter, new)	(increments of 10)
Wind: Calm	**Precipitation:** None	**NOTE:** inclement weather and/or wind >10 mph that inhibits surveyor's ability to hear responses will invalidate survey
(calm, light, moderate, strong)	(none, mist, fog, drizzle, rain)	

Station	Time Start	Time Stop	Total Time	No Response (write NR)	Owl Response and Notes				
					Species	Response time (24hr)	Sex/age	Distance (ft)	Bearing (0-360)
15	20:40	20:50	10 min	NR					
14	20:54	21:04		NR					
13	21:08	21:18		NR					
12	21:21	21:31		NR					
11	21:35	21:45		NR					
10	21:55	22:05		NR					
9	22:08	22:18		NR					
8	22:23	22:33		NR					

4-letter Code	Species
NSO or NSOW	northern spotted owl
BADO	barred owl
BANO	barn owl
FLOW	flammulated owl
GHOW	great horned owl
NOPO	northern pygmy owl
NSWO	northern saw whet owl
WESO	western screech owl

NSO Night Calling Survey Form

Date: 6/16/2022	**Surveyor: JRC**	**Landowner:** Ham Shan
Sunset: 20:50	**Visit No:** 4	**NSO AC No: HUM**
(24 hour)	Six Pass or Spot Surveys:	(Note if survey associated with an AC)
	Weather	
Temperature (F): 50°F	**Moon:** Full	**% Cloud Cover:** 100%
	(full, half, quarter, new)	(increments of 10)
Wind: Calm	**Precipitation:** 0%	**NOTE:**
(calm, light, moderate, strong)	(none, mist, fog, drizzle, rain)	

Station	Time Start	Time Stop	Total Time	No Response (write NR)	Owl Response and Notes				
					Species	Response time (24hr)	Sex/age	Distance (ft)	Bearing (0-360)
6	2040	2050	10 min	UR					
3	2051	2101	"	NR					
7	2111	2121	"	UR					
5	2125	2135	"	UR					
4	2137	2147	"	UR					
2	2151	2201	"	UR					
1	2211	2221	"	UR					

4-letter Code	Species
NSO or NSOW	northern spotted owl
BADO	barred owl
BANO	barn owl
FLOW	flammulated owl
GHOW	great horned owl
NOPO	northern pygmy owl
NSWO	northern saw whet owl
WESO	western screech owl

Property: Hum Sun **Date:** 2022.07.20

Temp: 50 deg **Moon:** quarter

Percipitation: none **Clouds:** none

Wind: calm **Visit#:** 5

Sunset: 2039

Station #	Start	End	Response
10	2029	2039	NR
8	2048	2058	NR
6	2115	2125	NR

Property: Hum Sun **Date:** 2022.07.19

Temp: 60 deg **Moon:** quarter

Percipitation: none **Clouds:** none

Wind: calm **Visit#:** 5

Sunset: 2040

Station #	Start	End	Response
1	2134	2144	NR
3	2148	2158	NR
2	2022	2012	NR
9	2222	2232	NR
12	2240	2250	NR
13	2255	2305	NR
11	2318	2328	NR
4	2338	2348	NR
5	2350	0000	NR
7	0006	0016	NR

Property: Hum Sun **Date:** 7/28/2022

Temp: 70 deg **Moon:** New

Percipitation: none **Clouds:** none

Wind: calm **Visit#:** 6

Sunset: 2037

Station #	Start	End	Response
10	2027	2037	NR
6	2052	2102	NR
3	2105	2115	NR
1	2125	2135	NR

Property: Hum Sun **Date:** 7/27/2022

Temp: 70 deg **Moon:** New

Percipitation: none **Clouds:** none

Wind: calm **Visit#:** 6

Sunset: 2037

Station #	Start	End	Response
13	2027	2037	NR
12	2042	2052	NR
11	2100	2110	NR
9	2121	2131	NR
8	2141	2151	NR
7	2203	2213	NR
5	2218	2228	NR
4	2230	2240	NR
2	2249	2259	NR

Attachment B: 2022 AC Search Data

NSO AC and Follow Up (FO)
Survey Form

Date: 6/24 /2022	**Surveyor: T. Kirk**	**Landowner/Property: HUM SUN**
Survey Start: 1740	**Survey Finish :1949**	**Total Survey Duration: 2 hours 9 minutes**
NSO AC No: HUM0514	**If FO, response from Station #:**	**Sunset: 20:51**
Weather		
Temperature (F): 72	**Moon: new**	**% Cloud Cover: 10**
	(full, half, quarter, new)	(increments of 10)
Wind: calm	**Precipitation: none**	**NOTE:** inclement weather and/or wind >10 mph that inhibits surveyor's ability to hear responses will invalidate survey
(calm, light, moderate, strong)	(none, mist, fog, drizzle, rain)	

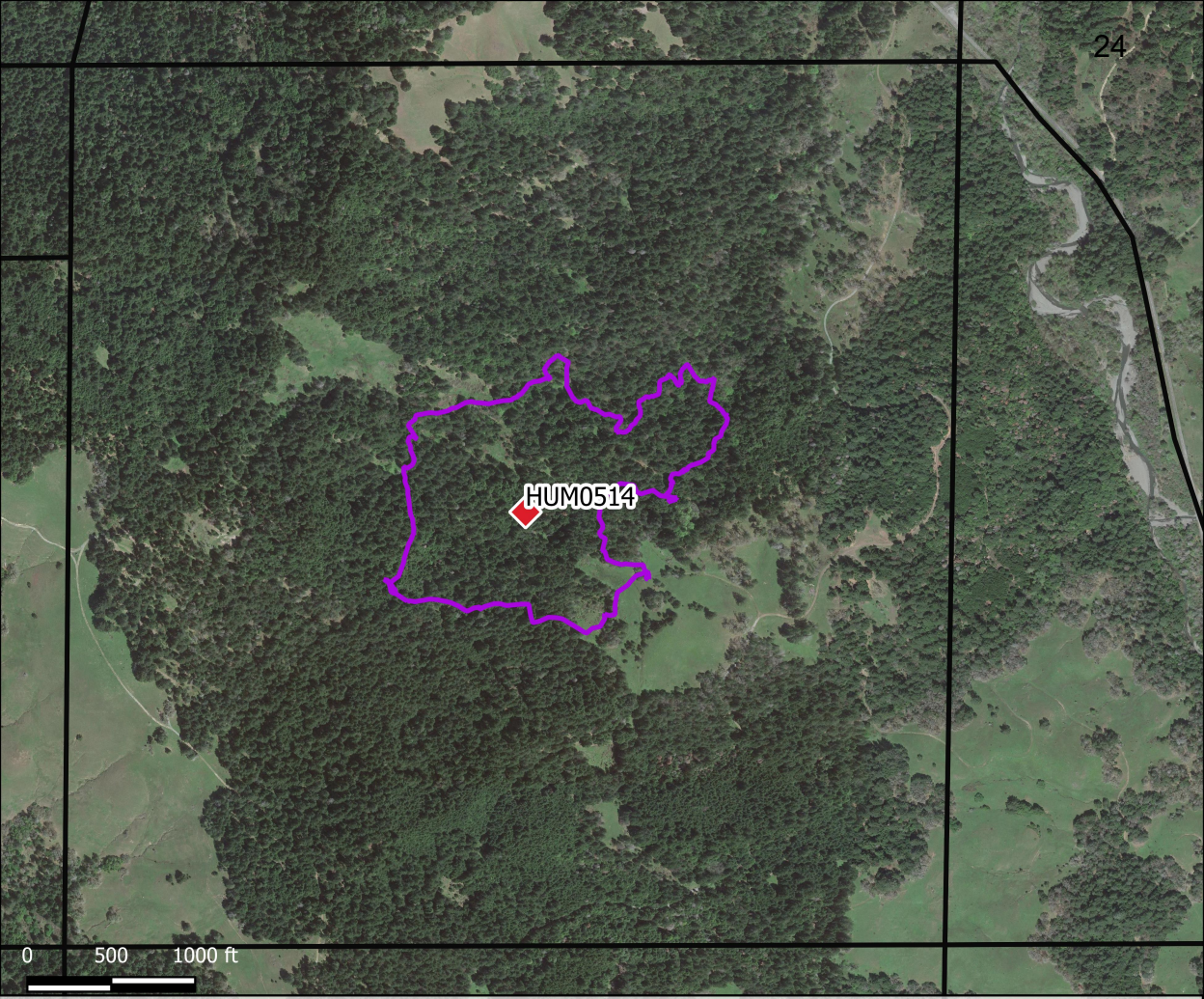
Detection and Location					
Species Code (NSO or BADO)	**Time Detected**	**How Detected** (Visual or Auditory)	**Sex** (M, F, U)	**Age Class** (Adult, Juv, Fledgling, Unknown)	**UTMs**

Mousing Report Record					
Mouse	**Outcome**	**Start Time**	**End Time**		**Notes**
M1					
M2					
M3					
M4					
M5					
M6					
M7					
M8					

Mousing Key	Designate Male or Female
E	Eats mouse
T	Takes mouse to other owl
H	Holds mouse until surveyor leaves
C	Caches mouse
I	Ignores mouse until surveyor leaves
X	Leaves with mouse and is not relocated
L	Leaves with mouse and is relocated without mouse

NSO STATUS: (Unknown, Non-nesting, Nesting behavior observed, Nesting)	**NEST TREE LOCATION:** (UTMs)
NOTES: Including accumulations of whitewash, feathers, pellets	**NEST TREE INFERRED:** (UTMs)

Parked truck on access road in open meadow, at jct. with skid road at edge of Activity Center. Hiked (W) across meadow with many cows, into PSME forest. Traverse (NW) towards creek. Calling – NR. Cross 'main' creek and hike (N), moderate habitat here. Calling – NR. Traverse (N) into mixed-hardwood forest (at smaller creek). Calling - NR. Continue hiking (N) and tie-in with access road, hiked (S) toward the AC centerpoint, calling – NR. Hiked downslope (NE) into good PSME forest, some hardwoods, semi-open understory. Calling – NR. Continue hiking downslope along creek, calling - NR. Continue along creek, cross it and start upslope on the other side, calling - NR. Hiked upslope in PSME forest, calling -NR. Located meadow, arrive at truck, end search.
No owls detected.



2022 AC (HUM0514) Search

AC

2022-06-24 HUM0514 tracks

Parcels

Google Satellite

APN 217-253-001, 217-214-001, 217-052-001, 217-055-002, 217-051-001 Humboldt County BlocksburgQuad T1S R5E sec 31; T2S R5E Sec 6, 7, 18; T2S R4E Sec 1, 12, 13; T1S R4E Sec 35, 36; T2S R4E Sec 2, 10,11,14,15 HM&B HUC12: 180101050601

N

NRM
NATURAL RESOURCES MANAGEMENT CORPORATION

NSO AC and Follow Up (FO)
Survey Form

Date: 6/27/2022	**Surveyor: T. Kirk**	**Landowner/Property: HUM SUN**
Survey Start: 1749	**Survey Finish :2042**	**Total Survey Duration: 2 hours 53 min**
NSO AC No: HUM0841	**If FO, response from Station #:**	**Sunset: 20:52**
Weather		
Temperature (F): 78	**Moon: new**	**% Cloud Cover: 0**
	(full, half, quarter, new)	(increments of 10)
Wind: light	**Precipitation: none**	**NOTE:** inclement weather and/or wind >10 mph that inhibits surveyor's ability to hear responses will invalidate survey
(calm, light, moderate, strong)	(none, mist, fog, drizzle, rain)	

Detection and Location					
Species Code (NSO or BADO)	**Time Detected**	**How Detected** (Visual or Auditory)	**Sex** (M, F, U)	**Age Class** (Adult, Juv, Fledgling, Unknown)	**UTMs**
BDOW	1812	Auditory	U	Unknown	441124 4461838
NSO	1958	Visual	U	Fledgling	441045 4461387
NSO	2002	Visual	U	Adult	441088 4461463

Mousing Report Record					
Mouse	**Outcome**	**Start Time**	**End Time**		**Notes**
M1	I	2012	2016		Not interested in mice
M2					
M3					
M4					
M5					
M6					
M7					
M8					

Mousing Key	**Designate Male or Female**
E	Eats mouse
T	Takes mouse to other owl
H	Holds mouse until surveyor leaves
C	Caches mouse
I	Ignores mouse until surveyor leaves
X	Leaves with mouse and is not relocated
L	Leaves with mouse and is relocated without mouse

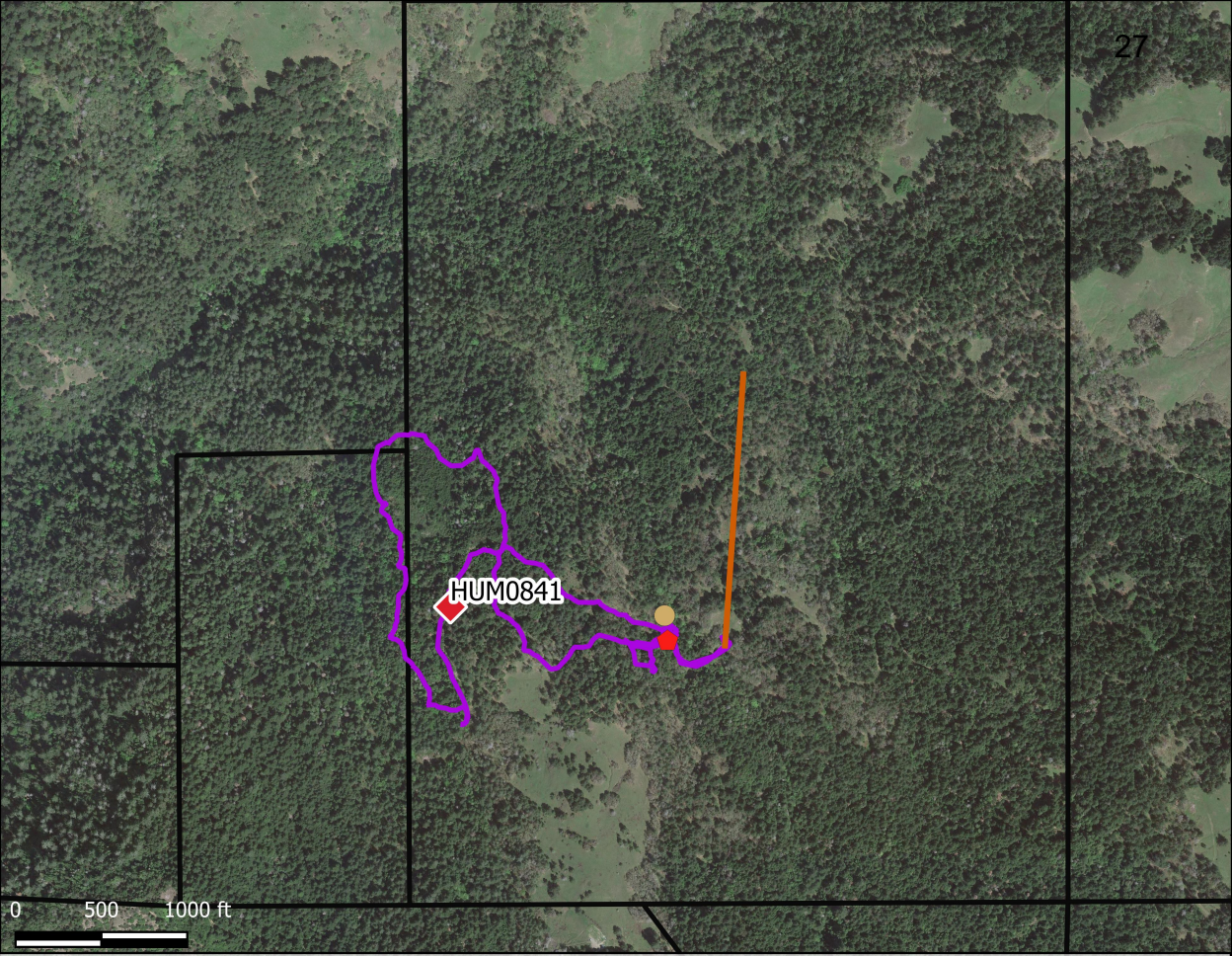
NSO STATUS: Unknown (Unknown, Non-nesting, Nesting behavior observed, Nesting)	**NEST TREE LOCATION:** (UTMs)
NOTES: Including accumulations of whitewash, feathers, pellets	**NEST TREE INFERRED:** (UTMs)

Park truck on access road at jct. on (E) side of Activity Center. Hike road to (W) into forest, cross creek. Calling - NR. Continue along road, good habitat: PSME overstory, near creek. Continue hiking (W) along old road, thick brush, calling - NR. Barred owl detection (18:12), stopped calling. Continue hiking on old road, turning (S) on other side of 'ridge'. Hike road until next creek, calling – NR. Hike downslope (towards creek) into PSME forest, calling -NR. Dropped down to creek, poor habitat, PSME harvested and much blowdown of hardwoods, thick brush. Traverse to (N) below old road, along creek, calling – NR. Continue to traverse, turning to (E), and found good habitat: larger PSME, semi-open understory. Calling - NR. Hike upslope, calling - NR. Crossed old road used for access, hiked up to top of 'ridge', calling – NR. Hike to (SE), on (E) side of 'ridge', calling – NR. Crossed small creek, and I heard a juvenille NSO contact call (19:58) – hissing contact calls.

I observed NSO perched on branch of oak tree, some down still on it. I GPSed the NSO location and took pictures (far away, up in tree). I used binoculars to ID the owl. As I approached, owl flew to another tree, then another – crossing the access road, flying downstream along the creek. I followed, and found it perched on a branch above the creek. A second NSO flew into the 'creek area' (20:02) and NSO (1) also began flying around. Both of them landed in the vicinity of the creek. I offered Mouse #1 to NSO (1), there was *no interest* in Mouse #1, after 4 minutes I retrieved the mouse. Then NSO (1) flew back to the stand where it was first detected. NSO (2) had landed in a nearby tree, as I approached with a mouse, it flew off downstream. I GPSed NSO (2), at its prior location near the creek. This NSO appeared to be an adult, but never called. This owl was never photographed.

I followed NSO (1) back across the access road and relocated it. I offered the mouse again, but again the NSO flew away, crossing several small creeks. I found the owl again and took some 'better' pictures (still far away). There was no re-detection of NSO (2) after it flew downslope. NSO (1) flew high up into a tree and was 'hiding' from me. After trying to get it interested in the mice again, with no luck, I hiked the access road back to the truck.

(1) Barred owl detected, (1) NSO juvenile/fledgling and (1) NSO adult detected.



2022 AC (HUM0841) Search Results

AC
NSO Adult (visual detection)
NSO Fledgling/Juvenile (visual detection)
2022-06-27 HUM0841 tracks
BADO (auditory detection)
Parcels
Google Satellite

N

APN 217-253-001, 217-214-001, 217-052-001, 217-055-002, 217-051-001 Humboldt County BlocksburgQuad T1S R5E sec 31; T2S R5E Sec 6, 7, 18; T2S R4E Sec 1, 12, 13; T1S R4E Sec 35, 36; T2S R4E Sec 2, 10,11,14,15 HM&B HUC12: 180101050601

NRM
NATURAL RESOURCES MANAGEMENT CORPORATION

NSO AC and Follow Up (FO)
Survey Form

Date: 6/21 /2022	**Surveyor: T. Kirk**	**Landowner/Property: HUM SUN**
Survey Start: 1812	**Survey Finish :2019**	**Total Survey Duration: 2 hours 7 minutes**
NSO AC No: HUM1095	**If FO, response from Station #:**	**Sunset: 20:50**
Weather		
Temperature (F): 78	**Moon: new**	**% Cloud Cover: 0**
	(full, half, quarter, new)	(increments of 10)
Wind: calm	**Precipitation: none**	**NOTE:** inclement weather and/or wind >10 mph that inhibits surveyor's ability to hear responses will invalidate survey
(calm, light, moderate, strong)	(none, mist, fog, drizzle, rain)	

Detection and Location					
Species Code (NSO or BADO)	**Time Detected**	**How Detected** (Visual or Auditory)	**Sex** (M, F, U)	**Age Class** (Adult, Juv, Fledgling, Unknown)	**UTMs**

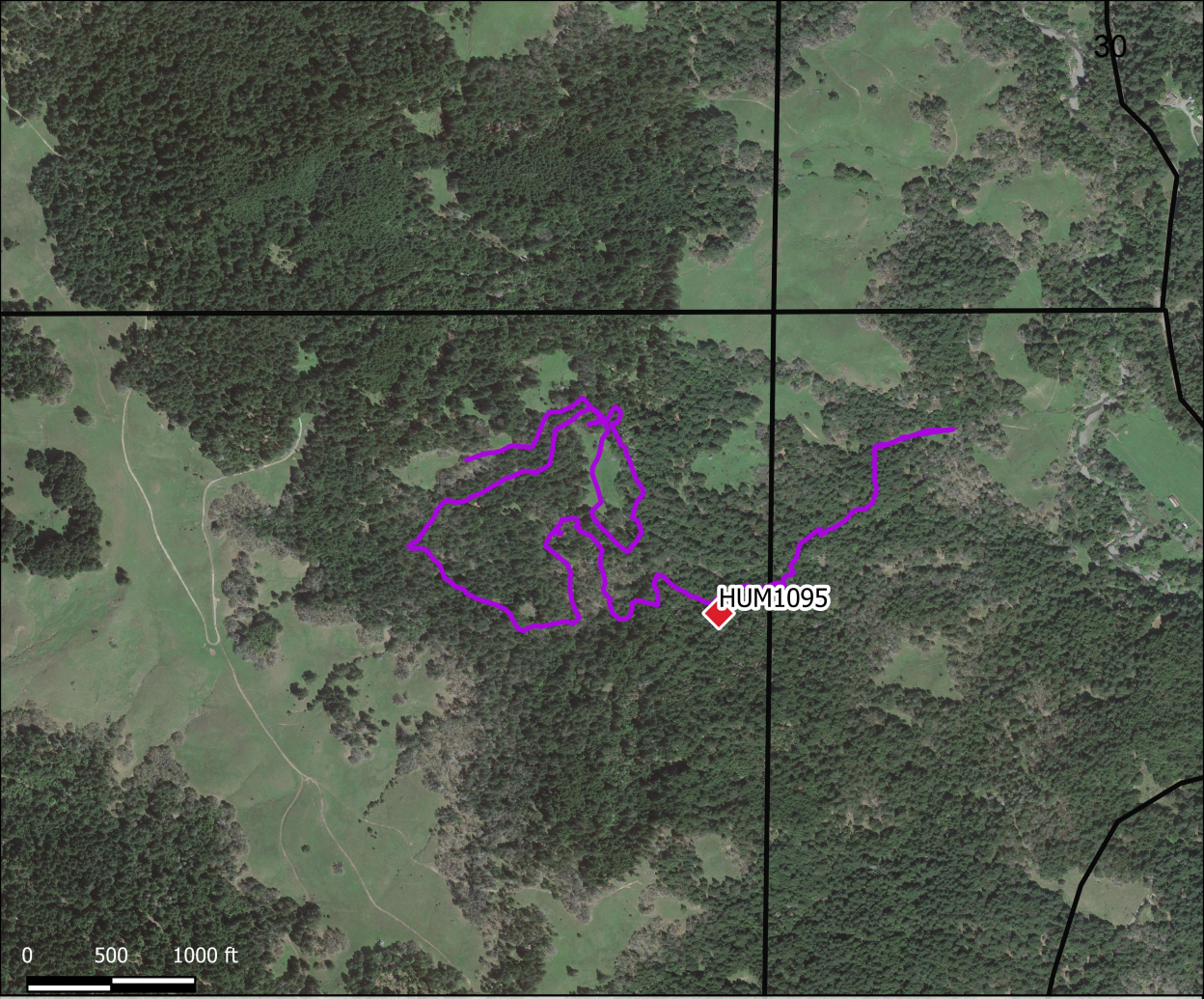
Mousing Report Record					
Mouse	**Outcome**	**Start Time**	**End Time**		**Notes**
M1					
M2					
M3					
M4					
M5					
M6					
M7					
M8					

Mousing Key	Designate Male or Female
E	Eats mouse
T	Takes mouse to other owl
H	Holds mouse until surveyor leaves
C	Caches mouse
I	Ignores mouse until surveyor leaves
X	Leaves with mouse and is not relocated
L	Leaves with mouse and is relocated without mouse

NSO STATUS: (Unknown, Non-nesting, Nesting behavior observed, Nesting)	**NEST TREE LOCATION:** (UTMs)
NOTES: Including accumulations of whitewash, feathers, pellets	**NEST TREE INFERRED:** (UTMs)

Park truck on access road near AC centerpoint. Hike down road (E), to bottom of Activity Center. Hiked too far down, hike back up road and (S) into forest (along creek). Calling - NR. Continue along creek, moderate habitat: Young PSME some hardwoods. Continue hiking (W) along creek, thick brush, calling - NR. Poor habitat upslope, mostly hardwoods, continue along creek - calling - NR. Hike upslope into PSME forest, calling -NR. Dropped back down to creek, better habitat: larger PSME, semi-open understory. Calling - NR. Hike upslope, calling - NR. Circle around to the (E) and then (N) - calling - NR. Tie-in with access road, calling- NR, cross over to (E) side, calling - NR. Turn around (on road) walk downslope towards the truck, calling - NR.

No owls detected.



2022 AC (HUM1095) Search

AC

2022-06-21 HUM1095 tracks

Parcels

Google Satellite

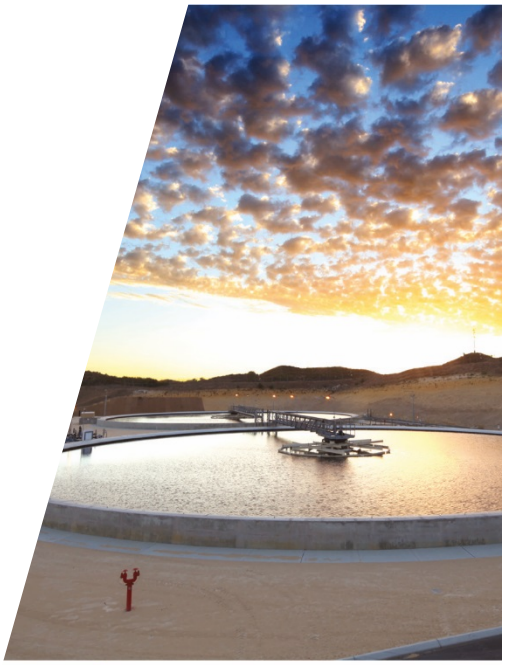
APN 217-253-001, 217-214-001, 217-052-001, 217-055-002, 217-051-001 Humboldt County BlocksburgQuad T1S R5E sec 31; T2S R5E Sec 6, 7, 18; T2S R4E Sec 1, 12, 13; T1S R4E Sec 35, 36; T2S R4E Sec 2, 10,11,14,15 HM&B HUC12: 180101050601

N

NRM
NATURAL RESOURCES MANAGEMENT CORPORATION

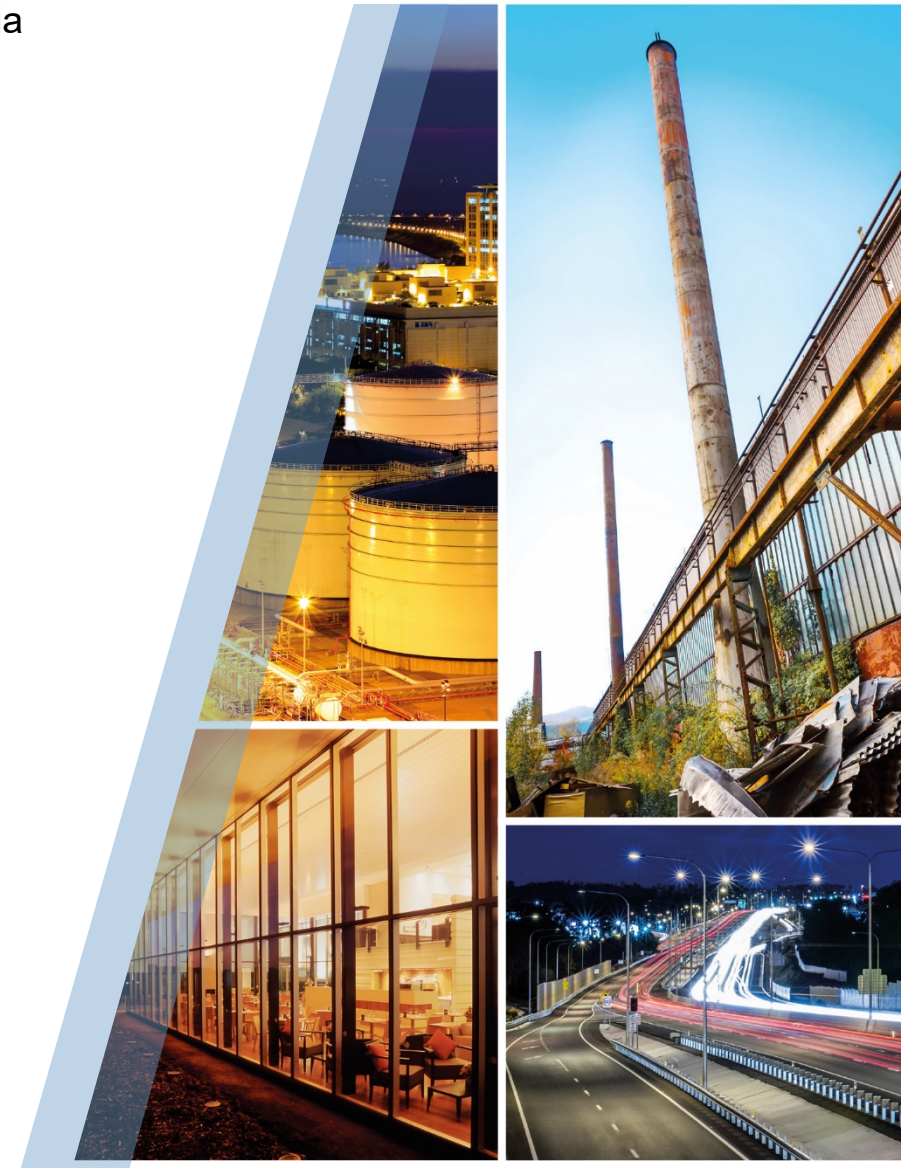
Appendix 2O

Aquatic Resources Report



Aquatic Resources Report

Hum Sun Farms Development Project
Humboldt County, California



Hum Sun LLP

Executive Summary

This aquatic resources delineation map (Appendix A) was based on field observations of soil, vegetation, and hydrologic characteristics as defined in the United States Army Corps of Engineers (USACE) *Wetland Delineation Manual* (Environmental Laboratory 1987) and the *Regional Supplement of the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region, Version 2.0* (USACE 2010).

Information included in this delineation is subject to verification by the USACE. GHD advises all parties to treat the information contained herein as preliminary until the USACE provides written verification of the boundaries of their jurisdiction. A desktop review of available data was compiled to provide a frame of reference for the site. A pedestrian wetland delineation was conducted during April and May 2019, during normal climate conditions for the area. Twenty-five wetlands were identified within the Survey Area. Due to the lack of development of the surrounding landscape, the quality of these features are good.

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Figure 6 Floodplain
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Appendix D Wetland Determination Data Forms

Acronyms

FAC	Facultative plant
FACU	Facultative upland plant
FACW	Facultative wetland plant
GNSS	Global Navigation Satellite System
GPS	Global Positioning System
NI	Not indicative
NRCS	Natural Resources Conservation Service
NWI	National Wetland Inventory
OBL	Obligate plant
OHWM	Ordinary High Water Mark
UPL	Upland plant
US	United States
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
W	Wetland
WD	Wetland Determination

1. Introduction

1.1 Contact Information

Applicant and Owner:
Hum Sun LLP.
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65 Uranus Terrace
San Francisco, California 94114

Agent(s):
GHD, Inc.
Ken Mierzwa
ken.mierzwa@ghd.com
707-443-8326

1.2 Purpose of this Report

The purpose of this report is to identify and describe wetlands and aquatic resources (provided in Appendix A). This report facilitates efforts to:

1. Avoid or minimize impacts to wetland and aquatic resources during the design process.
2. Document wetland and aquatic resource boundary determinations for review by regulatory authorities.
3. Provide background information.

1.3 Project Description

The proposed activity is proposed development of a cannabis growing operation within portions of a larger property currently utilized for grazing and occasional timber harvest. This report is one component of a larger environmental study intended to support CEQA and permitting.

The proposed activity includes several components focused largely in three parts of the site. These include cultivation areas, water sources (ponds), and structures (drying sheds). Overall, the Project includes approximately 12 acres for proposed cultivation (4 acres interior; 8 acres exterior), including the construction of processing buildings and ponds and the drilling of wells.

Three proposed cultivation areas have been identified: a greenhouse complex near the Alderpoint Road entrance and two outdoor cultivation areas (“Jellybean” and “Honeyhole”), both on or near the ridgetop. The Jellybean site is near the highest point on the ridgetop and relatively centrally located. The Honeyhole site is about 0.6 mile to the northwest, at and just southwest of the ridgetop. Seven pond locations have been identified, most within reasonable proximity to cultivation sites. Four drying sheds are proposed. Two are near the greenhouse location described above, and one is near each of the interior cultivation sites.

1.4 Survey Area Description

For purposes of this report, we created a nested study design utilizing a tightly defined boundary limited to a 250-foot buffer downslope and 115 foot buffer upslope around actual project-related ground disturbance areas. These study areas are “Road Site,” “Ponds 1, 2, and 3,” “Pond 4,” “Ponds 6 and 7,” “Jelly Bean,” and “Honey Hole” (Appendix A, Figure 1). In practice we excluded only peripheral northern, southern, and southwestern portions of the properties which are far removed

from any proposed activities and which have habitat types similar to those we characterized elsewhere on the site. We were not able to access adjoining private lands, thus our study boundaries are limited to parcels owned by Hum Sun Ranch.

2. Location

The project is located in southeastern Humboldt County, just north of Blocksburg, California, at latitude 40.309818° North and longitude -123.656221° West (Appendix B, Figure 1).

Driving directions are as follows:

- From Blocksburg, head northwest on Alderpoint Road toward Cemetery Road, 2.8 miles. The main gate is just north of a bridge over Larabee Creek. The address is 30740 Alder Point Road, Blocksburg CA 95514.

3. Methods

3.1 Technical Method

The aquatic resource delineations are based on field observations of soil, vegetation, and hydrologic characteristics as defined by the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region, Version 2.0* (USACE 2010). Ordinary High Water Mark (OHWM) was determined using *A Guide to Ordinary High Water Mark (OHWM) Delineation for Non-Perennial Streams in the Western Mountains, Valleys, and Coast Region of the United States* (Mersel and Lichvar 2014). Three-parameter data points (soil pits and vegetative plots) within the Survey Area were documented and analyzed. Wetland Determination Forms for these data points are presented in Appendix D.

3.2 Date of Field Observations

The field observations for this delineation were conducted by Amy Livingston and Misha Schwarz on April 11, 12, 25, and 26, 2019 and May 9, 2019. Ms. Livingston has a MS degree in Natural Resources with a plant ecology focus and Mr. Schwarz is a Certified Professional Soils Scientist and a Professional Wetlands Scientist.

3.3 Wetland Vegetation Indicator Status Reference

The USACE 2016 National Wetland Plant List for the western mountains, valleys, and coast region was used to determine the wetland indicator status for each plant species (Lichvar et. al. 2016 and USACE 2016b). When species were not officially listed, additional references were used to verify species affinities. If no reference to an indicator status were found, species were counted as upland species (as per USACE 2010 pg. 19). In addition, vegetation communities were classified using the *Manual of California Vegetation* (CNPS 2019).

3.4 Hydric Soil Method of Determination

A standard Munsell® soil color chart was used to determine soil matrix and mottle colors, if applicable.

3.5 Wetland Hydrology Method of Determination

Indicators of depth and duration of soil saturation, ponding, drainage patterns, bank-full, and the OHWM were observed in the field. Aerial photography was also used to verify field determinations.

3.6 Mapping Techniques

The location of three-parameter data points were mapped using Global Positioning System (GPS) capability on a Trimble Geo 7X Handheld Global Navigation Satellite System (GNSS) device with post-processing analysis to establish sub-meter accuracy.

4. Existing Conditions

A desktop review of available data was compiled to provide a frame of reference for the site, including the United States Department of Agriculture's (USDA) Natural Resource Conservation Service (NRCS) web soil survey and the United States Fish and Wildlife Service's (USFWS) National Wetland Inventory (NWI). A pedestrian survey and wetland delineation were conducted on April 11, 12, 25, and 26, 2019 and May 9, 2019, during normal climate conditions for the area. A survey area of approximately 12-acres was considered during these investigations. The delineation focused on the survey area proposed for development.

4.1 Landscape Setting

The site (Appendix B, Figure 1) includes 12 contiguous parcels and in sum covers approximately 3,200 acres. The site is bisected by a central roughly northwest-southeast trending ridge, with a series of small ravines and ephemeral streams flowing east and northeast into Larabee Creek (flows through the eastern portion of the site), or southwest into Coleman Creek and to the Eel River (located about 0.5-mile west of the westernmost part of the site; Appendix B, Figure 2). Elevations range from approximately 600 feet in the southwest corner, 1,300 feet along the eastern edge, up to about 2,300 feet at the highest part of the central ridge (Appendix B, Figure 2). Aerial photographic maps of the site are provided in Appendix B, Figure 3.

4.1.1 Hydrology

Water that lands in the survey area runs off from ridgetop ravines, ephemeral streams, or is otherwise conveyed via Larabee Creek on the eastern portion of the site, Coleman Creek on the southwest, and the Eel River to the west.

4.1.2 Soils

The NRCS Web Soil Survey identifies two units within the survey area (Appendix B, Figure 4), Tannin-Wohly complex, 9 to 30% slopes and Parkland, dry-Garberville, dry complex, 2 to 9 percent

(%) slopes, that comprise 10.7% of the Area of Interest (AOI). The remaining 89.3% of the AOI is listed as “Area not surveyed, access denied.”

A brief map unit description, as generated by the NRCS Web Soil Survey, is provided for each soil unit below (USDA 2019).

Tannin-Wohly complex (9 to 30% slopes)

The map unit composition is as follows: 60% Tannin and similar soils, 25% Wohly and similar soils, and 15% minor components. The setting includes backslopes and mountainflank of mountain slopes and ridges with colluvium derived from mudstone and/or colluvium derived from sandstone.

For Tannin, the depth to a restrictive feature is more than 80 inches. The natural drainage class is well drained. The depth to the water table is more than 80 inches. There is no frequency of flooding or ponding. The available water storage in a soil profile is “High” or about 10.9 inches. Irrigated land capability classification is not specified. Non-irrigated land capability classification is 4e. The hydrologic soil group is B. The soil series is not hydric

For Wohly, the depth to a restrictive feature is 20 to 49 inches to strongly contrasting textural stratification. The natural drainage class is well drained. The depth to the water table is more than 80 inches. There is no frequency of flooding or ponding. The available water storage in a soil profile is “Moderate” or about 6.1 inches. There is no specified irrigated land capability. Non-irrigated land capability is classified as 6e. The hydrologic soil group is B. The soil series is not hydric.

The descriptions of minor components (none of which are inherently hydric) are as follows: 7% Burgsblock, five percent Coolyork and 3% Dryfield (USDA 2019).

Parkland, dry-Garberville, dry complex (2 to 9 percent slopes)

The map unit composition is as follows: 50% Parkland, dry, and similar soils, 40% Garberville, dry, and similar soils, and 10% minor components. The setting includes linear or concave backslopes or footslopes with alluvium derived from sedimentary rock.

For Parkland, Dry, the depth to a restrictive feature is more than 80 inches. The natural drainage class is moderately well drained. The runoff class is high. The depth to the water table is about 20 to 39 inches. There is no frequency of flooding or ponding. The available water storage is “Moderate” or about 8.6 inches. Irrigated land capability classification is 2e. Non-irrigated land capability classification is 2e. The hydrologic soil group is C. The soil series is not hydric.

The descriptions of minor components (none of which are inherently hydric) are as follows: 5% Coolyork, 3% Burgsblock, and 2% Tannin (USDA 2019).

For Garberville, Dry, the depth to a restrictive features is more than 80 inches. The natural drainage class is well drained. The runoff class is medium. The depth to the water tables is more than 80 inches. There is no frequency of flooding or ponding. The available water storage is “Moderate” or above 8.6 inches. Irrigated land capability is classification 2e. Non-irrigated land capability classification is 2e. They hydrologic soil group is C. The soil series is not hydric.

The description of minor components (none of which are inherently hydric) are as follows: 5% Coolyork, 3% Burgsblock, and 2% Tannin (USDA 2019).

4.1.3 Vegetation Communities/Habitat

Vegetation communities and habitats are described in the Vegetation Mapping Report. In general, the site is characterized by Douglas fir dominated conifer forest, annual grassland, and smaller areas of oak woodland and riparian forest. Appendix C provides the list of plants noted during the wetland delineation, including scientific name, common name, and the wetland indicator status.

4.1.4 Interstate or Foreign Commerce

There is no interstate or foreign commerce within the survey area.

4.2 Aquatic Resources

4.2.1 Overview

The total acreage of mapped wetlands within the study area is 2.22 acres. No other aquatic resources were mapped within the study area. No streams were delineated due to the absence of physical characteristics of an ordinary high water mark. Aquatic resources delineated are depicted on the Aquatic Resources Delineation Map (Appendix A) and summarized on the Table 4.1 and soil color for all wetland sampling points are provided in Table 4.2. The current NWI and flood plain map for the area are provided in Appendix B Figure 5 and Figure 6, respectively.

Table 4.1 Federal Aquatic Resources within the Delineated Area

Aquatic Resource Name (Jurisdiction)	Aquatic Resource Classification		Aquatic Resource Size (acre)
	Cowardin	Location (lat/long)	
Figure 1.1 – Pond 4			
Wetland 1	PEM	40.319682; -123.671572	0.04
Wetland 2	PEM	40.318659; -123.671920	0.04
Wetland 3	PEM	40.319127; -123.672232	0.01
Figure 1.2 – Honey Hole			
Wetland 4	PEM	40.321088; -123.694998	0.40
Wetland 5	PEM	40.320993; -123.695234	0.03
Wetland 6	PEM	40.320378; -123.694601	0.01
Wetland 7	PEM	40.319838; -123.694880	0.26
Figure 1.3 – Jelly Bean			
Wetland 8	PEM	40.316740; -123.684438	0.02
Wetland 9	PEM	40.315820; -123.683263	0.01
Wetland 10	PEM	40.315349; -123.683825	0.05
Figure 1.4 – Ponds 6 & 7			
Wetland 11	PEM	40.313125; -123.683474	0.06
Wetland 12	PEM	40.312678; -123.683101	0.07
Wetland 13	PEM	40.312410; -123.682953	0.04
Wetland 14	PEM	40.312126; -123.682389	0.01
Wetland 15	PEM	40.311950; -123.682444	0.01
Wetland 16	PEM	40.311191; -123.681538	0.02

Table 4.1 Federal Aquatic Resources within the Delineated Area

Aquatic Resource Name (Jurisdiction)	Aquatic Resource Classification		Aquatic Resource Size (acre)
	Cowardin	Location (lat/long)	
Figure 1.5 – Road Site			
Wetland 17	PEM	40.309628; -123.659391	0.15
Wetland 18	PEM	40.309977; -123.658816	0.03
Wetland 19	PEM	40.310657; -123.659419	0.12
Wetland 20	PEM	40.311286; -123.659949	0.06
Wetland 21	PEM	40.310978; -123.658911	0.62
Figure 1.6 – Ponds 1, 2, & 3			
Wetland 22	PEM	40.313170; -123.662084	0.01
Wetland 24	PEM	40.315338; -123.661593	0.04
Wetland 25	PEM	40.315015; -123.663061	0.13
Total US Jurisdiction:			2.22

- Wetlands 1, 2, and 3 (Appendix A, Figure 1.1) are Palustrine Emergent (PEM) wetlands located in the Pond 4 Study Area.
  - **Wetland 1:** Wetland 1 occupies 0.04 acres within the Survey Area. Dominant hydrophytic vegetation observed within the wetland consisted of spreading rush (*Juncus patens*; facultative wetland plant ((FACW) and pennyroyal (*Mentha pulegium*; obligate plant (OBL)). Other hydrophytic species observed at non-dominant densities included water chickweed (*Montia fontana*; FACW), American brooklime (*Veronica americana*; OBL), curly dock (*Rumex crispus*; FAC), and western manna grass (*Glyceria* x *occidentalis*; OBL). Soil was characterized as silt loam to silty clay loam with redox dark surface (10YR 3/2) between 3 and 14 inches deep with redox features as iron concentrations of 7.5YR 4/4 Primary indicators for hydrology were observed by the presence of a high water table, saturation, algal mat or crust, and presence of reduced iron. Secondary indicators of hydrology were observed by the presence of drainage patterns, geomorphic position, and the Facultative Plant-Nuetral Test.
  - **Wetland 2 and Wetland 3:** Wetland 2 is an inboard ditch that occupies 0.04 acres within the Survey Area. Wetland 3 is hydrologically connected to Wetland 2 by a culvert and occupies 0.01 acres within the Study Area. Dominant hydrophytic vegetation observed within the wetlands consisted of water-starwort (*Callitriche* sp.; OBL) and whitewater crowfoot (*Ranunculus aquatilis*; OBL). Other hydrophytic species observed at non-dominant densities included pennyroyal, common buttercup (*Ranunculus californicus*; facultative plant (FAC)), western manna grass, and hairy wood rush (*Luzula comosa*; FAC). Soil was characterized as clay loam with a matrix color of 10YR 4/4 with a redox features (depleted matrix) of 2.5YR 3/1. This wetland location occurs within a ditch and man-induced wetlands do not require hydric soils to meet the criteria of a wetland. Primary indicators for hydrology were observed by the presence of surface water, algal mat or crust, and the presence of reduced iron. Secondary indicators for hydrology were observed by the presence of geomorphic position and FAC-Neutral Test.

- Wetlands 4, 5, 6, and 7 (Appendix A, Figure 1.2) are PEM wetlands located in the Honey Hole Survey Area.
  - **Wetland 4:** Wetland 4 is located in a grazed pasture and occupies 0.40 acres within the Survey Area. Dominant hydrophytic vegetation observed within the wetland consisted of spreading rush, wall barley (*Hordeum murinum*; FAC) and Italian rye grass (*Festuca perennis*; FAC). Other hydrophytic plant species observed at non-dominant densities included water-starwort, western manna grass, pennyroyal, annual blue grass (*Poa annua*; FAC), and curly dock. Soil was characterized as loam to silt loam with redox dark surface. A matrix color of 10YR 2/1, with redox features as iron concentrations of (10YR 5/6), was recorded. Primary indicators of hydrology were observed by the presence of surface water, high water table, saturation, and algal mat or crust.
  - **Wetland 5:** Wetland 5 is located in a gully and occupies 0.03 acres within the Survey Area. Dominant hydrophytic vegetation observed within the wetland consisted of spreading rush and pennyroyal. Other hydrophytic plant species observed at non-dominant densities included wall barley, curly dock, water-starwort, and common velvet grass (*Holcus lanatus*; FAC). Soil was characterized as loam with a matrix color of 10YR 2/1 from 0 to 6 inches with iron concentrations and sandy loam with a matrix color of 7.5YR 4/6 from 6 to 14 inches deep. This area appears to be manipulated or a result of mass wasting. Primary indicators of hydrology were observed by the presence of saturation and secondary indicators were observed by the FAC-Neutral Test.
  - **Wetland 6 and Wetland 7:** These wetlands are located in grazed pasture land. Wetland 6 occupies 0.01 acres and Wetland 7 is located within a gully and occupies 0.26 acres within the Survey Area. Dominant hydrophytic vegetation observed within the wetlands consisted of western manna grass. Other non-dominant hydrophytic species observed included soft rush (*Juncus effusus*; FACW), spreading rush, and pennyroyal. Soil was characterized as gravelly loam with redox dark surface with a matrix color of 10YR 2/1 with redox features as iron concentrations of 7.5YR3/4 visible as concentrations in the matrix from 0 to 4 inches deep. From 4 to 14 inches deep, soil is silty clay loam with a matrix color of 10YR 2/1 with redox features as iron concentrations of 7.5YR 4/4.in the matrix, high water table, saturation, algal mat or crust, and presence of reduced iron. Secondary indicators of hydrology were observed by geomorphic position and FAC-Neutral Test.
- Wetlands 8, 9, and 10 (Appendix A, Figure 1.3) are PEM wetlands located in the Jelly Bean Study Area.
  - **Wetland 8:** Wetland 8 is located in a roadside ditch and occupies 0.02 acres within the Survey Area. Dominant hydrophytic vegetation observed within the wetland consisted of spreading rush. Other non-dominant hydrophytic vegetation observed included pennyroyal and common buttercup. Soil was characterized as silt loam, loam, and clay loam at various depths with redox dark surface. From 0 to 9 inches, a matrix color of 10YR 3/2, with redox features observed as iron concentrations of (7.5YR 4/4) in the matrix. From 9 to 14 inches, a matrix color of 10YR 4/3, with redox features observed as depletions in the pore lining (10YR 5/1). The soil is a result of a roadside ditch and redox features are still developing at this location. Primary indicators of hydrology were observed by the presence of saturation,

sparsely vegetated concave surface, water-stained leaves, and presence of water. Secondary hydrology indicators were observed by the presence of drainage patterns.

- **Wetland 9:** Wetland 9 occupies 0.01 acres within the Survey Area. Dominant hydrophytic vegetation observed within the wetland consisted of pennyroyal with spreading rush and curly dock at non-dominant densities. Soil was characterized as gravelly loam with redox dark surfaces. A matrix color of 10YR 3/2 and redox features observed as iron concentrations (10YR 4/4) in the matrix at 0 to 3 inches. Primary indicators of hydrology were observed by the presence of saturation, algal mat or crust, and presence of reduced iron. Secondary hydrology indicators included geomorphic position and FAC-Neutral Test.
- **Wetland 10:** Wetland 10 occupies 0.05 acres within the Study Area. Dominant hydrophytic vegetation observed within the wetland consisted of pennyroyal with common buttercup and spreading rush observed in non-dominant densities. Soil was characterized as silt loam to loam with a depleted matrix. From 0 to 5 inches deep, a matrix color of 2.5YR 3/1 was observed. From 5 to 14 inches deep, a matrix color of 2.5YR 4/1 was observed with redox features (7.5YR 4/4) visible as iron concentrations in the matrix. Primary indicators for hydrology were observed by the presence of surface water, saturation, and reduced iron. Secondary indicators for hydrology were observed by the presence of drainage patterns and the FAC-Neutral Test.

- Wetlands 11, 12, 13, 14, 15, and 16 (Appendix A, Figure 1.4) are PEM wetlands located in the Ponds 6 and 7 Study Area.
  - **Wetland 11:** Wetland 11 was delineated along the edge of a man-made pond and occupies 0.06 acres within the Study Area. Dominant hydrophytic vegetation observed within the wetland consisted of soft rush and western manna grass with water-starwort observed in non-dominant densities. Approximately 65% of the wetland area was bare ground with standing water. Soil was characterized as gravelly loam with redox dark surface. From 0 to 10 inches deep, a matrix color of 10YR 3/1 was observed with redox features (10YR 4/6) represented by iron concentrations in the matrix. Primary indicators of hydrology were observed by the presence of surface water, saturation, algal mat or crust, and recent iron reduction in tilled soils.
  - **Wetland 12:** Wetland 12 is located in a gully on grazed pastureland and occupies 0.07 acres within the Study Area. Dominant hydrophytic vegetation observed within the wetland consisted of pennyroyal and spreading rush with curly dock and wall barley observed in non-dominant densities. Soil was characterized as silt loam with redox dark surface. From 0 to 6 inches, a matrix color of 10YR 2/1 was observed. From 6 to 14 inches, a matrix color of 10YR 2/2 was observed with redox features (7.5YR 4/4) represented by iron concentrations in the matrix. Primary indicators for hydrology were observed by the presence of saturation and algal mat or crust. Secondary indicators for hydrology were observed by the presence of drainage patterns, geomorphic position, and the FAC-Neutral Test.
  - **Wetland 13:** Wetland 13 occurs in a slight depression on grazed pastureland and occupies 0.04 acres within the Study Area. Dominant hydrophytic vegetation observed within the wetland consisted of pennyroyal with buttercup (*Ranunculus muricatus*; FACW), water-starwort, and western manna grass observed in non-dominant densities. Soil was

characterized as gravelly loam to silt loam with redox dark surface. From 0 to 3 inches, a matrix color of 10YR 2/2, with redox features (7.5YR 5/6) observed as iron concentrations in the matrix. From 3 to 13 inches, a matrix color of 10YR 2/1 was observed. Primary indicators of hydrology included the presence of surface water, algal mat or crust, and the presence of reduced iron. Secondary hydrology indicators included geomorphic position and the FAC-Neutral Test.

- **Wetland 14 and Wetland 15:** Wetland 14 occupies 0.01 acres and Wetland 15 occupies 0.01 acres within the Study Area. Dominant hydrophytic vegetation observed within these wetlands consisted of pennyroyal and water-starwort, with individuals of western manna grass, common buttercup, and soft rush observed in non-dominant densities. Soil was characterized as loam to gravelly clay loam with a redox dark surface. Redox features consisted of concentrations and depletions in the matrix. From 0 to 4 inches, a matrix color of 10YR 3/2 and redox features as iron concentrations of 7.5YR 4/4 were recorded. From 4 to 8 inches, a matrix color of 10YR 3/2 with redox features of 7.5YR 5/6 as iron concentrations were recorded. From 8 to 13 inches deep, a matrix color 10YR 4/3 with redox features of 10YR 4/1 as iron concentrations were recorded. Primary indicators of hydrology included the presence of surface water, saturation, algal mat or crust, and recent iron reduction in tilled soils. Secondary indicators of hydrology were observed by the presence of drainage patterns, geomorphic position, and FAC-Neutral Test.
- **Wetland 16:** Wetland 16 occurs in a roadside ditch and occupies 0.02 acres within the Study Area. Dominant hydrophytic vegetation observed within the wetland consisted of pennyroyal and spreading rush with water chickweed and common buttercup observed in non-dominant densities. Soil was characterized as loam to clay loam with a depleted matrix. From 0 to 4 inches, a matrix color of 10YR 3/2 was recorded with redox features represented as iron concentrations in the matrix (7.5YR 4/4). From 4 to 8 inches, a matrix color of 2.5Y 5/1 was recorded with redox features represented by iron concentrations in the matrix (7.5YR 4/6). From 8 to 14 inches a matrix color of G1 6/10Y was recorded. Primary indicators of hydrology were observed by the presence of saturation and algal mat or crust. Secondary indicators of hydrology were observed by the presence of drainage patterns, geomorphic position, and the FAC-Neutral Test. A wet swale was encountered south of wetlands 16. A soil pit was dug and a vegetative plot was conducted. Soils from 0-3 inches consisted of a silt loam with a matrix color of 10YR 3/2 with no redox features. Soils from 3-6 inches consisted of a gravelly silt loam with a matrix color of 10YR 3/2 with redox feature as iron concentrations of 7.5YR 4/4. From 6-14 inches soils consisted of a loam with a matrix color of 10YR 3/2 with no redox. Reduced iron was not present. Plant species consisted of 50% FAC or wetter. The soil does not meet the requirement of a Redox Dark Surface and a minimum of 4 inches was not met. This swale is not a three parameter wetlands.

- Wetlands 17, 18, 19, 20, and 21 (Appendix A, Figure 1.5) are PEM wetlands located in the Road Site Study Area.
  - **Wetland 17:** Wetland 17 occupies 0.15 acres within the Study Area. Dominant hydrophytic vegetation observed within the wetland consisted of rush (*Eleocharis* sp.), water parsley (*Oenanthe sarmentosa*; OBL), Himalayan blackberry (*Rubus armeniacus*; FAC), Kentucky bluegrass (*Poa pratensis* ssp. *pratensis;* FAC), spreading rush, and common buttercup with

individuals of curly dock observed in non-dominant density. Soil was characterized as silty loam with redox dark surface. From 3 to 14 inches, a matrix color of 2.5Y 3/1 with redox features (7.5YR 4.4) visible as iron concentrations in the matrix and pore lining. Primary indicators of hydrology were observed by the presence of sediment deposits and algal mats or crust. Secondary indicators were observed by geomorphic position.

- **Wetland 18:** Wetland 18 is an isolated wetland that occupies 0.03 acres within the Study Area. Dominant hydrophytic vegetation observed within the wetland consisted of western manna grass and Kentucky blue grass with individuals of buttercup, water foxtail (*Alopercurus geniculatus*; OBL), and annual bluegrass (*Poa annua*; FAC) observed in non-dominant densities. Soil was characterized as silt loam to silty clay loam with redox dark surface. From 0 to 3 inches, a matrix color of 10YR 2/1 with redox features (7.5YR 3/4) visible as irons concentrations in the matrix was recorded. From 3 to 16 inches, a matrix color of 10YR 3/1 with redox features (10YR 4/4) visible as iron concentrations in the matrix was recorded. Primary indicators of hydrology were observed by the presence of reduced iron. Secondary indicators of hydrology were observed by the presence of drainage patterns and the FAC-Neutral Test. Observation on April 11, 2019 had the presence of standing water in this wetlands, but on April 26, 2019 water was not present.
- **Wetland 19:** Wetland 19 is an isolated wetland that occupies 0.12 acres within the Study Area. Dominant hydrophytic vegetation observed within the wetland consisted of dense sedge (*Carex densa*; OBL) with individuals of pennyroyal, buttercup, and Kentucky bluegrass in non-dominant densities. Soil was characterized as silt loam to silty clay loam with redox dark surface. From 0 to 2 inches, a matrix color of 10YR 3/1 with redox features (7.5YR 4/4) visible as iron concentrations in the matrix was recorded. From 2 to 14 inches, a matrix color of 2.5Y 2.5/1 with redox features (10YR 4/4) visible as iron concentrations in the matrix was recorded. Primary indicators of hydrology were observed by the presence of reduced iron. Secondary indicators of hydrology were observed by the presence of drainage patterns, geomorphic position, and the FAC-Neutral Test. Observation on April 11, 2019 had the presence of standing water in this wetlands, but on April 26, 2019 water was not present.
- **Wetland 20:** Wetland 20 occupies 0.06 acres within the Study Area. Dominant hydrophytic vegetation observed within the wetland consisted of pennyroyal, buttercup, and water-starwort. Soil was characterized as silt loam with redox dark surfaces. From 5 to 13 inches, a matrix color of 10YR 3/2 with redox features (10YR 4/4) visible as iron concentrations in the matrix was recorded. Primary indicators of hydrology included the presence of reduced iron. Secondary indicators of hydrology were observed by drainage patterns, geomorphic position, and FAC-Neutral Test.
- **Wetland 21:** Wetland 21 occurs in a shallow drainage and occupies 0.62 acres within the Study Area. Dominant hydrophytic vegetation observed within the wetland consisted of pennyroyal, water-starwort, western manna grass, water chickweed, meadow fescue (*Festuca perennis*; FAC), and Kentucky bluegrass. Soils were characterized as loam to sandy loam with a depleted matrix and redox dark surface. From 0 to 3 inches, a matrix color of 2.5Y 3/2, with redox features (7.5YR 4/6) visible as iron concentrations in the matrix, was recorded. Primary indicators of hydrology included the presence of surface water,

saturation, algal mat or crust, and reduced iron. Secondary indicators of hydrology were observed by the presence of drainage patterns, geomorphic position, and FAC-Neutral Test.

- Wetlands 22, 24, and 25 (Appendix A, Figure 1.6) are PEM wetlands located in the Ponds 1, 2, and 3 Study Area.
  - **Wetland 22:** Wetland 22 occupies 0.01 acres within the Study Area. Dominant hydrophytic vegetation observed within the wetland consisted of pennyroyal, common buttercup, and ripgut grass (*Bromus diandrus*) with individuals of spreading rush, Kentucky bluegrass, and California oat grass (*Danthonia californica*; FAC) in non-dominant densities. Soil was characterized as loam to silt loam with redox dark surface. From 0 to 3 inches, a matrix color of 10YR 2/2, with redox features (7.5YR 4/4) visible as iron concentrations in the matrix, was recorded. From 3 to 12 inches, a matrix color of 10YR 2/2, with redox features (7.5YR 4/6) visible as iron concentrations in the matrix, was recorded. Primary indicators of hydrology were observed by the presence of algal mat or crust and oxidized rhizospheres along living roots. Secondary indicators of hydrology were observed as geomorphic position.
  - **Wetland 24:** Wetland 24 occupies 0.04 acres within the Study Area. Dominant hydrophytic vegetation observed within the wetland consisted of rush (*Eleocharis* sp.; FACW) and bearded clover (*Trifolium barbigerum*; FACW) with individuals of common buttercup, creeping St. John's wort (*Hypericum anagalloides*; OBL), rush (*Juncus* sp.), and tall cyperus (*Cyperus eragrostis*; FACW) observed in non-dominant densities. Soil was characterized as clay loam with a depleted matrix. From 0 to 6 inches deep, a matrix color of G13/10Y was recorded. From 6 to 13 inches, a matrix color of G14/10Y, with redox features (10YR 4/6) observed as iron concentrations in the matrix, was recorded. Primary indicators of hydrology were observed by the presence of algal mat or crust and surface soil cracks. Secondary indicators of hydrology were observed by the presence of drainage patterns and geomorphic position.
  - **Wetland 25:** Wetland 25 occupies 0.13 acres within the Study Area. Dominant hydrophytic vegetation observed within the wetland consisted of dense sedge and pennyroyal with individuals of water-starwort, western manna grass, annual bluegrass, common buttercup, and Kentucky bluegrass in non-dominant densities. Soil was characterized as loam to silt loam with redox dark surface. From 0 to 5 inches, a matrix color of 10YR 3/1, with redox features (7.5YR 3/1) observed iron as concentrations in the matrix, was recorded. From 5 to 12 inches, a matrix color of 10YR 3/1 was recorded with less than 1 percent redox. Primary indicators of hydrology were observed by the presence of surface water, saturation, and reduced iron. Secondary indicators of hydrology were observed by the presence of drainage patterns, geomorphic position, and FAC-Neutral Test.

Table 4.2 Soil Color for Sampling Points

Sampling Pit	Feature	Soil Texture	Soil Color
W1T1W	Wetland	Silty Loam/Silty Clay Loam	10YR 3/1 matix color with 10% redox at 5YR 3/4
W1T1W	Wetland	Silty Loam/Silty Clay Loam	10YR 3/2 matrix color with 20% redox at 7.5YR 4/4
W1T1U	Upland	Silt Loam	10YR 3/1 matrix color with no visible redox features

Table 4.2 Soil Color for Sampling Points

Sampling Pit	Feature	Soil Texture	Soil Color
W1T1U	Upland	Silt Loam/Silty Clay Loam	10 YR 3/2 matrix color with no visible redox features
W2T1W	Wetland	Clay Loam	10YR 4/4 matrix color with 5% redox at 2.5YR 3/1
W2T1U	Upland	Silt Loam	10YR 3/3 matrix color with no visible redox features
W2T1U	Upland	Silt Loam	10YR 3/3 matrix color with no visible redox features
W2T1U	Upland	Clay Loam	10YR 5/6 matrix color with no visible redox features
W4T1W	Wetland	Loam	10YR 2/1 matrix color with no visible redox features
W4T1W	Wetland	Silt Loam	10YR 2/1 matrix color with 5% redox at 10YR 5/6
W4T1U	Upland	Loam	10YR 3/2 matrix color with no visible redox features
W4T1U	Upland	Silt Loam	10YR 3/2 matrix color with no visible redox features
W4T2W	Wetland	Loam	10YR 3/2 matrix color with no visible redox features
W4T2W	Wetland	Silt Loam	10YR 2/1 matrix color with 3% redox at 10YR 4/6
W4T2U	Upland	Loam	10YR 3/2 matrix color with no visible redox features
W4T2U	Upland	Silt Loam	10YR 3/2 matrix color with no visible redox features
W4T2U	Upland	Loam (weathered sandstone)	10YR 3/2 matrix color with no visible redox features
W5T1W	Wetland	Loam	10YR 2/1 matrix color with no visible redox features
W5T1W	Wetland	Sandy Loam	7.5YR 4/6 matrix color with no visible redox features
W5T1U	Upland	Loam	10YR 3/2 matrix color with no visible redox features
W5T1U	Upland	Loam/Silt Loam	10YR 3/3 matrix color with no visible redox features
W7T1W	Wetland	Gravelly Loam	10YR 2/1 matrix color with 5% redox at 7.5YR 3/4
W7T1W	Wetland	Gravelly Loam/Clay Loam	10YR 2/1 matrix color with 5% redox at 7.5YR 4/4
W7T1U	Upland	Loam	10YR 3/2 matrix color with no visible redox features
W7T1U	Upland	Cobbly Loam	10YR 3/2 matrix color with no visible redox features
W7T1U	Upland	Gravelly Loam	10YR 4/3 matrix color with no visible redox features

Table 4.2 Soil Color for Sampling Points

Sampling Pit	Feature	Soil Texture	Soil Color
W7T2W	Wetland	Silt Loam	10YR 3/2 matrix color with no visible redox features
W7T2W	Wetland	Silty Clay Loam	2/5YR 4/1 matrix color with 20% redox at 7/5YR 3/4
W7T2U	Upland	Gravelly Silt Loam	10YR 3/2 matrix color with no visible redox features
W7T2U	Upland	Silt Loam	10YR 3/2.5 matrix color with no visible redox features
W7T2U	Upland	Silty Clay Loam	10YR 4/3 matrix color with no visible redox features
Upland 1	Upland	Silt Loam	10YR 3/2 matrix color with no visible redox features
Upland 1	Upland	Gravelly Silt Loam	10YR 3/2 matrix color with 8% redox at 7.5YR 4/4
Upland 1	Upland	Loam	10YR 3/2 matrix color with no visible redox features
W8T1W	Wetland	Silt Loam	10YR 3/3 matrix color with 5% redox at 7.5YR 4/4
W8T1W	Wetland	Loam/Clay Loam	10YR 4/3 matrix color with 5% redox at 10YR 5/1
W8T1U	Upland	Silt Loam	10YR 3/2 matrix color with no visible redox features
W8T1U	Upland	Gravelly Silt Loam	10YR 3/2 matrix color with no visible redox features
W8T1U	Upland	Loam/Clay Loam	10YR 4/3 matrix color with no visible redox features
W9T1W	Wetland	Gravelly Loam	10YR 3/2 matrix color with 3% redox at 10YR 4/4
W9T1W	Wetland	Gravelly Loam	10YR 3/1 matrix color with no visible redox features
W9T1U	Upland	Loam	10YR 3/3 matrix color with no visible redox features
W9T1U	Upland	Silt Loam	10YR 3/3 matrix color with no visible redox features
W9T1U	Upland	Loam	10YR 4/4 matrix color with no visible redox features
W10T1W	Wetland	Silt Loam	2.5YR 3/1 matrix color with no visible redox features
W10T1W	Wetland	Loam	2/5YR 4/1 matrix color with 20% redox at 7.5YR 4/1
W10T1U	Upland	Loam	10YR 3/3 matrix color with no visible redox features
W10T1U	Upland	Gravelly Silty Loam	10YR 4/3 matrix color with no visible redox features
W10T1U	Upland	Silty Clay Loam	10YR 4/3 matrix color with no visible redox features

Table 4.2 Soil Color for Sampling Points

Sampling Pit	Feature	Soil Texture	Soil Color
W11T1W	Wetland	Gravelly Loam	10YR 3/1 matrix color with 5% redox at 10YR 4/6
W11T1W	Wetland	Gravelly Clay Loam	10YR 4/4 matrix color with no visible redox features
W11T1U	Upland	Gravelly Loam	10YR 3/2 matrix color with no visible redox features
W11T1U	Upland	Silt Loam	10YR 3/2 matrix color with no visible redox features
W12T1W	Wetland	Silt Loam	10YR 2/1 matrix color with no visible redox features
W12T1W	Wetland	Silt Loam	10YR 2/2 matrix color with 10% redox at 7.5YR 4/4
W12T1U	Upland	Silt Loam	10YR 3/2 matrix color with no visible redox features
W12T1U	Upland	Silt Loam	10YR 2/2 matrix color with no visible redox features
W12T2W	Wetland	Silt Loam	10YR 2/1 matrix color with 10% redox at 7.5YR 4/4
W12T2W	Wetland	Loam	10YR 3/2 matrix color with 20% redox at 7.5YR 4/4
W12T2U	Upland	Gravelly Loam	10YR 3/2 matrix color with no visible redox features
W12T2U	Upland	Gravelly Silty Loam	10YR 3/2 matrix color with no visible redox features
W13T1W	Wetland	Gravelly Loam	10YR 2/2 matrix color with with 10% of secondary matrix of 7.5YR 5/6
W13T1W	Wetland	Silt Loam	10YR 2/1 no visible redox features
W13T1U	Upland	Gravelly Silt Loam	10YR 3/2 matrix color with no visible redox features
W13T1U	Upland	Loam	10YR 3/2 matrix color with no visible redox features
W14T1W	Wetland	Loam	10YR 3/2 matrix color with 10% redox at 7.5YR 4/4
W14T1W	Wetland	Gravelly Clay Loam	10YR 3/2 matrix color with 15% redox at 7.5YR 5/6
W14T1W	Wetland	Gravelly Clay Loam	10YR 4/3 matrix color with 15% redox at 10YR 4/1
W14T1U	Upland	Loam/Silt Loam	10YR 3/2 matrix color with no visible redox features
W14T1U	Upland	Gravelly Silt Loam	10YR 4/2 matrix color with no visible redox features
W16T1W	Wetland	Loam	10YR 3/2 matrix color with 10% redox at 7.5YR 4/4
W16T1W	Wetland	Clay Loam	2.5YR 5/1 matrix color with 15% redox at 7.5YR 4/6

Table 4.2 Soil Color for Sampling Points

Sampling Pit	Feature	Soil Texture	Soil Color
W16T1W	Wetland	Clay Loam	G1 6/?10Y matrix color with no visible redox features
W16T1U	Upland	Loam	10YR 4/4 matrix color with no visible redox features
W16T1U	Upland	Loam/Clay Loam	10YR 4/6 matrix color with no visible redox features
W17T1W	Wetland	Silt Loam	10YR 2/1 matrix color with no visible redox features
W17T1W	Wetland	Silt Loam	2.5Y 3/1 matrix color with 15% redox at 7.5YR 4/4
W17T1U	Upland	Loam	10YR 2/2 matrix color with no visible redox features
W17T1U	Upland	Silt Loam	10YR 2/2 matrix color with no visible redox features
W17T2W	Wetland	Silt Loam	10YR 3/1 matrix color with 30% redox at 7.5YR 4/4
W17T2W	Wetland	Silty Clay Loam	10YR 4/1 matrix color with 40% redox at 7.5YR 4/6
W17T2U	Upland	Silt Loam	10YR 3/2 matrix color with no visible redox features
W18T1W	Wetland	Silt Loam	10YR 2/1 matrix color with 5% redox at 7.5YR 3/4
W18T1W	Wetland	Silt Loam/Silty Clay Loam	10YR 3/1 matrix color with 15% redox at 10YR 4/4
W18T1U	Upland	Silt Loam	10YR 2/2 matrix color with no visible redox features
W18T1U	Upland	Silt Loam/Silty Clay Loam	10YR 3/2 matrix color with no visible redox features
W19T1W	Wetland	Silt Loam	10YR 3/1 matrix color with 10% redox at 7.5YR 4/4
W19T1W	Wetland	Silty Clay Loam	2.5Y/1 matrix color with 5% redox at 10YR 4/4
W19T1U	Upland	Loam	10YR 3/1 matrix color with no visible redox features
W19T1U	Upland	Silt Loam	10YR 2/2 matrix color with no visible redox features
W19T2W	Wetland	Loam	10YR 3/1 matrix color with 5% redox at 10YR 4/4
W19T2W	Wetland	Silt Loam	10YR 3/1 matrix color with 10% redox at 10YR 4/4
W19T2U	Upland	Not Recorded	10YR 3/2 matrix color with no visible redox features
W19T2U	Upland	Not Recorded	10YR 3/2 matrix color with no visible redox features
W20T1W	Wetland	Silt Loam	10YR 3/2 matrix color with no visible redox features

Table 4.2 Soil Color for Sampling Points

Sampling Pit	Feature	Soil Texture	Soil Color
W20T1W	Wetland	Silt Loam	10YR 3/2 matrix color with 5% redox at 10YR 4/4
W20T1U	Upland	Loam	10YR 3/2 matrix color with no visible redox features
W20T1U	Upland	Silt Loam	10YR 3/2 matrix color with no visible redox features
W21T1W	Wetland	Loam	2.5Y 3/2 matrix color with 20% redox at 7.5YR 4/6
W21T1W	Wetland	Sandy Loam	2.5Y 4/2 matrix color with 35% redox at 7.5YR 4/4
W21T1U	Upland	Silt Loam	10YR 4/3 matrix color with no visible redox features
W21T1U	Upland	Silt Loam	10YR 3/2 matrix color with no visible redox features
W21T2W	Wetland	Loam	10YR 3/1 matrix color with 10% redox at 7.5YR 4/4
W21T2W	Wetland	Silt Loam	10YR 3/2 matrix color with 25% redox at 7.5YR 4/4
W21T2W	Wetland	Gravelly Sandy Loam	10YR 3/2 matrix color with 20% redox at 7.5YR 4/6
W21T2U	Upland	Silt Loam	10YR 2/2 matrix color with no visible redox features
W21T2U	Upland	Loam/Silt Loam	10YR 3/2 matrix color with no visible redox features
W21T3W	Wetland	Loam	10YR 3/2 matrix color with 10% redox at 10YR 4/4
W21T3W	Wetland	Gravelly Loam	10YR 2/1 matrix color with 15% redox at 7.5YR 4/6
W21T3U	Upland	Loam	10YR 2/2 matrix color with no visible redox features
W21T3U	Upland	Gravelly Silt Loam	10YR 3/2 matrix color with no visible redox features
W22T1W	Wetland	Loam	10YR 2/2 matrix color with 3% redox at 7.5YR 4/4
W22T1W	Wetland	Loam/Silt Loam	10YR 2/2 matrix color with 5% redox at 7.5YR 4/6
W22T1U	Upland	Gravelly Loam	10YR3/2 matrix color with no visible redox features
W23T1W	Wetland	Clay Loam	10YR 3/1 matrix color with 5% redox at 7.5YR 4/4
W23T1W	Wetland	Clay Loam	G1 4/10Y matrix color with 10% redox at 10YR 4/6
W23T1U	Upland	Gravelly Loam	10YR 4/2 matrix color with no visible redox features
W23T1U	Upland	Clay Loam	10YR 4/3 matrix color with no visible redox features

Table 4.2 Soil Color for Sampling Points

Sampling Pit	Feature	Soil Texture	Soil Color
W23T1U	Upland	Clay Loam	10YR 4/3 matrix color with 10% redox at 7.5YR 5/6
W24T1W	Wetland	Clay Loam	G13/10Y matrix color with no visible redox features
W24T1W	Wetland	Clay Loam	G14/10Y matrix color with 4% redox at 10YR 4/6
W24T1U	Upland	Loam	10YR 3/2 matrix color with no visible redox features
W24T1U	Upland	Loam	10YR 4/2 matrix color with no visible redox features
W25T1W	Wetland	Loam	10YR 3/1 matrix color with 5% redox at 7.5YR 4/4
W25T1W	Wetland	Silt Loam	10YR 3/1 matrix color with no visible redox features
W25T1U	Upland	Silt Loam	10YR 3/2 matrix color with no visible redox features
W25T1U	Upland	Gravelly Loam	10YR 3/2 matrix color with no visible redox features

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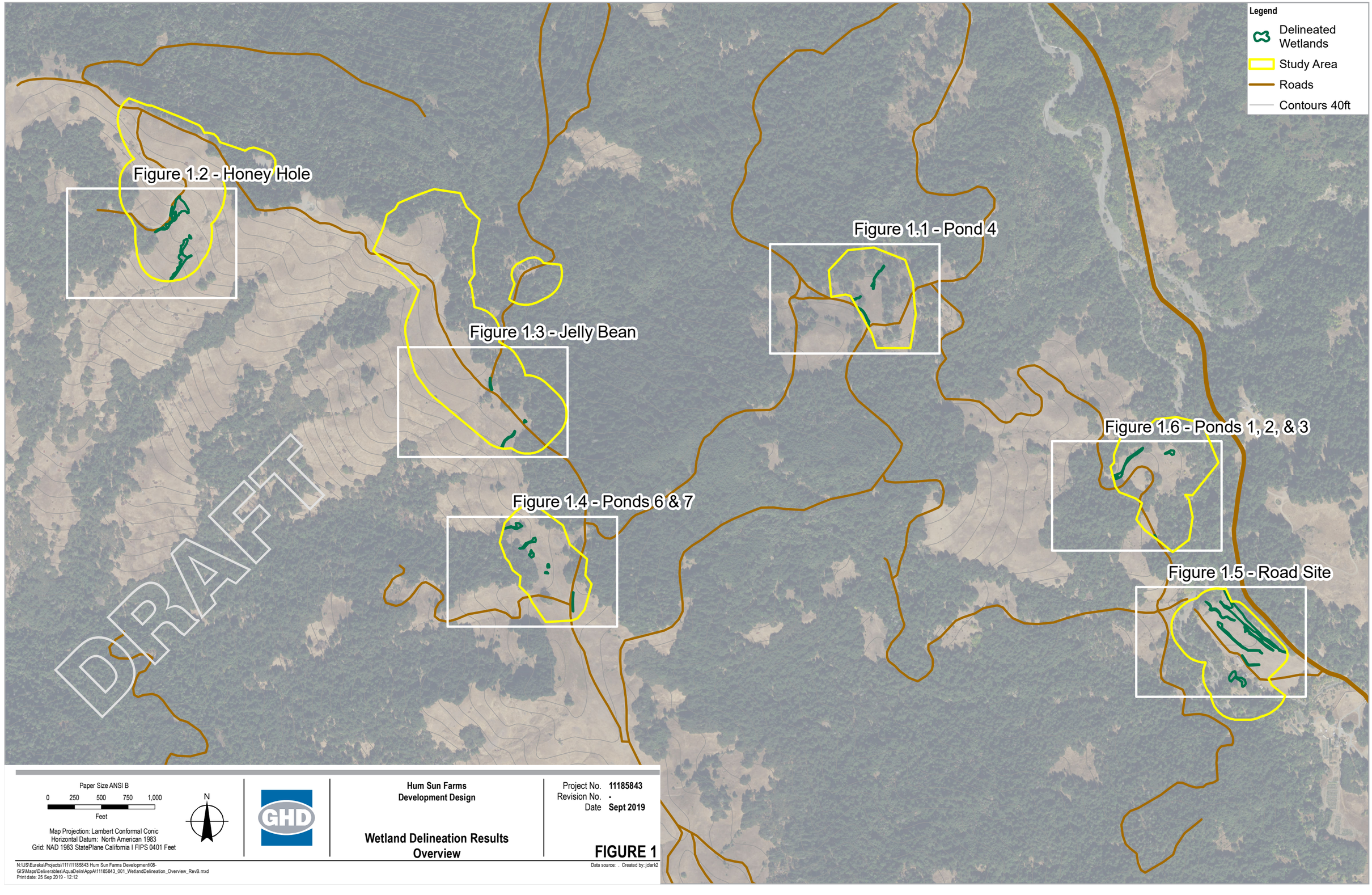
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Appendices

Appendix A
Aquatic Resources Delineation Map



Paper Size ANSI B

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Map Projection: Lambert Conformal Conic
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GHD

Hum Sun Farms
Development Design

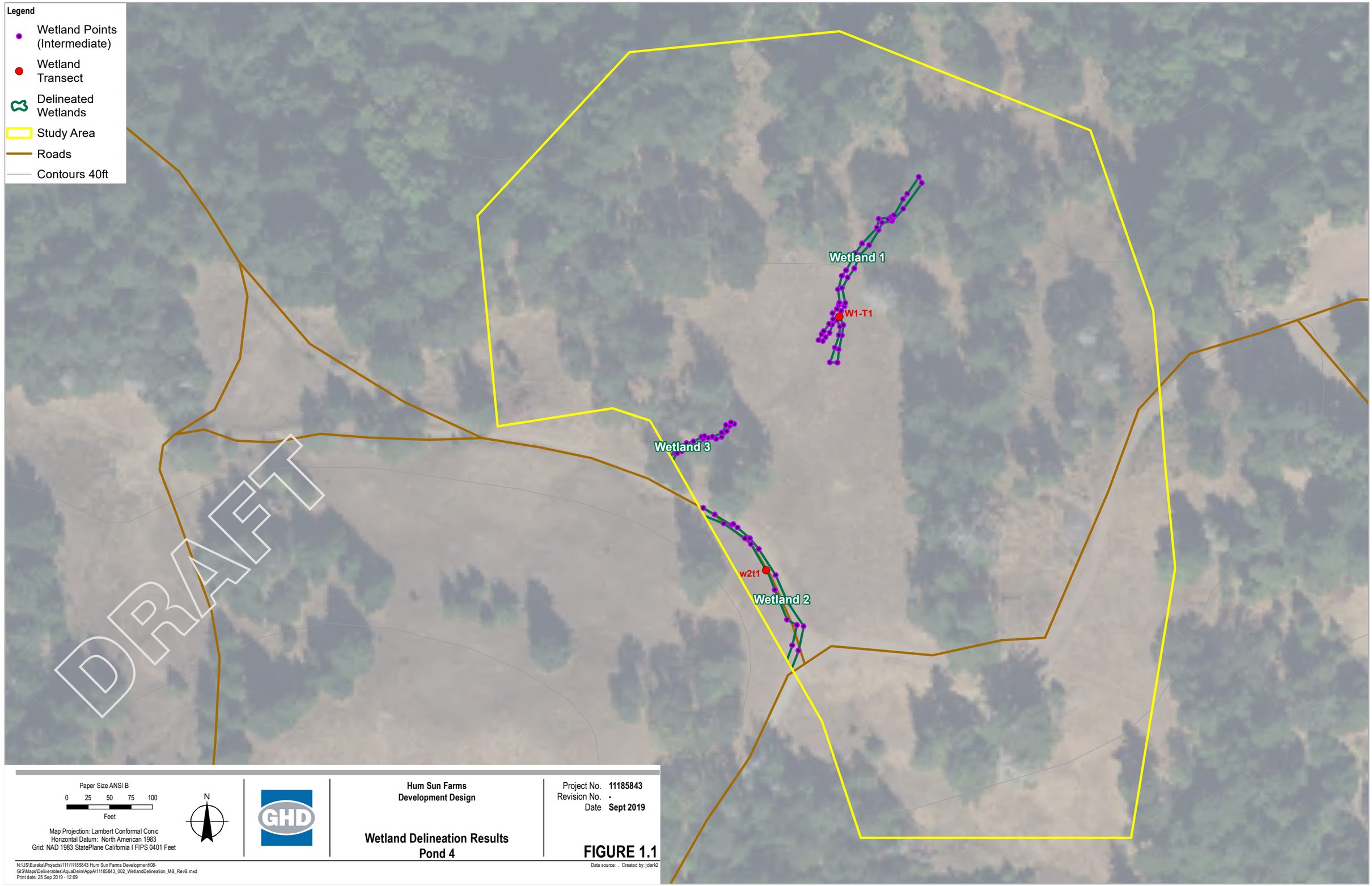
Wetland Delineation Results Overview

Project No. **11185843**
Revision No. **-**
Date **Sept 2019**

FIGURE 1

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Hum Sun Farms
Development Design

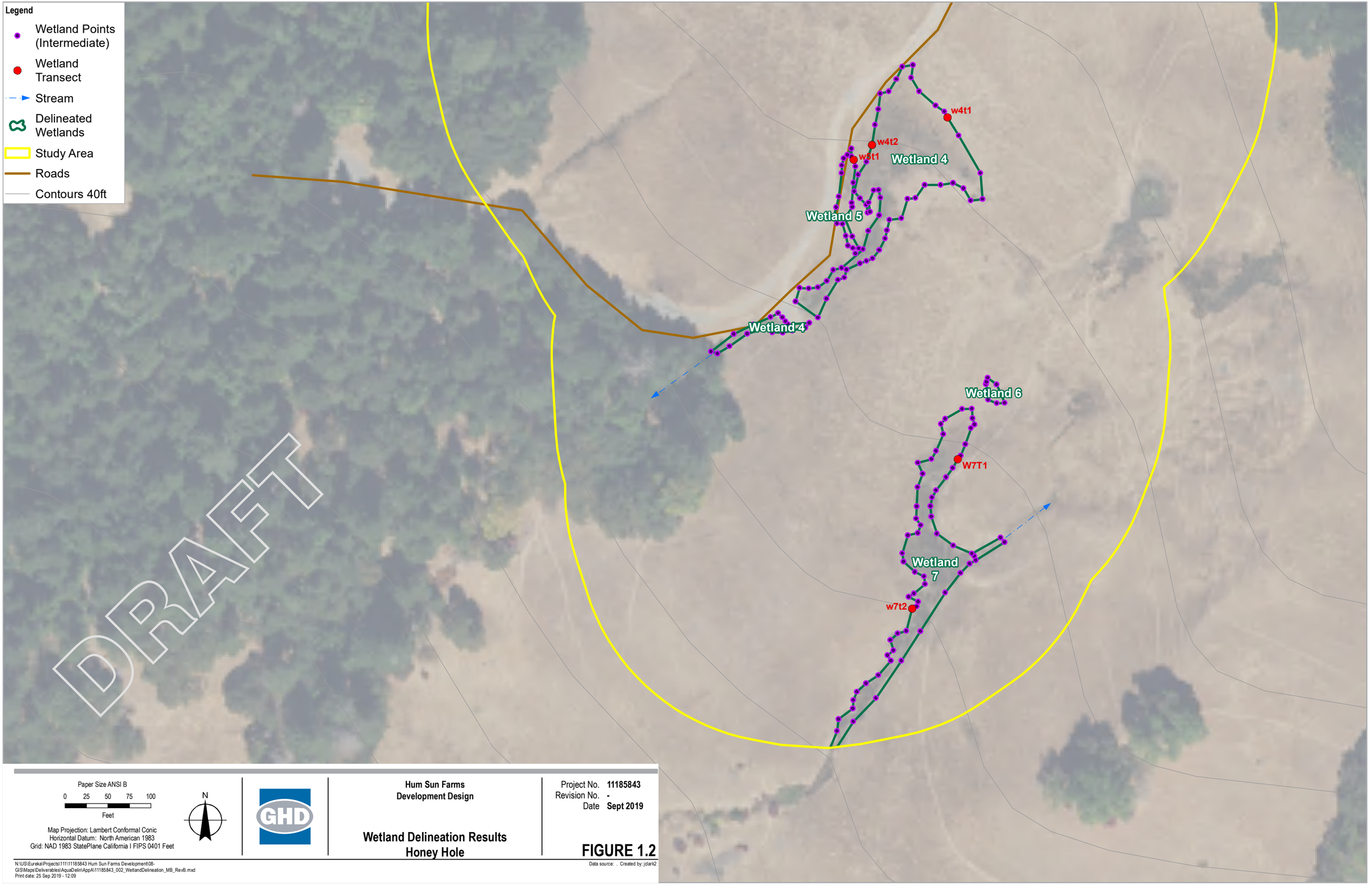
Wetland Delineation Results
Pond 4

Project No. **11185843**
Revision No. **-**
Date **Sept 2019**

FIGURE 1.1

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Hum Sun Farms
Development Design

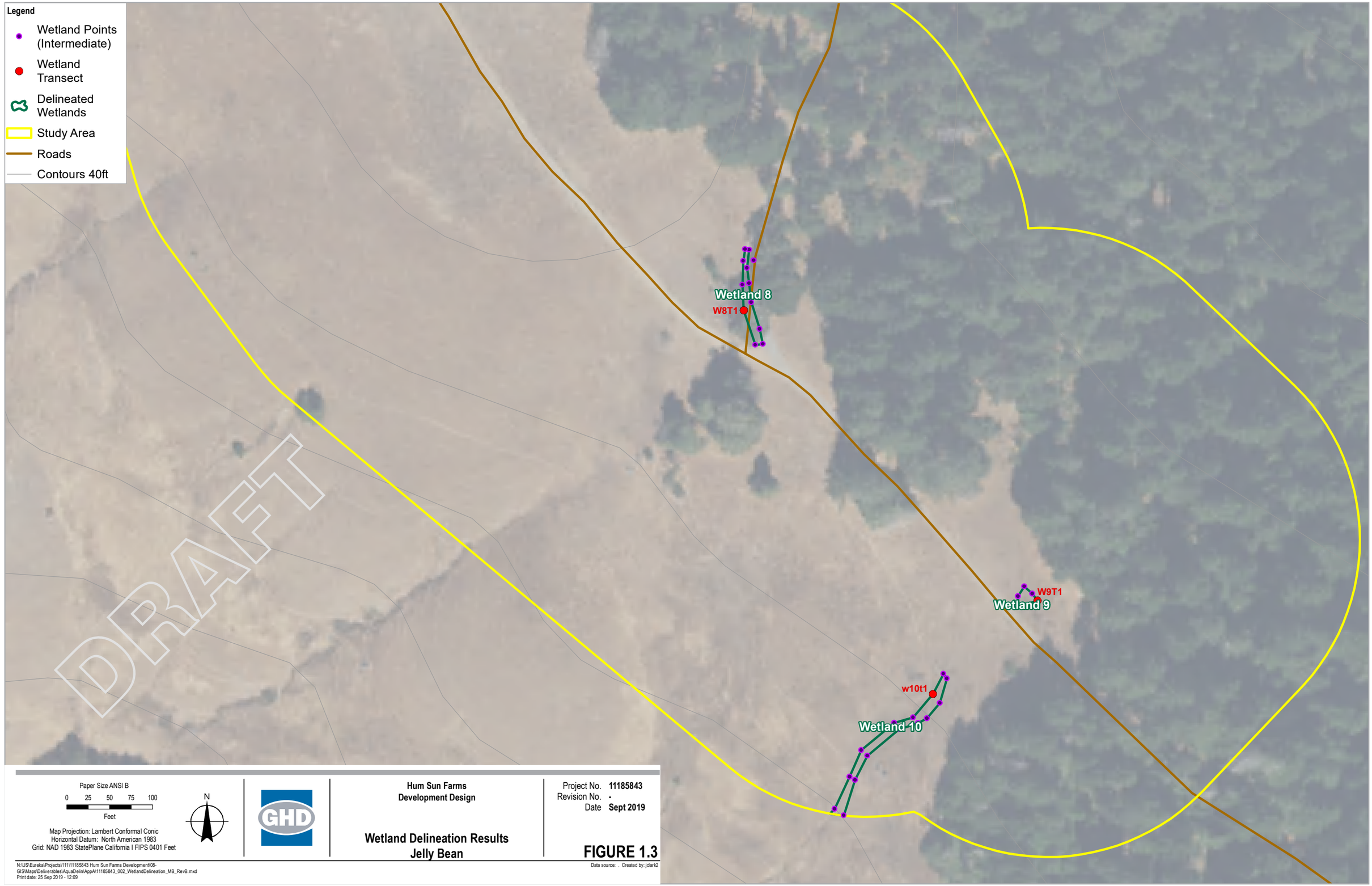
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Honey Hole

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Revision No. **-**
Date **Sept 2019**

FIGURE 1.2

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Hum Sun Farms
Development Design

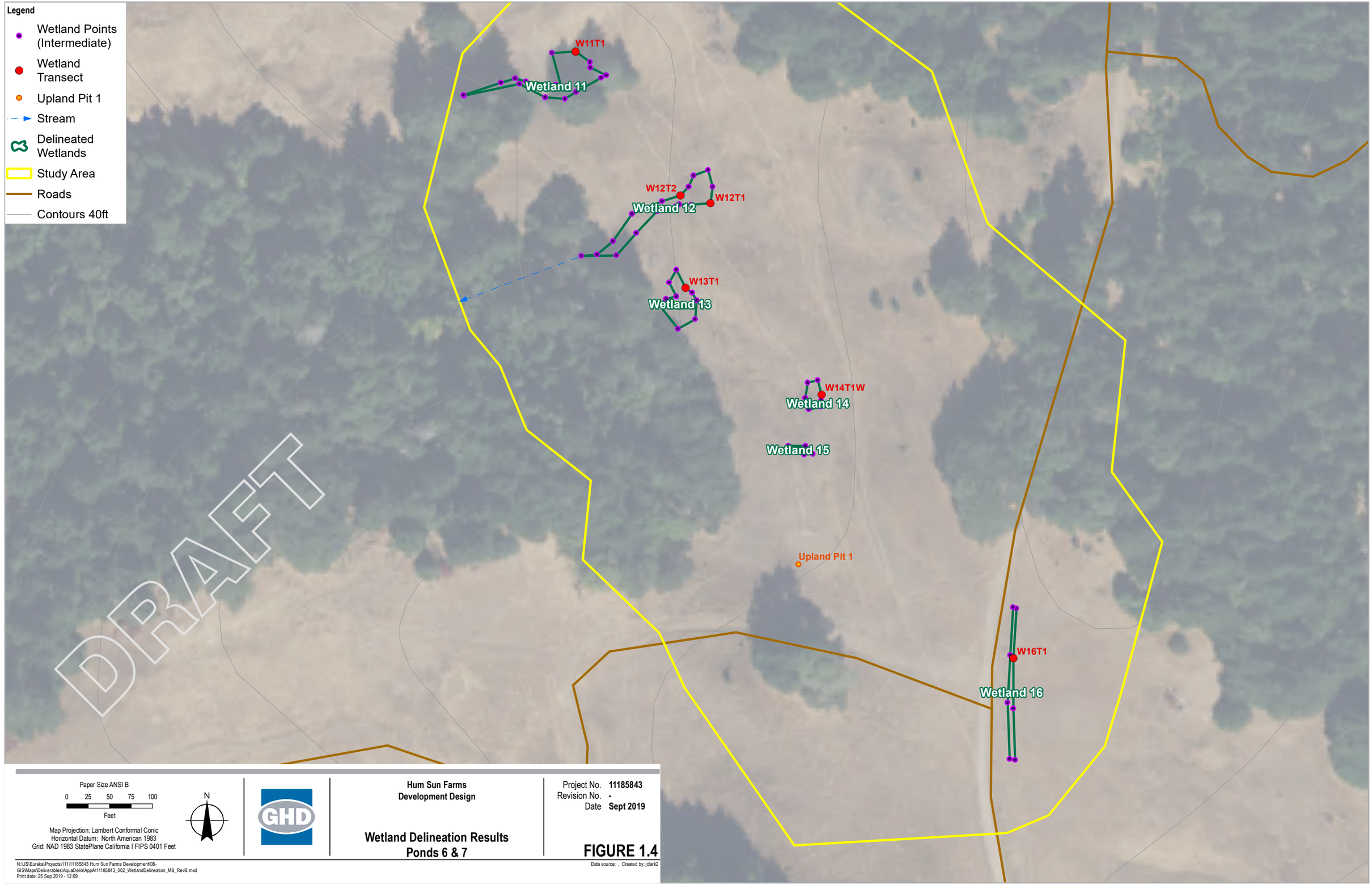
Wetland Delineation Results
Jelly Bean

Project No. **11185843**
Revision No. **-**
Date **Sept 2019**

FIGURE 1.3

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Hum Sun Farms
Development Design

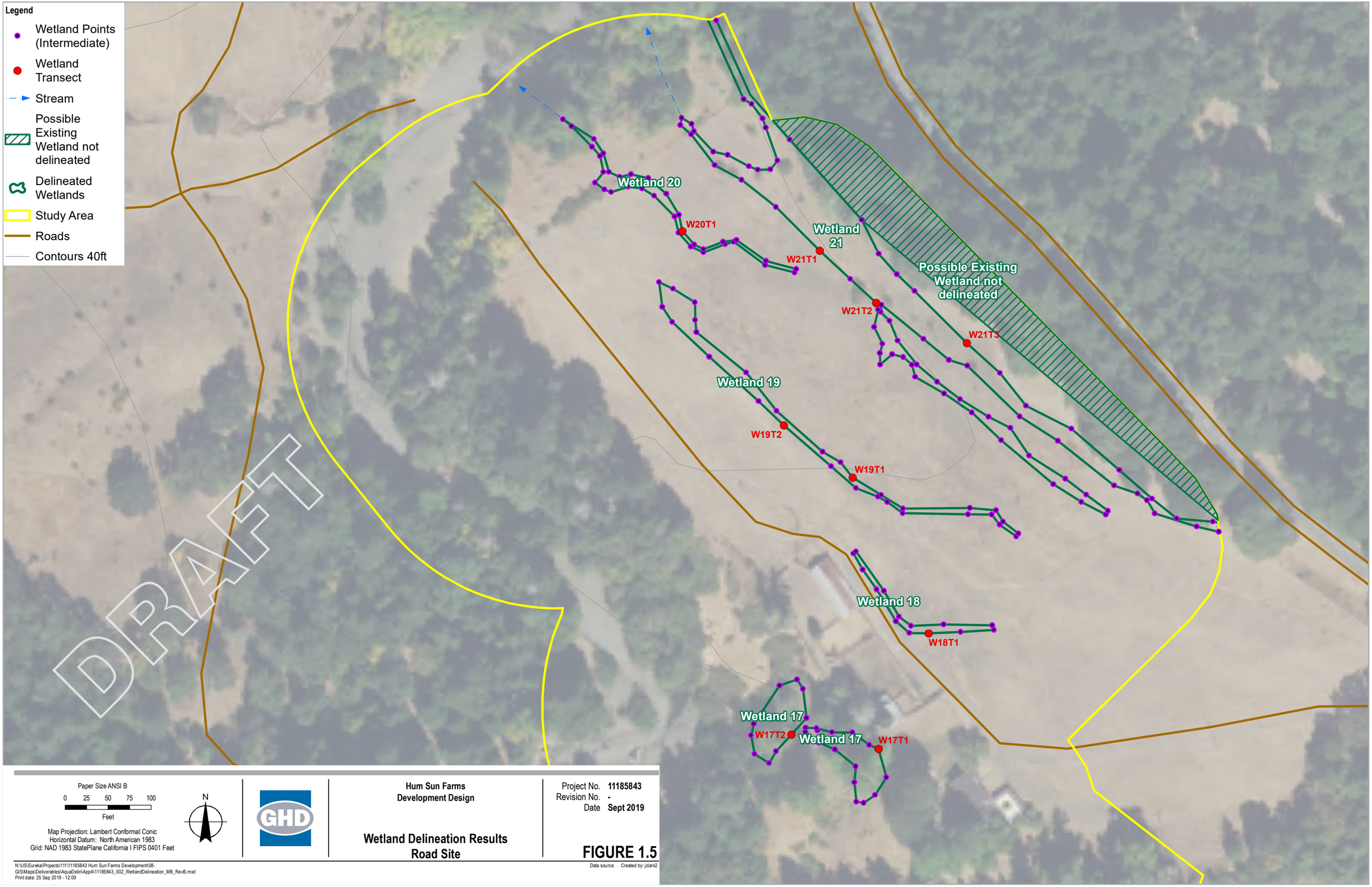
Wetland Delineation Results
Ponds 6 & 7

Project No. **11185843**
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Date **Sept 2019**

FIGURE 1.4

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Hum Sun Farms
Development Design

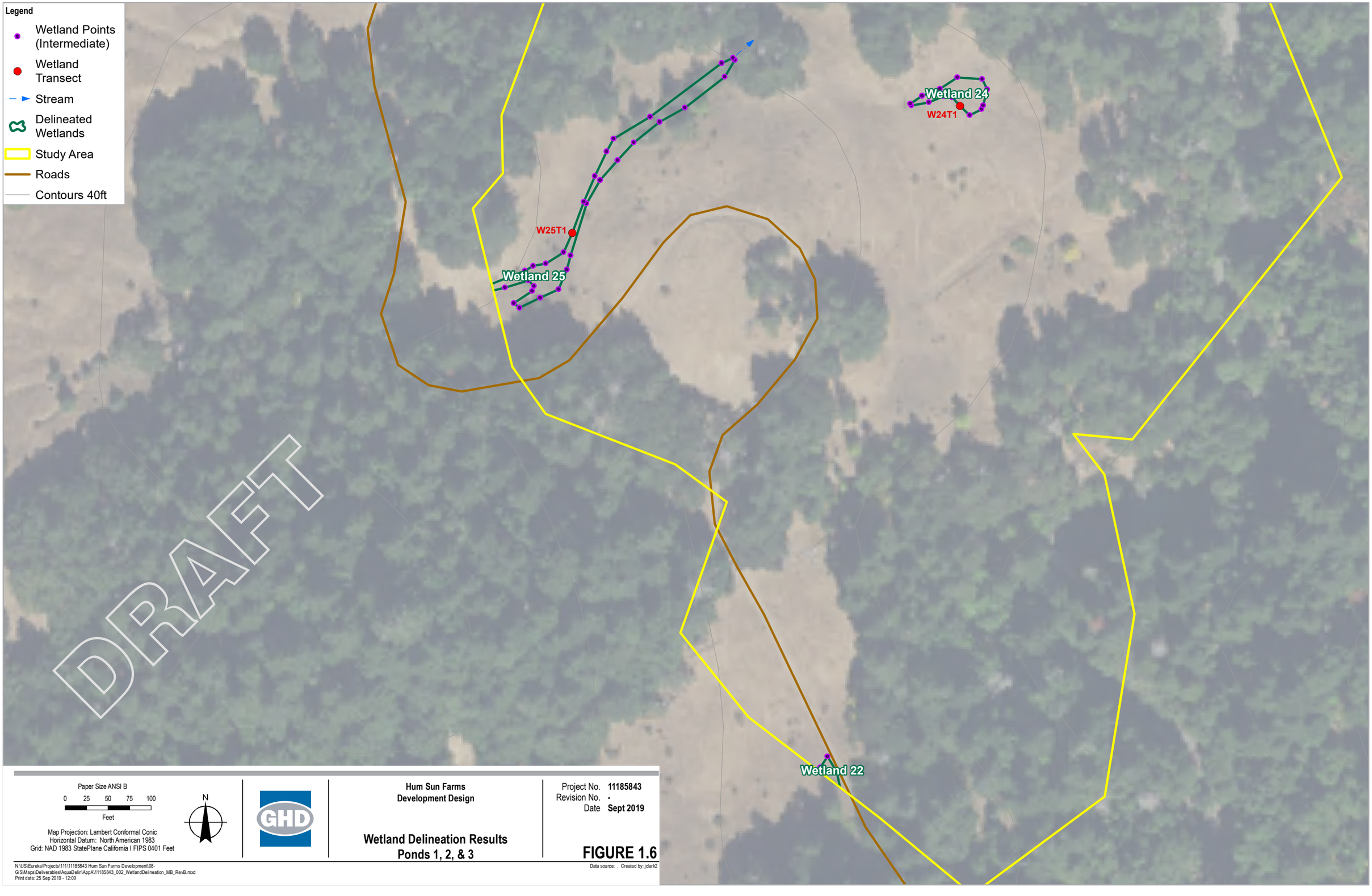
Wetland Delineation Results
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Project No. **11185843**
Revision No. **-**
Date **Sept 2019**

FIGURE 1.5

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Paper Size ANSI B

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Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
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GHD

Hum Sun Farms
Development Design

Wetland Delineation Results
Ponds 1, 2, & 3

Project No. **11185843**
Revision No. **-**
Date **Sept 2019**

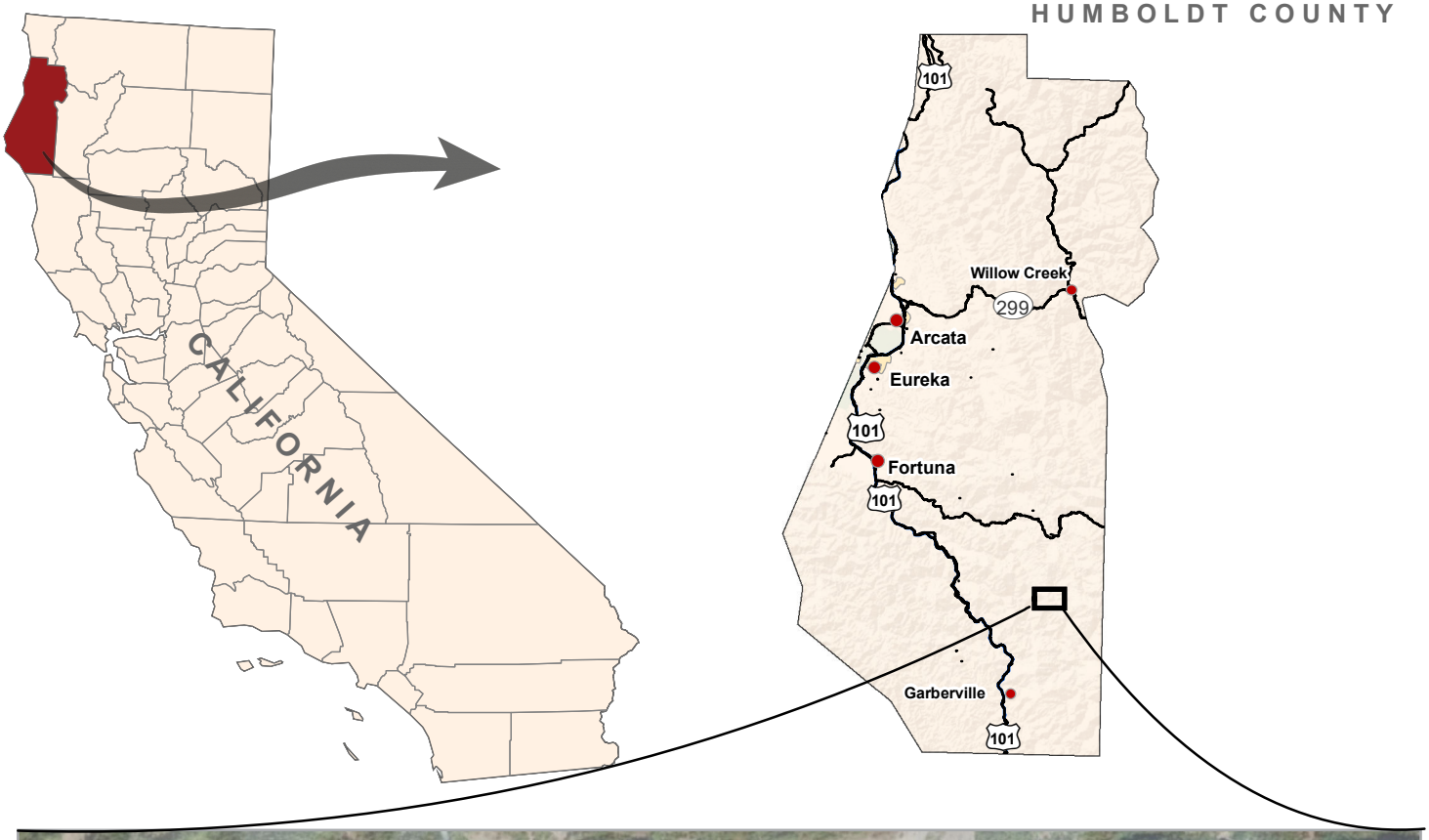
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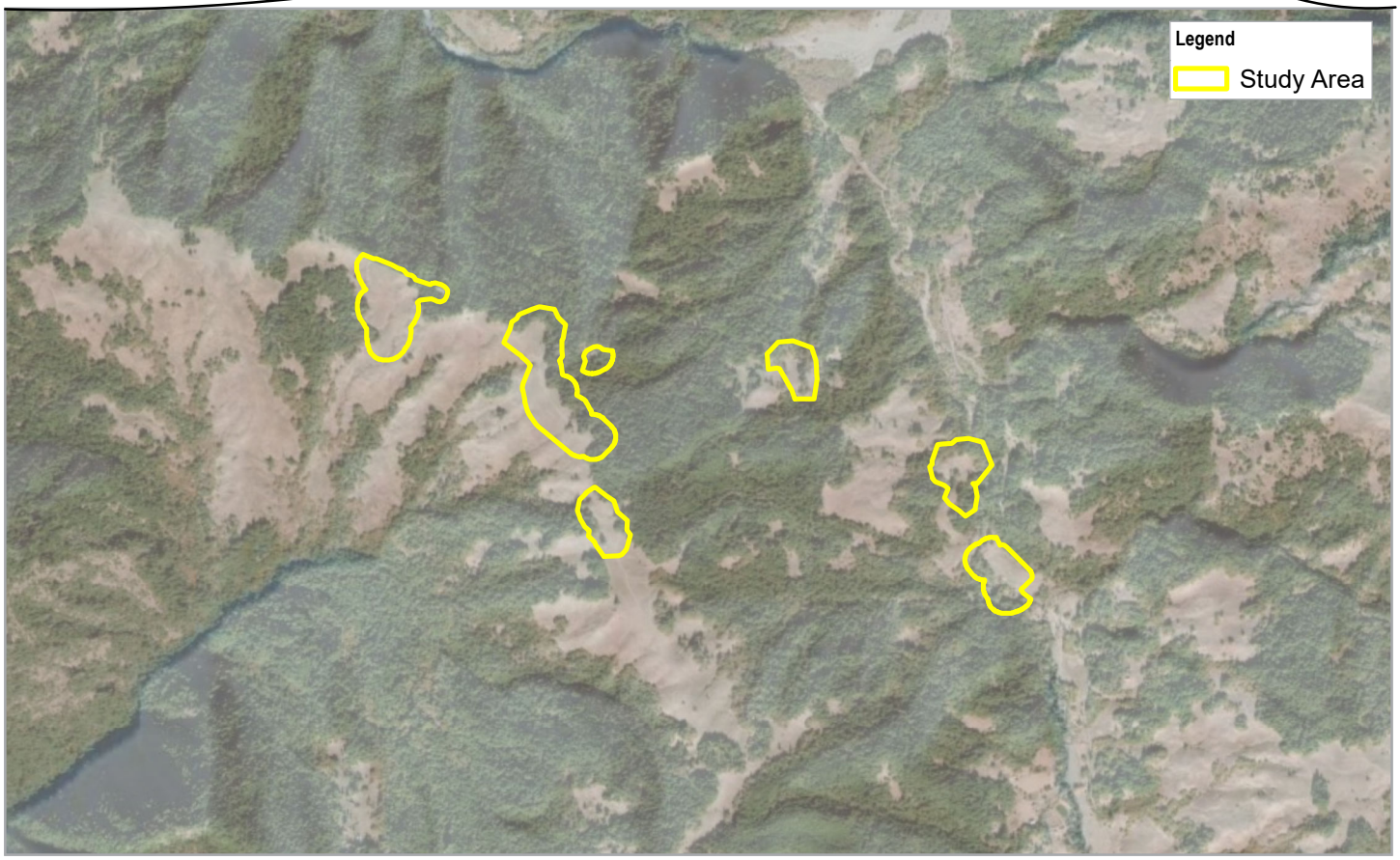
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Appendix B
Additional Figures

HUMBOLDT COUNTY





Paper Size ANSI A

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Feet

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GHD

Hum Sun Farms
Development Design

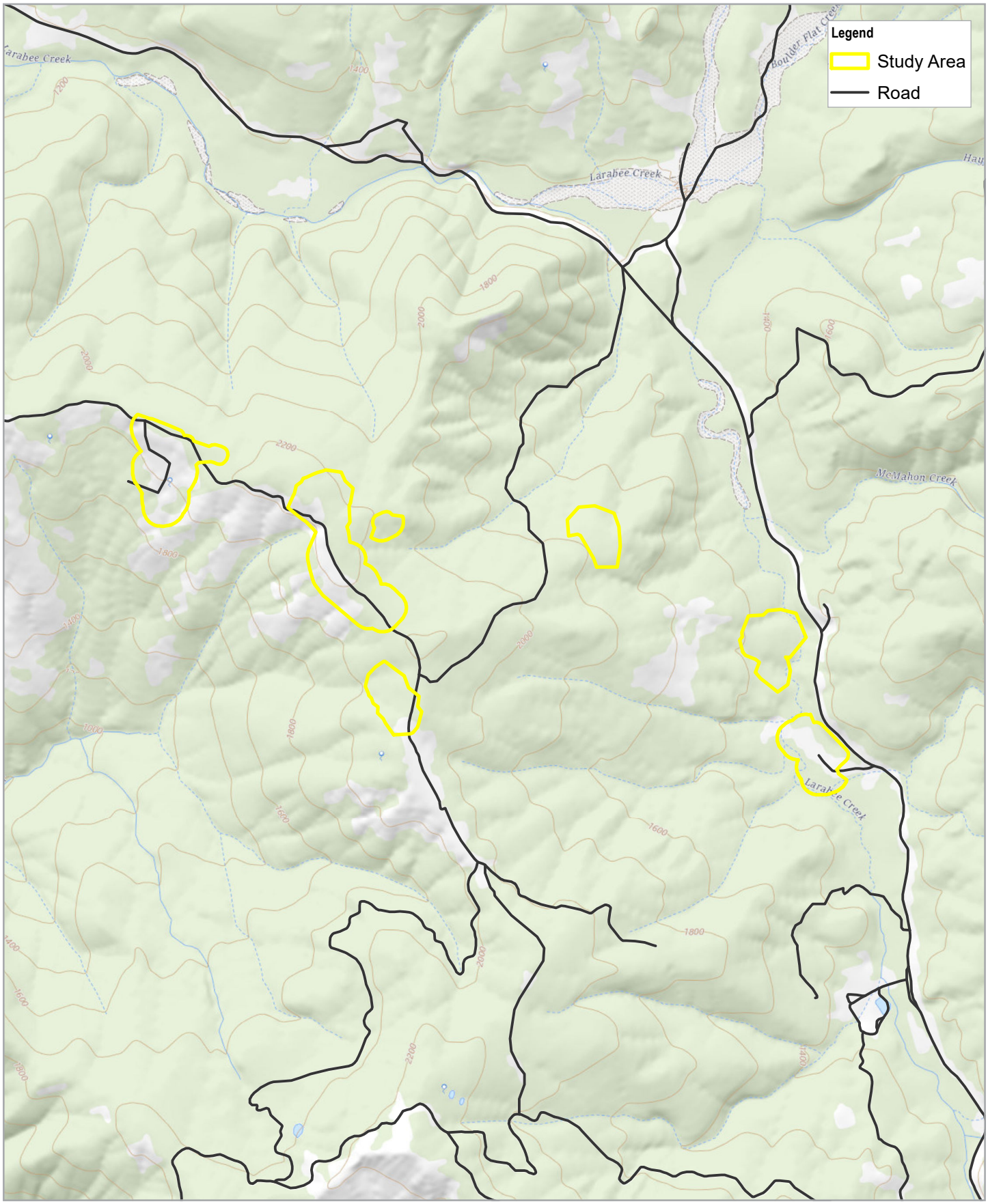
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Revision No. **-**
Date **Sept 2019**

Project Location

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Data source: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
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Sources: Esri, USGS, NOAA; CNDDB, October 2017. Created by: jclark2



Paper Size ANSI A

0 500 1,000 1,500 2,000

Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

N

GHD

Hum Sun Farms
Development Design

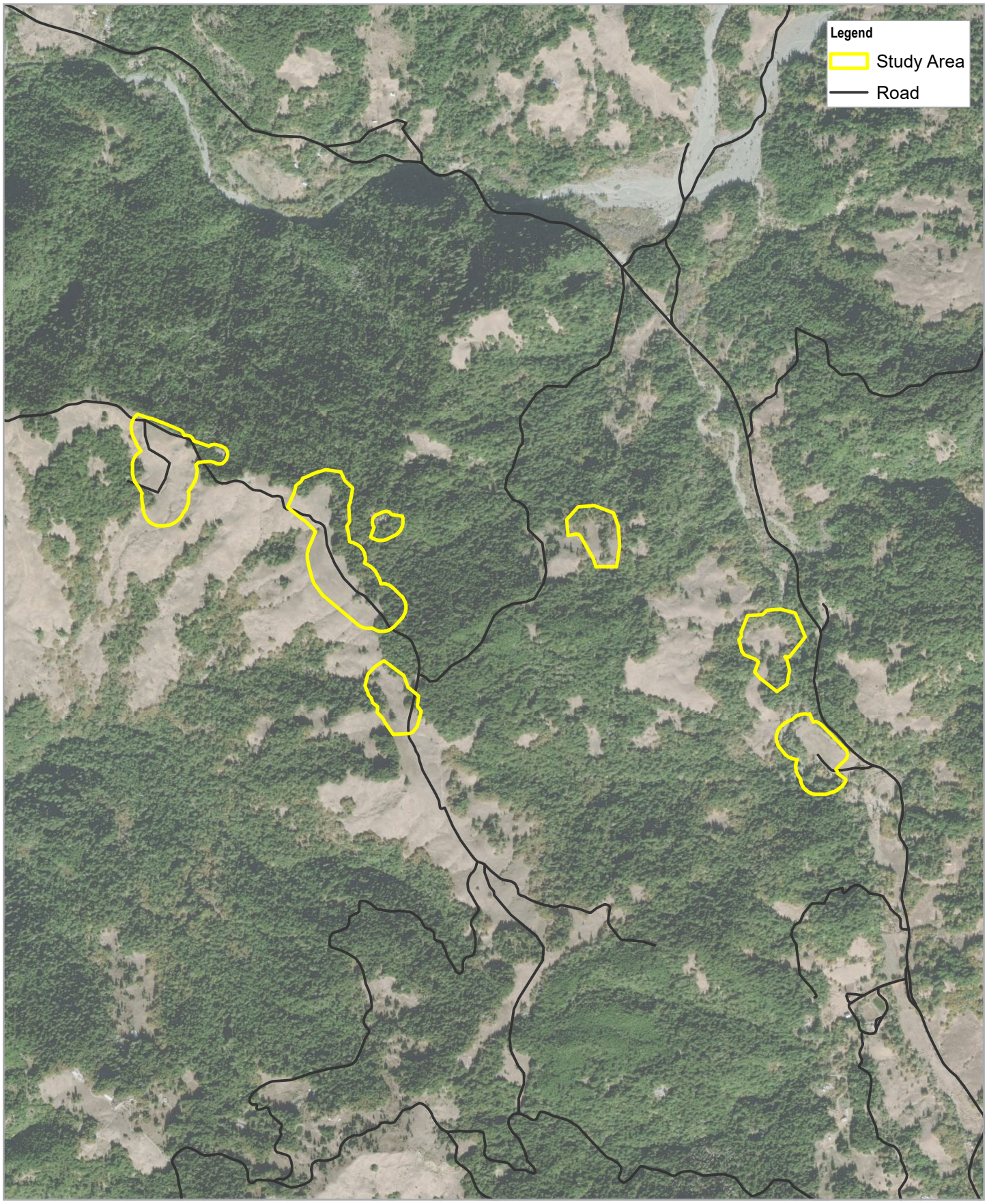
Project No. **11185843**
Revision No. **-**
Date **Sept 2019**

USGS Topography

FIGURE 2

N:\US\Eureka\Projects\111\11185843 Hum Sun Farms Development\08-GIS\Maps\Deliverables\AquaDelin\AppB\11185843_02_USGSTopo.mxd
Print date: 18 Sep 2019 - 13:29

Data source: USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road Data; Natural Earth Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information, U.S. Coastal Relief Model. Data refreshed October 2018.. Created by: jclark2



Paper Size ANSI A

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Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

N

GHD

Hum Sun Farms
Development Design

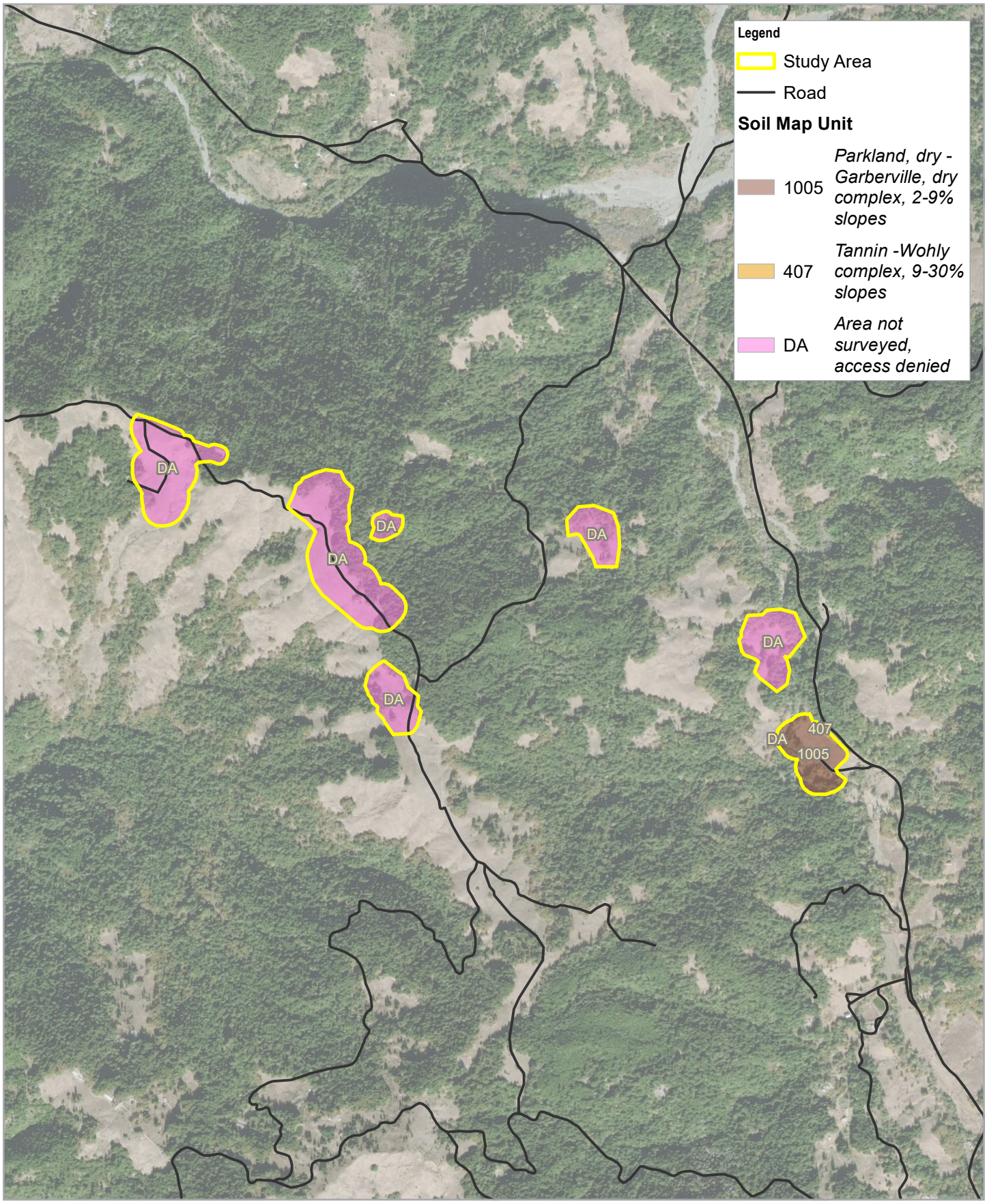
Aerial Map

Project No. **11185843**
Revision No. **-**
Date **Sept 2019**

FIGURE 3

N:\US\Eureka\Projects\111\11185843 Hum Sun Farms Development\08-GIS\Maps\Deliverables\AquaDelin\AppB\11185843_03_AerialMap.mxd
Print date: 18 Sep 2019 - 13:25

Data source: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community. Created by: jclark2



Paper Size ANSI A

0 500 1,000 1,500 2,000

Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

N

GHD

Hum Sun Farms Development Design

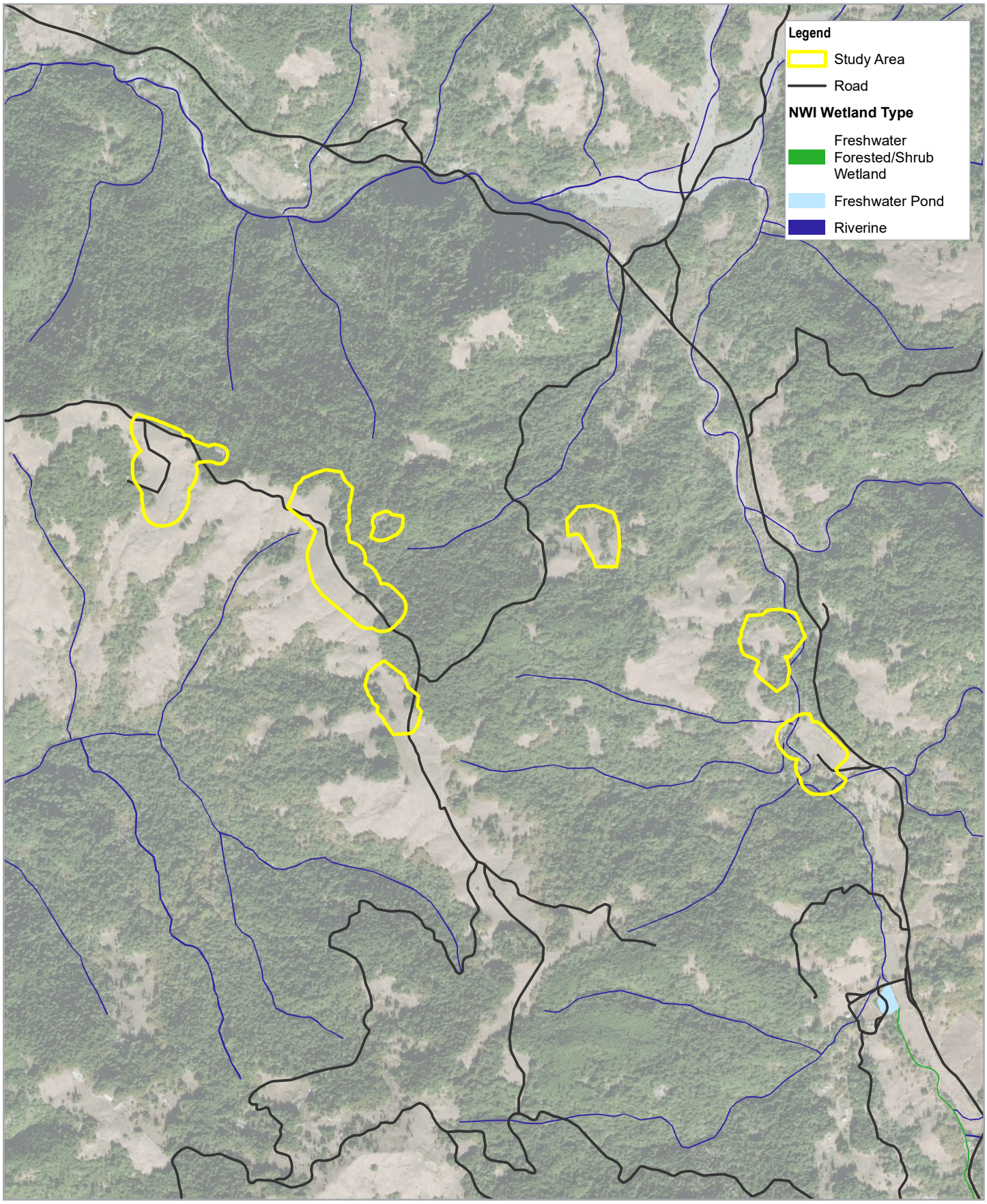
NRCS Soils

Project No. **11185843**
Revision No. **-**
Date **Sept 2019**

FIGURE 4

N:\US\Eureka\Projects\111\11185843 Hum Sun Farms Development\08-GIS\Maps\Deliverables\AquaDelin\AppB\11185843_04_NRCSSoils_RevA.mxd
Print date: 18 Sep 2019 - 15:46

Data source: NRCS Soils 2016; Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community. Created by: jclark2



Paper Size ANSI A

0 500 1,000 1,500 2,000

Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

N

GHD

Hum Sun Farms
Development Design

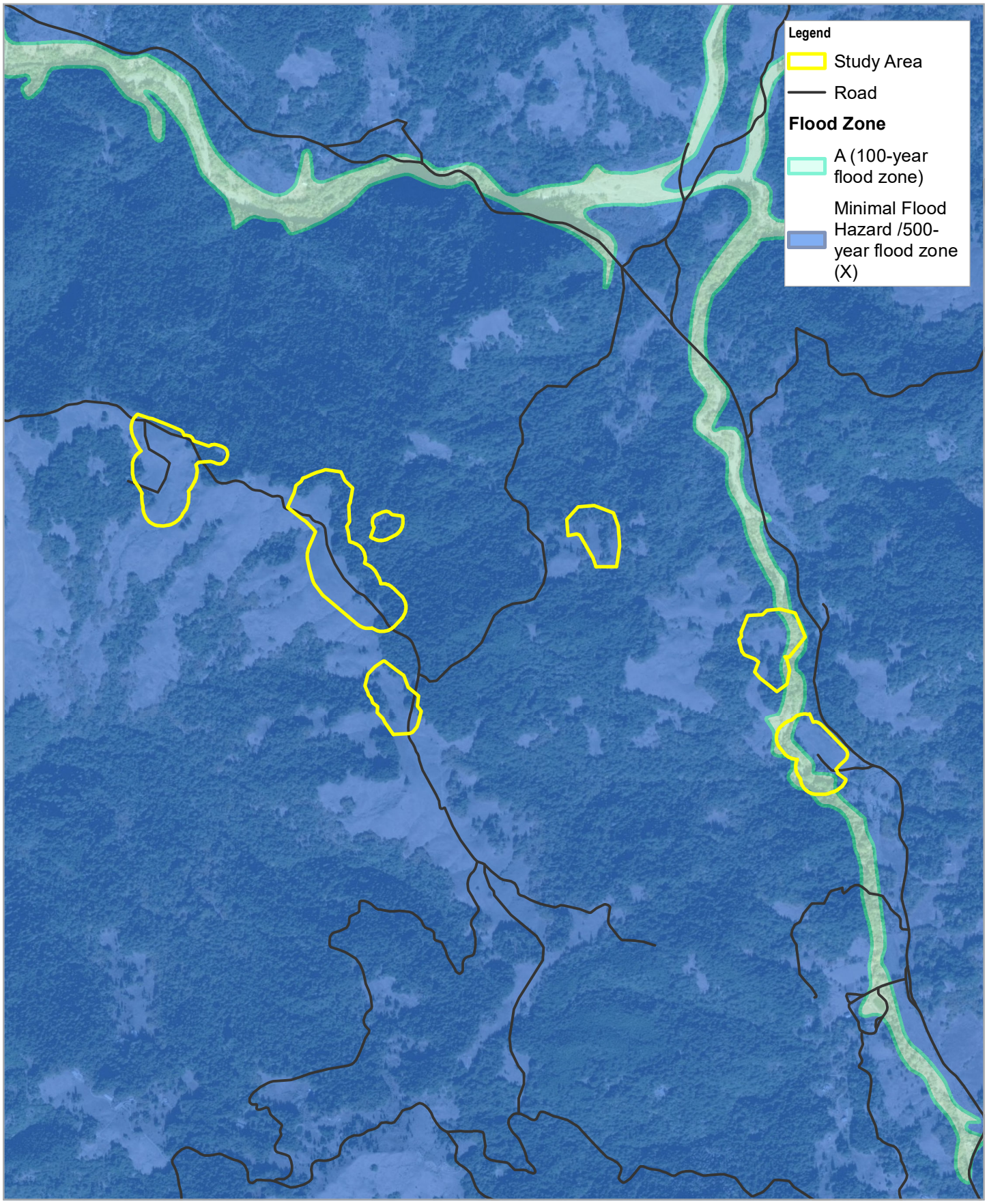
Project No. **11185843**
Revision No. **-**
Date **Sept 2019**

National Wetland Inventory

FIGURE 5

N:\US\Eureka\Projects\111\11185843 Hum Sun Farms Development\08-GIS\Maps\Deliverables\AquaDelin\AppB\11185843_05_NWI.mxd
Print date: 18 Sep 2019 - 15:47

Data source: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community. Created by: jclark2



Paper Size ANSI A

0 500 1,000 1,500 2,000

Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California I FIPS 0401 Feet

N

GHD

Hum Sun Farms
Development Design

Floodplain

Project No. **11185843**
Revision No. **-**
Date **Sept 2019**

FIGURE 6

N:\US\Eureka\Projects\111\11185843 Hum Sun Farms Development\08-GIS\Maps\Deliverables\AquaDelin\AppB\11185843_06_Floodplain.mxd
Print date: 18 Sep 2019 - 15:47

Data source: FEMA FIRM, 2017; Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community. Created by: jclark2

Appendix C
Plant List

Scientific Name	Common Name	Indicator Status
Acer macrophyllum	Big-leaf maple	FACU
Alopercurus geniculatus	Water foxtail	OBL
Anthoxanthum odoratum	Sweet vernal grass	FACU
Bellis perennis	English daisy	NL
Bromus diandrus	Ripgut grass	NL
Callitriche sp.	Water-starwort	OBI
Carex densa	Dense sedge	OBL
Cynosurus echinatus	Bristly dogtail grass	NL
Cyperus eragrostis	Tall cyperus	FACW
Danthonia californica	California oat grass	FAC
Eleocharis sp.	Rush	FACW
Festuca perennis	Italian rye grass	FAC
Festuca perennis	Meadow fescue	FAC
Geranium molle	Cranesbill	UPL
Glyceria x occidentalis	Western manna grass	OBL
Holcus lanatus	Common velvet grass	FAC
Hordeum murinum	Wall barley	FAC
Hypericum anagalloides	Creeping St. John's wort	OBL
Hypochaeris glabra	Smooth cat's-ear	NL
Hypochaeris radicata	Rough cat's-ear	FACU
Hypochaeris sp.	Cat's-ear	NL
Juncus effusus	Soft rush	FACW
Juncus patens	Spreading Rush	FACW
Juncus sp.	Rush	NL
Luzula comosa	Hairy wood rush	FAC
Mentha pulegium	Pennyroyal	OBL
Montia fontana	Water chickweed	FACW
Nasturtium officinale	Water cress	OBL
Oenanthe sarmentosa	Water parsley	OBL
Plantago lanceolate	English plantain	FACU
Poa annua	Annual blue grass	FAC
Poa pratensis ssp. pratensis	Kentucky bluegrass	FAC
Ranunculus aquatilis	Whitewater crowfoot	OBL
Ranunculus californicus	Common buttercup	FAC
Ranunculus muricatus	Buttercup	FACW
Rubus armeniacus	Himalayan blackberry	FAC
Rumex crispus	Curly dock	FAC
Rumex pulcher	Fiddle dock	NL
Trifolium barbigerum	Bearded clover	FACW
Trifolium subterraneum	Subterranean clover	NL
Veronica Americana	American brooklime	OBL

Appendix D
Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Blocksburg HUMSUN City/County: Blocksburg / Humboldt Sampling Date: 4-11-19

Applicant/Owner: _____ State: CA Sampling Point: WITLW

Investigator(s): A.L. ; M.S. Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): concave Slope (%): 2%

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	Is the Sampled Area within a Wetland?	Yes X No _____
Hydric Soil Present?	Yes X No _____		
Wetland Hydrology Present?	Yes X No _____		

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 1m x 2m Rectangle)			
1. Juncus patens	30	X	FACW
2. Mentha pulegium	15	X	OBL
3. Mentha fontana	2		FACW
4. Veronica americana	5		OBL
5. Rumex crispus	3		FAC
6. Glyceria x occidentalis	2		OBL
7. immature grass (not identified)	7		?
8.			
9.			
10.			
11.			
	64 = Total Cover		32 / 13
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 30%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Wetland Non-Vascular Plants[1]
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

Herbaceous plot is rectangle containing soil pit and in front of pit towards wetland. Wetland edge is 1 1/2 feet from wetland test pit

SOIL

Sampling Point: W1-T1-W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR3/1	90	5YR3/4	10	C	M	Silt loam/Silty clay loam	
3-14	10YR3/2	80	7.5YR4/4	20	C	M	"	"

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes X No ___

Remarks:

Redox Reaction @ 3, 8 & 12"

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- X Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- X Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? (1) Yes ___ No ___ Depth (inches) ___

Water Table Present? Yes X No ___ Depth (inches): 3"

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 3"

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: (1) Within 12" of pit

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Blocksburg City/County: Blocksburg / Humboldt Sampling Date: 4-11-19

Applicant/Owner: State: CA Sampling Point: WITI U

Investigator(s): A.L., N.S Section, Township, Range:

Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): convex Slope (%):

Subregion (LRR): Lat: Long: Datum:

Soil Map Unit Name: NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	Is the Sampled Area within a Wetland? Yes ____ No X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 1m x 2m rectangle)			
1. Matricaria discoidea	7		FACU
2. Plantago lanceolata	8		FACU
3. Trifolium subterraneum	25	X	NL
4. Poa annua	5		FAC
5. Cynosurus echinatus	10	X	NL
6. Hypochaeris glabra	5		NL
7. Bellis perennis	5		NL
8. Anthoxanthum odoratum	10	X	FACU
9. Triphasaria pusilla	5		NL
10.			
11.			
	80 = Total Cover		40 / 16
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Wetland Non-Vascular Plants[1]
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks:

Bryophytes in herbaceous plot at ~10%. Wetland edge is 4½ ft from upland test pit

SOIL

Sampling Point: W1-TU

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR3/1	100	—	—	—	—	Silt Loam	
3-16	10YR3/2	100	—	—	—	—	Silt Loam/Silty clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

No Reaction to @@ dip

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No _____ Depth (inches): _____

Water Table Present? Yes X No _____ Depth (inches): 10"

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Blocksburg HUMSUN City/County: Blocksburg / Humboldt Sampling Date: 4-11-19

Applicant/Owner: State: CA Sampling Point: W2-TIW

Investigator(s): J.C., M.S Section, Township, Range:

Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Slope (%):

Subregion (LRR): Lat: Long: Datum:

Soil Map Unit Name: NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No	
Hydric Soil Present?	Yes	No ✓	Is the Sampled Area within a Wetland? Yes ✓ No
Wetland Hydrology Present?	Yes ✓	No	

Remarks:
"Man-Induced Wetlands" do not need hydric soil to be considered wetlands only hydrology and hydric veg.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 3x7)			
1. Callitriche sp.	Y	20	OBL
2. Ranunculus aquatilis	Y	30	OBL
3. Mentha pulegium		5	OBL
4. Ranunculus californica		<1	FAC
5. Hypochaeris or Lunondidon		1	NI
6. Glyceria x occidentalis		1	OBL
7. Juncus patens		5	FACW
8. Trifolium (subterranium)		2	NI
9. Luzula (Comosa)		5	FAC
10.			
11.			
	109 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ✓ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Wetland Non-Vascular Plants[1]
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No

Remarks:
wetland test pit to boundary 3ft
Uplant test pit 10ft to boundary above cut

SOIL

Sampling Point: W2-TW

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-14+	10YR 4/1	95	2.5Y5/1	5	D	M	clay loam	+ Inpores also some Redox @ 3%

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- __ Histosol (A1)
- __ Histic Epipedon (A2)
- __ Black Histic (A3)
- __ Hydrogen Sulfide (A4)
- __ Depleted Below Dark Surface (A11)
- __ Thick Dark Surface (A12)
- __ Sandy Mucky Mineral (S1)
- __ Sandy Gleyed Matrix (S4)
- __ Sandy Redox (S5)
- __ Stripped Matrix (S6)
- __ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- __ Loamy Gleyed Matrix (F2)
- __ Depleted Matrix (F3)
- __ Redox Dark Surface (F6)
- __ Depleted Dark Surface (F7)
- __ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- __ 2 cm Muck (A10)
- __ Red Parent Material (TF2)
- __ Very Shallow Dark Surface (TF12)
- __ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X (1)

Remarks:

standing water - this area is in cut (Inboard ditch) - positive redox @ edge of cut about 3.5' - Does not meet any soil hydric indicators (1)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- X Surface Water (A1)
- __ High Water Table (A2)
- __ Saturation (A3)
- __ Water Marks (B1)
- __ Sediment Deposits (B2)
- __ Drift Deposits (B3)
- X Algal Mat or Crust (B4)
- __ Iron Deposits (B5)
- __ Surface Soil Cracks (B6)
- __ Inundation Visible on Aerial Imagery (B7)
- __ Sparsely Vegetated Concave Surface (B8)
- __ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- __ Salt Crust (B11)
- __ Aquatic Invertebrates (B13)
- __ Hydrogen Sulfide Odor (C1)
- __ Oxidized Rhizospheres along Living Roots (C3)
- X Presence of Reduced Iron (C4)
- __ Recent Iron Reduction in Tilled Soils (C6)
- __ Stunted or Stressed Plants (D1) **(LRR A)**
- __ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- __ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- __ Drainage Patterns (B10)
- __ Dry-Season Water Table (C2)
- __ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- __ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- __ Raised Ant Mounds (D6) **(LRR A)**
- __ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes X No _____ Depth (inches): 2"

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes X No _____ Depth (inches): 2"+

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

(1) Man-Induced Wetlands - Does not need hydric soil. only hydrology + Wplants = wetlands

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: HUMSUN City/County: Humboldt Sampling Date: 4/26/19

Applicant/Owner: State: CA Sampling Point: W2-TIU

Investigator(s): A.L., M.S. Section, Township, Range:

Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Slope (%):

Subregion (LRR): Lat: Long: Datum:

Soil Map Unit Name: NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation, Soil, or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation, Soil, or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	No X
Hydric Soil Present?	Yes	No X
Wetland Hydrology Present?	Yes	No X
Is the Sampled Area within a Wetland?	Yes	No X

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 1m x 1m)			
1. Prunella vulgaris	15	X	FACU
2. Ranunculus californicus	7		FAC
3. Trifolium subterraneum	7		NL
4. Hypochaeris radicata	40	X	NL
5. Anthoxanthum odoratum	10	X	FACU
6. Cynosurus echinatus	5		NL
7. Bellis perennis	5		NL
8. Armipsea americana	7		FACU
9. Holcus lanatus	3		FAC
10.			
11.			
	69 = Total Cover		35/17
Woody Vine Stratum (Plot size:)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 25

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
- 2 - Dominance Test is >50%
- 3 - Prevalence Index is ≤3.0[1]
- 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- 5 - Wetland Non-Vascular Plants[1]
- Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes No X

Remarks:

SOIL

Sampling Point: W2-T1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR3/3	100	—	—	—	—	Silt loam	
3-12"	10YR3/3	100	—	—	—	—	Silt loam	
12"-18"	10YR5/6	100	—	—	—	—	Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- __ Histosol (A1)
- __ Histic Epipedon (A2)
- __ Black Histic (A3)
- __ Hydrogen Sulfide (A4)
- __ Depleted Below Dark Surface (A11)
- __ Thick Dark Surface (A12)
- __ Sandy Mucky Mineral (S1)
- __ Sandy Gleyed Matrix (S4)
- __ Sandy Redox (S5)
- __ Stripped Matrix (S6)
- __ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- __ Loamy Gleyed Matrix (F2)
- __ Depleted Matrix (F3)
- __ Redox Dark Surface (F6)
- __ Depleted Dark Surface (F7)
- __ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- __ 2 cm Muck (A10)
- __ Red Parent Material (TF2)
- __ Very Shallow Dark Surface (TF12)
- __ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- __ Surface Water (A1)
- __ High Water Table (A2)
- __ Saturation (A3)
- __ Water Marks (B1)
- __ Sediment Deposits (B2)
- __ Drift Deposits (B3)
- __ Algal Mat or Crust (B4)
- __ Iron Deposits (B5)
- __ Surface Soil Cracks (B6)
- __ Inundation Visible on Aerial Imagery (B7)
- __ Sparsely Vegetated Concave Surface (B8)
- __ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- __ Salt Crust (B11)
- __ Aquatic Invertebrates (B13)
- __ Hydrogen Sulfide Odor (C1)
- __ Oxidized Rhizospheres along Living Roots (C3)
- __ Presence of Reduced Iron (C4)
- __ Recent Iron Reduction in Tilled Soils (C6)
- __ Stunted or Stressed Plants (D1) **(LRR A)**
- __ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- __ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- __ Drainage Patterns (B10)
- __ Dry-Season Water Table (C2)
- __ Saturation Visible on Aerial Imagery (C9)
- __ Geomorphic Position (D2)
- __ Shallow Aquitard (D3)
- __ FAC-Neutral Test (D5)
- __ Raised Ant Mounds (D6) **(LRR A)**
- __ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Blocksburg / HUMSUN City/County Blocksburg / Humboldt Sampling Date 4/12/19

Applicant/Owner: _____ State _____ Sampling Point W4T / W

Investigator(s): A.L., M.S. Section, Township, Range _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): Convex Slope (%) _____

Subregion (LRR): _____ Lat _____ Long _____ Datum _____

Soil Map Unit Name: _____ NWI classification _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	Is the Sampled Area within a Wetland? Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks: Heavily grazed pasture

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 1m radial plot)			
1. Poa annua	15		FAC
2. Hordeum Murinum	25	X	FAC
3. Geranium Molle	20	X	UPL
4. other immature grass	15		—
5. Rumex crispus	3		FAC
6. Festuca perennis	20	X	FAC
7.			
8			
9			
10.			
11.			
	98 = Total Cover		49/18
Woody Vine Stratum (Plot size: _____)			
1			
2			
	_____ = Total Cover		

% Bare Ground in Herb Stratum _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.6 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Wetland Non-Vascular Plants[1]
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: Wetland boundary is 3' from wetland test pit. There is a patch of Juncus effusus ~ 10' to 15' downslope from wetland veg plot but not captured in plot.

SOIL

Sampling Point: W4-TW

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR2/1	100	—	—	—	—	Loam	
3-16	10YR2/1	95	10YR5/6	5	C	M	Silt Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- X Surface Water (A1) (1)
- X High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ✓ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ___ No ___ Depth (inches): ___

Water Table Present? Yes ✓ No ___ Depth (inches): 7"

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): 7"

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

(1) 3' within wetland soil pit

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Bloomsburg City/County: _____ Sampling Date: 4-12-19

Applicant/Owner: _____ State: _____ Sampling Point: W4T1U

Investigator(s): A.L., M.S Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No X	Is the Sampled Area within a Wetland? Yes _____ No X
Hydric Soil Present?	Yes _____ No X	
Wetland Hydrology Present?	Yes _____ No X	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 1m radial plot)			Indicator
1. Geranium molle	10	UPL	
2. Poa annua	30	FAC	X
3. Trifolium subterraneum	15	UPL	X
4. ~~Poa~~	~~15~~	~~FAC~~	~~X~~
5. Hypochaeris glabra	10	NL	
6. Plantago lanceolata	15	FACU	X
7. Erodium botrys *	5	FACU	
8. other mostly grass	10	unk	
9.			
10.			
11.			
	95 = Total Cover		48/19
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

__ 1 - Rapid Test for Hydrophytic Vegetation

__ 2 - Dominance Test is >50%

__ 3 - Prevalence Index is ≤3.0[1]

__ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ 5 - Wetland Non-Vascular Plants[1]

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No X

Remarks:

Wetland boundary is 7' from upland test pit.

* Erodium botrys or possibly E. brachycarpum (NL)

SOIL

Sampling Point: W4-T1-U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR3/2	100	—	—	—	—	Loam	
4-18	10YR3/2	100	—	—	—	—	Silt Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- __ Histosol (A1)
- __ Histic Epipedon (A2)
- __ Black Histic (A3)
- __ Hydrogen Sulfide (A4)
- __ Depleted Below Dark Surface (A11)
- __ Thick Dark Surface (A12)
- __ Sandy Mucky Mineral (S1)
- __ Sandy Gleyed Matrix (S4)
- __ Sandy Redox (S5)
- __ Stripped Matrix (S6)
- __ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- __ Loamy Gleyed Matrix (F2)
- __ Depleted Matrix (F3)
- __ Redox Dark Surface (F6)
- __ Depleted Dark Surface (F7)
- __ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- __ 2 cm Muck (A10)
- __ Red Parent Material (TF2)
- __ Very Shallow Dark Surface (TF12)
- __ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks: Soil low chroma due to high O.M (Grassland)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required, check all that apply)

- __ Surface Water (A1)
- __ High Water Table (A2)
- __ Saturation (A3)
- __ Water Marks (B1)
- __ Sediment Deposits (B2)
- __ Drift Deposits (B3)
- __ Algal Mat or Crust (B4)
- __ Iron Deposits (B5)
- __ Surface Soil Cracks (B6)
- __ Inundation Visible on Aerial Imagery (B7)
- __ Sparsely Vegetated Concave Surface (B8)
- __ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- __ Salt Crust (B11)
- __ Aquatic Invertebrates (B13)
- __ Hydrogen Sulfide Odor (C1)
- __ Oxidized Rhizospheres along Living Roots (C3)
- __ Presence of Reduced Iron (C4)
- __ Recent Iron Reduction in Tilled Soils (C6)
- __ Stunted or Stressed Plants (D1) **(LRR A)**
- __ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- __ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- __ Drainage Patterns (B10)
- __ Dry-Season Water Table (C2)
- __ Saturation Visible on Aerial Imagery (C9)
- __ Geomorphic Position (D2)
- __ Shallow Aquitard (D3)
- __ FAC-Neutral Test (D5)
- __ Raised Ant Mounds (D6) **(LRR A)**
- __ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No H_2O - pit to 18"

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Blocksburg City/County: Blocksburg / Humboldt Sampling Date: 4-12-19

Applicant/Owner: State: CA Sampling Point: W4T2W

Investigator(s): A.L., M.S. Section, Township, Range:

Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Slope (%):

Subregion (LRR): Lat: Long: Datum:

Soil Map Unit Name: NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No	Is the Sampled Area within a Wetland? Yes X No
Hydric Soil Present?	Yes X No	
Wetland Hydrology Present?	Yes X No	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 2m x 1.5m Rectangle)			
1. Juncus patens	40	X	FACW
2. Geranium molle	15	X	NL
3. Callitriche	7		OBL
4. Mentha pullegium	3		OBL
5. immature grass	10		unk
6. Poa annua	15	X	FAC
7. Glyceria x occidentale	2		OBL
8.			
9.			
10.			
11.			
	92 = Total Cover		46/19
Woody Vine Stratum (Plot size:)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 5% (standing Water)

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.6 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Wetland Non-Vascular Plants[1]
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No

Remarks:

Wetland test pit is ~3ft from mapped wetland boundary.

SOIL

Sampling Point: W4-T2W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 2/2	100	—	—	—	—	Loam	
3-14	10YR 2/1	97	10YR 4/6	3	C	M	Silt Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

positive reaction to @ e Dip.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ✓ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (LRR A)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ___ No ___ Depth (inches): ___

Water Table Present? Yes X No ___ Depth (inches): 3"

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 3"

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Blocksburg City/County: _____ Sampling Date: 4-12-19

Applicant/Owner: * State: _____ Sampling Point: W4T2U

Investigator(s): A.L, M.S Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	Is the Sampled Area within a Wetland? Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks: * Erodium sp. is likely E. botrys (FACU) or E. brachycarpum NL

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 2M X 1.5M Rectangle)			
1. Plantago lanceolata	20	X	FACU
2. Poa annua	15	X	FAC
3. Hordeum murinum	10		FAC
4. Erodium *sp.	10		FACU
5. Trifolium subterraneum	15	X	UPL
6. Geranium dissectum	5		NL
7. Navaretia sp.	1		
8. Linum bienne	1		NL
9. Triphysaria pusilla	3		NL
10. immature grasses (other)	10		?
11.			
	90 = Total Cover		45 / 18
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Wetland Non-Vascular Plants[1]
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks: Upland test pit is ~2 feet from mapped wetland boundary. other immature grass is likely CYNDACH. and possibly [illegible]

SOIL

Sampling Point: W 4-T2 U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR3/2	100	–	–	–	–	Loam	
5-14	10YR3/2	100	–	–	–	–	Silt Loam	
14-18	10YR3/2	100	–	–	–	–	G. Loam	Weathered Sandstone

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- __ Histosol (A1)
- __ Histic Epipedon (A2)
- __ Black Histic (A3)
- __ Hydrogen Sulfide (A4)
- __ Depleted Below Dark Surface (A11)
- __ Thick Dark Surface (A12)
- __ Sandy Mucky Mineral (S1)
- __ Sandy Gleyed Matrix (S4)
- __ Sandy Redox (S5)
- __ Stripped Matrix (S6)
- __ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- __ Loamy Gleyed Matrix (F2)
- __ Depleted Matrix (F3)
- __ Redox Dark Surface (F6)
- __ Depleted Dark Surface (F7)
- __ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- __ 2 cm Muck (A10)
- __ Red Parent Material (TF2)
- __ Very Shallow Dark Surface (TF12)
- __ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No V

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- __ Surface Water (A1)
- __ High Water Table (A2)
- __ Saturation (A3)
- __ Water Marks (B1)
- __ Sediment Deposits (B2)
- __ Drift Deposits (B3)
- __ Algal Mat or Crust (B4)
- __ Iron Deposits (B5)
- __ Surface Soil Cracks (B6)
- __ Inundation Visible on Aerial Imagery (B7)
- __ Sparsely Vegetated Concave Surface (B8)
- __ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- __ Salt Crust (B11)
- __ Aquatic Invertebrates (B13)
- __ Hydrogen Sulfide Odor (C1)
- __ Oxidized Rhizospheres along Living Roots (C3)
- __ Presence of Reduced Iron (C4)
- __ Recent Iron Reduction in Tilled Soils (C6)
- __ Stunted or Stressed Plants (D1) **(LRR A)**
- __ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- __ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- __ Drainage Patterns (B10)
- __ Dry-Season Water Table (C2)
- __ Saturation Visible on Aerial Imagery (C9)
- __ Geomorphic Position (D2)
- __ Shallow Aquitard (D3)
- __ FAC-Neutral Test (D5)
- __ Raised Ant Mounds (D6) **(LRR A)**
- __ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

pit to 18"

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Blacksburg City/County: _____ Sampling Date: 4-12-19

Applicant/Owner: _____ State: _____ Sampling Point: WSTLW

Investigator(s): A.L., M.S. Section, Township, Range: _____

Landform (hillslope, terrace, etc.): gully Local relief (concave, convex, none): concave Slope (%): _____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	Is the Sampled Area within a Wetland? Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 2m x 1m Rectangular Plot)			
1. Juncus patens	35	X	FACW
2. Mentha pulegium	15	X	OBL
3. Hordeum murinum	10		FAC
4. Rumex crispus	5		FAC
5. Callitriche sp	3		OBL
6. other immature grass	10		unknown
7. Anthoxanthum odoratum	10		FACU
8. Holcus lanatus	5		FAC
9.			
10.			
11.			
	96 = Total Cover		48/20
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		
% Bare Ground in Herb Stratum _____			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Wetland Non-Vascular Plants[1]
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

Wetland test pit is 6' from mapped wetland boundary

SOIL

Sampling Point: W5-TIW

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR2/1	100	—	—	—	—	Loam	Positive @ @ dip @ 5"
6-14	7.5YR4/6	100	—	—	—	—	Sandy Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- __ Histosol (A1)
- __ Histic Epipedon (A2)
- __ Black Histic (A3)
- __ Hydrogen Sulfide (A4)
- __ Depleted Below Dark Surface (A11)
- __ Thick Dark Surface (A12)
- __ Sandy Mucky Mineral (S1)
- __ Sandy Gleyed Matrix (S4)
- __ Sandy Redox (S5)
- __ Stripped Matrix (S6)
- __ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- __ Loamy Gleyed Matrix (F2)
- __ Depleted Matrix (F3)
- __ Redox Dark Surface (F6)
- __ Depleted Dark Surface (F7)
- __ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- __ 2 cm Muck (A10)
- __ Red Parent Material (TF2)
- __ Very Shallow Dark Surface (TF12)
- __ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X (1) No _____

Remarks:

This area appears to be manipulated or a result of mass wasting as subsurface layer is higher chroma than 0-6" soil horizon

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- __ Surface Water (A1)
- __ High Water Table (A2)
- __ Saturation (A3)
- __ Water Marks (B1)
- __ Sediment Deposits (B2)
- __ Drift Deposits (B3)
- __ Algal Mat or Crust (B4)
- __ Iron Deposits (B5)
- __ Surface Soil Cracks (B6)
- __ Inundation Visible on Aerial Imagery (B7)
- __ Sparsely Vegetated Concave Surface (B8)
- __ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- __ Salt Crust (B11)
- __ Aquatic Invertebrates (B13)
- __ Hydrogen Sulfide Odor (C1)
- __ Oxidized Rhizospheres along Living Roots (C3)
- __ Presence of Reduced Iron (C4)
- __ Recent Iron Reduction in Tilled Soils (C6)
- __ Stunted or Stressed Plants (D1) **(LRR A)**
- __ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- __ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- __ Drainage Patterns (B10)
- __ Dry-Season Water Table (C2)
- __ Saturation Visible on Aerial Imagery (C9)
- __ Geomorphic Position (D2)
- __ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- __ Raised Ant Mounds (D6) **(LRR A)**
- __ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No _____ Depth (inches): _____

Water Table Present? Yes X No _____ Depth (inches): 31

Saturation Present? (includes capillary fringe) Yes X No _____ Depth (inches): 31

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

(1) Soils does not depict a typical hydric soil. But standing water, Wetland plants & positive @ @ dip. result in positive hydric soil determination

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Blocksburg City/County: _____ Sampling Date: 4-12-19

Applicant/Owner: _____ State: _____ Sampling Point: WST 1U

Investigator(s): A.L., M.S. Section, Township, Range: _____

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope (%): ~10°+

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No X	Is the Sampled Area within a Wetland? Yes _____ No X
Hydric Soil Present?	Yes _____ No X	
Wetland Hydrology Present?	Yes _____ No X	

Remarks: Heavily Grazed pasture.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 2m x 1m, Rectangular Plot)			
1. Plantago lanceolata	20	X	FACU
2. Hordeum murinum	15	X	FAC
3. Poa annua	15	X	FAC
4. Geranium dissectum	3		NL
5. Trifolium subterraneum	15	X	NL
6. Juncus patens	5		FACW
7. Bellis perennis	3		NL
8. Cynosurus echinatus	10		NL
9. Hypochaeris glabra	5		NL
10. Navarretia sp	1		unk
11.			
	92 = Total Cover		46/18
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		
% Bare Ground in Herb Stratum _____			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species _____	x 1 =	_____
FACW species _____	x 2 =	_____
FAC species _____	x 3 =	_____
FACU species _____	x 4 =	_____
UPL species _____	x 5 =	_____
Column Totals: _____ (A)		_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- X 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Wetland Non-Vascular Plants[1]
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks: Upland test pit is 5' from mapped wetland boundary.

SOIL

Sampling Point: WS-T1U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 3/2	100	—	—	—	—	Loam	
5-18	10YR 3/3	100	—	—	—	—	Loam/Silt Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes ___ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Blocksburg City/County: _____ Sampling Date: 4-12-19

Applicant/Owner: _____ State: _____ Sampling Point: W7T1W

Investigator(s): A.L., M.S. Section, Township, Range: _____

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): Concave Slope (%): <1%

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	Is the Sampled Area within a Wetland? Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks:
Grazed pasture

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 2m x 1m Rectangle)			
1. Juncus effusus	5		FACW
2. Juncus patens	5		FACW
3. Mentha pulegium	5		OBL
4. Glyceria x occidentalis	10	X	OBL
5. Carex sp.	5		?
6. Trifolium sp.	5		?
7. unknown immature trees	3		?
8. Plantago lanceolata	3		FACU
9.			
10.			
11.			
	41% = Total Cover		20.5/8
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 45%*

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Wetland Non-Vascular Plants[1]
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:
* Standing water covers bare ground disturbed by cattle
Abs. Veg cover is low due to bare soil in plot.

SOIL

Sampling Point: W7-T1W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 2/1	95	7.5YR 3/4	5	C	M	Gravelly Loam	
4-14	10YR 2/1	90	7.5Y 4/4	10	C	M	Gravelly Loam / clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- __ Histosol (A1)
- __ Histic Epipedon (A2)
- __ Black Histic (A3)
- __ Hydrogen Sulfide (A4)
- __ Depleted Below Dark Surface (A11)
- __ Thick Dark Surface (A12)
- __ Sandy Mucky Mineral (S1)
- __ Sandy Gleyed Matrix (S4)
- __ Sandy Redox (S5)
- __ Stripped Matrix (S6)
- __ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- __ Loamy Gleyed Matrix (F2)
- __ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- __ Depleted Dark Surface (F7)
- __ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- __ 2 cm Muck (A10)
- __ Red Parent Material (TF2)
- __ Very Shallow Dark Surface (TF12)
- __ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

Positive reaction to α-α dip. @6"

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- __ Water Marks (B1)
- __ Sediment Deposits (B2)
- __ Drift Deposits (B3)
- X Algal Mat or Crust (B4)
- __ Iron Deposits (B5)
- __ Surface Soil Cracks (B6)
- __ Inundation Visible on Aerial Imagery (B7)
- __ Sparsely Vegetated Concave Surface (B8)
- __ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- __ Salt Crust (B11)
- __ Aquatic Invertebrates (B13)
- __ Hydrogen Sulfide Odor (C1)
- __ Oxidized Rhizospheres along Living Roots (C3)
- X Presence of Reduced Iron (C4)
- __ Recent Iron Reduction in Tilled Soils (C6)
- __ Stunted or Stressed Plants (D1) **(LRR A)**
- __ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- __ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- __ Drainage Patterns (B10)
- __ Dry-Season Water Table (C2)
- __ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- __ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- __ Raised Ant Mounds (D6) **(LRR A)**
- __ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes X No _____ Depth (inches): Surface

Water Table Present? Yes X No _____ Depth (inches): 11

Saturation Present? (includes capillary fringe) Yes X No _____ Depth (inches): 11

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site Blacksburg City/County Blacksburg / Humboldt Sampling Date 4-12-19

Applicant/Owner _____ State _____ Sampling Point WTIU

Investigator(s) A.L., M.S. Section, Township, Range _____

Landform (hillslope, terrace, etc.) _____ Local relief (concave, convex, none) Convex Slope (%) 15%

Subregion (LRR) _____ Lat _____ Long _____ Datum _____

Soil Map Unit Name _____ NWI classification _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	Is the Sampled Area within a Wetland? Yes _____ No _____
Hydric Soil Present?	Yes _____	No _____	
Wetland Hydrology Present?	Yes _____	No _____	

Remarks

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size _____)	Absolute % Cover	Dominant Species?	Indicator Status
1			
2			
3			
4			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size _____)			
1			
2			
3			
4			
5			
	_____ = Total Cover		
Herb Stratum (Plot size Rectangle 2m x 1m)			
1 Plantago lanceolata	15	X	FACU
2 Trifolium subterraneum ?	10		NL
3 Hordeum murinum	15	X	FAC
4 Anthoxanthum odoratum	20	X	FACU
5 immature grass	10		unk
6 Ranunculus californica	3		FAC
7 Chlorogalum pomeridianum	2		NL
8 Erodium botrys? or brachycarpum	2		FAC/NL
9			
10			
11			
	77 = Total Cover		39/15
Woody Vine Stratum (Plot size _____)			
1			
2			
	_____ = Total Cover		

% Bare Ground in Herb Stratum _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3 (A/B)

Prevalence Index worksheet:

Total % Cover of	Multiply by
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

__ 1 - Rapid Test for Hydrophytic Vegetation

__ 2 - Dominance Test is >50%

__ 3 - Prevalence Index is ≤3.0[1]

__ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ 5 - Wetland Non-Vascular Plants[1]

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks

SOIL

Sampling Point: W7-TIU

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-5	10YR3/2	100	—	—	—	—	Loam	
5-14	10YR3/2	100	—	—	—	—	Cobbly Loam	
14-18	10YR 4/3	100	—	—	—	—	Gravelly Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ____ No Y

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ____ No Y Depth (inches): _____

Water Table Present? Yes ____ No Y Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ____ No Y Depth (inches): _____

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

pit Dug to 18"

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site Blocksburg HUMSUN City/County Humboldt Sampling Date 4/12/19

Applicant/Owner State CA Sampling Point W7T2W

Investigator(s) A.L., M.S. Section, Township, Range

Landform (hillslope, terrace, etc.) gully Local relief (concave, convex, none) Concave Slope (%)

Subregion (LRR) Lat Long Datum

Soil Map Unit Name NWI classification

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No	Is the Sampled Area within a Wetland? Yes X No
Hydric Soil Present?	Yes X No	
Wetland Hydrology Present?	Yes X No	

Remarks

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size)	Absolute % Cover	Dominant Species?	Indicator Status
1			
2			
3			
4			
	= Total Cover		
Sapling/Shrub Stratum (Plot size)			
1			
2			
3			
4			
5			
	= Total Cover		
Herb Stratum (Plot size Rectangle 2m x 1m)			
1 Juncus effusus	80	X	FACW
2 Mentha pulegium	5		OBL
3 Nasturtium officinale	5		OBL
4			
5			
6			
7			
8			
9			
10			
11			
	90 = Total Cover		45/18
Woody Vine Stratum (Plot size)			
1			
2			
	= Total Cover		

% Bare Ground in Herb Stratum 7 % (with water covering bare ground)

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of	Multiply by
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

X 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

__ 3 - Prevalence Index is ≤3.0[1]

__ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ 5 - Wetland Non-Vascular Plants[1]

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic

Hydrophytic Vegetation Present? Yes X No

Remarks

Wetland test pit is 5' from mapped wetland boundary.

SOIL

Sampling Point: W7-T2W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR3/2	100	—	—	—	—	Silt Loam	
3-14	2.5Y 4/1	80	7.5YR3/4	20	C	M	Silty clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ____

Remarks:

Positive reaction to @ edge 6"+10"

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- X Surface Water (A1)
- Y High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- X Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- X Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes Y No ____ Depth (inches): Surface

Water Table Present? Yes Y No ____ Depth (inches): Surface

Saturation Present? (includes capillary fringe) Yes Y No ____ Depth (inches): Surface

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site Blocksburg HUMSUN City/County Humboldt Sampling Date 4/12/19
Applicant/Owner _____ State CA Sampling Point W7T2U
Investigator(s) A.L., M.S. Section, Township, Range _____
Landform (hillslope, terrace, etc.) Midslope of hillside Local relief (concave, convex, none) Convex Slope (%) _____
Subregion (LRR) _____ Lat _____ Long _____ Datum _____
Soil Map Unit Name _____ NWI classification _____
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No X	Is the Sampled Area within a Wetland? Yes _____ No _____
Hydric Soil Present?	Yes _____ No X	
Wetland Hydrology Present?	Yes _____ No X	

Remarks

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size _____)	Absolute % Cover	Dominant Species?	Indicator Status
1			
2			
3			
4			
	= Total Cover		
Sapling/Shrub Stratum (Plot size _____)			
1			
2			
3			
4			
5			
	= Total Cover		
Herb Stratum (Plot size 1m x 1m Rectangle)			
1 Hordeum murinum	25	X	FAC
2 Cynosurus echinatus	15	X	NL
3 Anthoxanthum odoratum	20	X	FACU
4 Holcus lanatus	5		FAC
5 Plantago lanceolata	10		FACU
6 Hypochaeris glabra	10		NL
7 Sherardia arvensis	2		NL
8 Erodium botrys	5		FACU
9			
10			
11			
	92 = Total Cover		46/18
Woody Vine Stratum (Plot size _____)			
1			
2			
	= Total Cover		

% Bare Ground in Herb Stratum _____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3 (A/B)

Prevalence Index worksheet:

Total % Cover of	Multiply by
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
__ 1 - Rapid Test for Hydrophytic Vegetation
__ 2 - Dominance Test is >50%
__ 3 - Prevalence Index is ≤3.0[1]
__ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ 5 - Wetland Non-Vascular Plants[1]
__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic

Hydrophytic Vegetation Present? Yes _____ No X

Remarks
Upland test pit is 2' from mapped wetland boundary.

SOIL

Sampling Point: W7-T20

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR3/2	100	—	—	—	—	Gravelly Silt Loam	
3-13	10YR3/2-5	100	—	—	—	—	Silt Loam	
13-18	10YR 4/3	100	—	—	—	—	Silty clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- __ Histosol (A1)
- __ Histic Epipedon (A2)
- __ Black Histic (A3)
- __ Hydrogen Sulfide (A4)
- __ Depleted Below Dark Surface (A11)
- __ Thick Dark Surface (A12)
- __ Sandy Mucky Mineral (S1)
- __ Sandy Gleyed Matrix (S4)
- __ Sandy Redox (S5)
- __ Stripped Matrix (S6)
- __ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- __ Loamy Gleyed Matrix (F2)
- __ Depleted Matrix (F3)
- __ Redox Dark Surface (F6)
- __ Depleted Dark Surface (F7)
- __ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- __ 2 cm Muck (A10)
- __ Red Parent Material (TF2)
- __ Very Shallow Dark Surface (TF12)
- __ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- __ Surface Water (A1)
- __ High Water Table (A2)
- __ Saturation (A3)
- __ Water Marks (B1)
- __ Sediment Deposits (B2)
- __ Drift Deposits (B3)
- __ Algal Mat or Crust (B4)
- __ Iron Deposits (B5)
- __ Surface Soil Cracks (B6)
- __ Inundation Visible on Aerial Imagery (B7)
- __ Sparsely Vegetated Concave Surface (B8)
- __ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- __ Salt Crust (B11)
- __ Aquatic Invertebrates (B13)
- __ Hydrogen Sulfide Odor (C1)
- __ Oxidized Rhizospheres along Living Roots (C3)
- __ Presence of Reduced Iron (C4)
- __ Recent Iron Reduction in Tilled Soils (C6)
- __ Stunted or Stressed Plants (D1) **(LRR A)**
- __ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- __ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- __ Drainage Patterns (B10)
- __ Dry-Season Water Table (C2)
- __ Saturation Visible on Aerial Imagery (C9)
- __ Geomorphic Position (D2)
- __ Shallow Aquitard (D3)
- __ FAC-Neutral Test (D5)
- __ Raised Ant Mounds (D6) **(LRR A)**
- __ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Dug pit to 18"

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site Humsun City/County Humboldt Sampling Date 4/25/19

Applicant/Owner State CA Sampling Point Upland 1

Investigator(s) A.L., M.S. Section, Township, Range

Landform (hillslope, terrace, etc.) Local relief (concave, convex, none) Slope (%)

Subregion (LRR) Lat Long Datum

Soil Map Unit Name NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No	
Hydric Soil Present?	Yes	No X	Is the Sampled Area within a Wetland? Yes No X
Wetland Hydrology Present?	Yes	No X	

Remarks: Seepy area without hydric soil. Did not pass hydrology. Swale feature terminates 40' downslope of upland 1 test pit.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size ____)	Absolute % Cover	Dominant Species?	Indicator Status
1			
2			
3			
4			
	= Total Cover		
Sapling/Shrub Stratum (Plot size ____)			
1			
2			
3			
4			
5			
	= Total Cover		
Herb Stratum (Plot size 2m x 1m, rectangular plot)			
1 Mentha pulegium	35	X	OBL
2 Trifolium subterraneum	10		NL
3 Ranunculus californica	2		FAC
4 Cynosurus echinatus	7		NL
5 Anthoxanthum odoratum	15	X	FACU
6 Plantago lanceolata	3		FACU
7 Hypochaeris glabra	2		NL
8			
9			
10			
11			
	74 = Total Cover		37/15
Woody Vine Stratum (Plot size ____)			
1			
2			
	= Total Cover		

% Bare Ground in Herb Stratum 20

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of		Multiply by	
OBL species	35	x 1 =	35
FACW species	0	x 2 =	0
FAC species	2	x 3 =	6
FACU species	18	x 4 =	72
UPL species	19	x 5 =	95
Column Totals	74 (A)		208 (B)

Prevalence Index = B/A = 2.8

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤3.0
- ___ 4 - Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Wetland Non-Vascular Plants
- ___ Problematic Hydrophytic Vegetation (Explain)

Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No

Remarks

SOIL

Sampling Point: Upland-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR3/2	100	—	—	—	—	Silt Loam	
3-6	10YR3/2	92	7.5YR4/4	8	C	PL	Gravelly Silt Loam	
6-14	10YR3/2	100	—	—	—	—	Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

No A A dip reaction –
Meets F6 requirement for chroma But · Does Not meet min 4" Thickness

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required, check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Hum Sun City/County: Blocksburg / Humboldt Sampling Date: 4-25-19

Applicant/Owner: State: Sampling Point: W18-T1-W

Investigator(s): A.L., M.S. Section, Township, Range:

Landform (hillslope, terrace etc.): roadside ditch Local relief (concave, convex, none): Slope (%):

Subregion (LRR): Lat: Long: Datum:

Soil Map Unit Name: NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No	Is the Sampled Area within a Wetland? Yes X No
Hydric Soil Present?	Yes X No	
Wetland Hydrology Present?	Yes X No	

Remarks: Plot is at the edge of road, roadside ditch. Ditch filled w/ decaying oak leaves

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2			
3.			
4			
	= Total Cover		
Sapling/Shrub Stratum (Plot size ____)			
1			
2			
3			
4			
5			
	= Total Cover		
Herb Stratum (Plot size 1m x 1m) Rectangle			
1 Mentha pulegium	5		OBL
2 Juncus patens	25	X	FACW
3 Anthoxanthum odoratum	30	X	FACU
4 Bellis perennis	3		NL
5 Ranunculus californicus	5		FAC
6			
7			
8			
9			
10			
11			
	68 = Total Cover		34/14
Woody Vine Stratum (Plot size ____)			
1			
2			
	= Total Cover		

% Bare Ground in Herb Stratum 30%.

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of	Multiply by
OBL species 5	x 1 = 5
FACW species 25	x 2 = 50
FAC species 5	x 3 = 15
FACU species 30	x 4 = 120
UPL species 3	x 5 = 15
Column Totals: 68 (A)	205 (B)

Prevalence Index = B/A = 3.0

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Wetland Non-Vascular Plants[1]
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No

Remarks: Wetland soil pit + veg plot are 5' from mapped wetland boundary.

SOIL

Sampling Point: W8T1-W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-9	10YR3/2	95	7.5YR4/4	5	C	M	Silt loam	Road side Ditch
9-14	10YR4/3	95	10YR5/1	5	D	PL	Loam/clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks: This soil (hydric) is a result of a Roadside Ditch. positive reaction to α,α Dip. Redox Features still Developing. Reaction @ 3" & 8"

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✓ Sparsely Vegetated Concave Surface (B8)
- ✓ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ✓ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ✓ No ___ Depth (inches): 1.0"

Water Table Present? Yes ✓ No ___ Depth (inches): 8"

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): 1.0"

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Standing water near soil pit. GW also observed

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site HumSun City/County Blocksburg / Humboldt Sampling Date 4-25-19

Applicant/Owner _____ State CA Sampling Point W8-T1-U

Investigator(s) A.L., M.S. Section, Township, Range _____

Landform (hillslope, terrace, etc.) upslope from ditch Local relief (concave, convex, none) Concave Slope (%) _____

Subregion (LRR) _____ Lat _____ Long _____ Datum _____

Soil Map Unit Name _____ NWI classification _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____ No X	
Wetland Hydrology Present?	Yes _____ No X	

Remarks

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size 1m x 1m Rectangle)			
1 Anthoxanthum odoratum	60	X	FACU
2 Mentha pulegium	5		OBL
3 Bellis perennis	15		NL
4 Hypochaeris glabra	5		NL
5			
6			
7			
8			
9			
10			
11			
	80 = Total Cover		40/16
Woody Vine Stratum (Plot size _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 10

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of	Multiply by
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

__ 1 - Rapid Test for Hydrophytic Vegetation

__ 2 - Dominance Test is >50%

__ 3 - Prevalence Index is ≤3.0[1]

__ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ 5 - Wetland Non-Vascular Plants[1]

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks

Upland plot is 17 feet from mapped wetland boundary

SOIL

Sampling Point W8TI-U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/2	100	—	—	—	—	Silt Loam	
3-7	10YR 3/2	100	—	—	—	—	Gravelly Silt Loam	
7-16	10YR 4/3	100	—	—	—	—	Loam/Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (If present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: HUM SUN City/County Blocksburg / Humboldt Sampling Date 4/25/19

Applicant/Owner: _____ State CA Sampling Point W9T1-W

Investigator(s): A.L., M.S. Section, Township, Range _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none) _____ Slope (%) _____

Subregion (LRR): _____ Lat _____ Long _____ Datum _____

Soil Map Unit Name: _____ NWI classification _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	Is the Sampled Area within a Wetland? Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 1m x 2m, rectangle)			
1. Mentha pulegium	65	X	OBL
2. Anthoxanthum odoratum	10		FACU
3. Juncus patens	10		FACW
4. Rumex crispus	3		FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	88 = Total Cover		
Woody Vine Stratum (Plot size. _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 5 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of	Multiply by
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Wetland Non-Vascular Plants[1]
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

* Downed wood covering some of the ground in herbaceous plot. Wetland plot is 5' from mapped boundary.

SOIL

Sampling Point: W9-T1W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR3/2	97	10YR4/4	3	C	M	Gravelly Loam	
3-14	10YR3/1	100	—	—	—	—	Gravelly Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks: AA Dip reaction @ 5"

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ✓ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ✓ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ✓ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ___ No ___ Depth (inches): _____

Water Table Present? Yes ___ No ___ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): near Surface

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Hum Sun City/County: Blockburg / Humboldt Sampling Date: 4-25-19

Applicant/Owner: State: CA Sampling Point: W9T1-U

Investigator(s): A.L., M.C Section, Township, Range:

Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Concave Slope (%): ~2%

Subregion (LRR): Lat: Long: Datum:

Soil Map Unit Name: NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____ No X	Is the Sampled Area within a Wetland? Yes ____ No X
Hydric Soil Present?	Yes ____ No X	
Wetland Hydrology Present?	Yes ____ No X	

Remarks

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size ____)	Absolute % Cover	Dominant Species?	Indicator Status
1			
2			
3			
4			
	= Total Cover		
Sapling/Shrub Stratum (Plot size ____)			
1			
2			
3			
4			
5			
	= Total Cover		
Herb Stratum (Plot size 1m x 1m, Rectangle)			
1 Bromus diandrus	80	X	NL
2 Anthoxanthum odoratum	7		FACU
3 Trifolium subterraneum	5		NL
4 Cynosurus echinatus	3		NL
5 Hypochaeris glabra	3		NL
6			
7			
8			
9			
10			
11			
	98 = Total Cover		
Woody Vine Stratum (Plot size ____)			
1			
2			
	= Total Cover		

% Bare Ground in Herb Stratum ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of	Multiply by
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Wetland Non-Vascular Plants[1]
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks

Upland plot is 5' from mapped boundary.

SOIL

Sampling Point: WG-T1U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-3	10YR3/3	100	—	—	—	—	Loam	
3-6	10YR3/3	100	—	—	—	—	Silt Loam	
6-18	10YR 4/4	100	—	—	—	—	Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site HUM SUN City/County Blocksburg / Humboldt Sampling Date 4/25/19
Applicant/Owner _____ State CA Sampling Point W10T1W
Investigator(s) A.L., M.S Section, Township, Range _____
Landform (hillslope, terrace, etc.) _____ Local relief (concave, convex, none) _____ Slope (%) _____
Subregion (LRR) _____ Lat _____ Long _____ Datum _____
Soil Map Unit Name _____ NWI classification _____
Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____
Are Vegetation _____, Soil _____ or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size _____)	Absolute % Cover	Dominant Species?	Indicator Status
1			
2			
3			
4			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size _____)			
1			
2			
3			
4			
5			
	_____ = Total Cover		
Herb Stratum (Plot size 2m x 1m rectangle)			
1 Mentha pulegium	50	X	OBL
2			
3 Anthoxanthum odoratum	10		FACU
4 Hypochaeris glabra	3		NL
5 Ranunculus californicus	3		FAC
6 Cynosurus echinatus	5		NL
7 Trifolium subterraneum	5		NL
8 Juncus patens	5		FACW
9			
10			
11			
	81 = Total Cover		
Woody Vine Stratum (Plot size _____)			
1			
2			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 10%

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
__ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
__ 3 - Prevalence Index is ≤3.0[1]
__ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ 5 - Wetland Non-Vascular Plants[1]
__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks
Wetland plot is 3 feet from mapped wetland boundary.

SOIL

Sampling Point: W10-TW

Profile Description: (Describe to the depth needed to document the Indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	2.5Y 3/1	100	—	—	—	—	Silt Loam	
5-14	2.5Y 4/1	80	7.5YR 4/4	20	C	M	Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks: A. A, Dip reactim at 3" + 10"

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ✓ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ✓ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ✓ No ___ Depth (inches): 1"

Water Table Present? Yes ✓ No ___ Depth (inches): 1"

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): 1"

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site HUMSUN City/County Blocksburg / Humboldt Sampling Date 4/25/19
Applicant/Owner _____ State CA Sampling Point WDT1U
Investigator(s) A.L., M.S. Section, Township, Range _____
Landform (hillslope, terrace, etc.) _____ Local relief (concave, convex, none): _____ Slope (%) _____
Subregion (LRR) _____ Lat _____ Long _____ Datum _____
Soil Map Unit Name _____ NWI classification _____
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No X	Is the Sampled Area within a Wetland? Yes _____ No X
Hydric Soil Present?	Yes _____ No X	
Wetland Hydrology Present?	Yes _____ No X	

Remarks.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size _____)	Absolute % Cover	Dominant Species?	Indicator Status
1			
2			
3			
4			
	= Total Cover		
Sapling/Shrub Stratum (Plot size _____)			
1			
2			
3			
4			
5			
	= Total Cover		
Herb Stratum (Plot size 2m x 1m, Rectangle)			
1 Cynosurus echinatus	15	X	NL
2 Hypochaeris glabra	20	X	NL
3 Erodium botrys	5		FACU
4 Plantago lanceolata	10		FACU
5 Trifolium subterraneum	10		NL
6 Anthoxanthum odoratum	20	X	FACU
7 Geranium molle	5		UPL
8 Bromus diandrus	7		
9			
10			
11			
	92 = Total Cover		
Woody Vine Stratum (Plot size _____)			
1			
2			
	= Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of	Multiply by
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
__ 1 - Rapid Test for Hydrophytic Vegetation
__ 2 - Dominance Test is >50%
__ 3 - Prevalence Index is ≤3.0[1]
__ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ 5 - Wetland Non-Vascular Plants[1]
__ Problematic Hydrophytic Vegetation[1] (Explain)
[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? Yes _____ No X

Remarks
Upland plot is two feet from mapped boundary.

SOIL

Sampling Point: W10-TU

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-4	10YR3/3	100	—	—	—	—	Loam	
4-12	10YR4/3	100	—	—	—	—	Gravelly Silty Loam	
12-18	10YR4/3	100	—	—	—	—	Silty clay Loam	(1)

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

(1) Some Fe CJs, but chroma too high to be a hydric soil

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): _____

Water Table Present? Yes ___ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: HUMSUN City/County: Blocksburg / Humboldt Sampling Date: 4-25-19

Applicant/Owner: State: CA Sampling Point: W11T1W

Investigator(s): A.L., M.S Section, Township, Range:

Landform (hillslope, terrace etc.): edge of pond Local relief (concave, convex, none): Convex Slope (%):

Subregion (LRR): Lat: Long: Datum:

Soil Map Unit Name: NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation, Soil, or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation, Soil, or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No	Is the Sampled Area within a Wetland? Yes X No
Hydric Soil Present?	Yes X No	
Wetland Hydrology Present?	Yes X No	

Remarks: Wetland plot is 1 foot from mapped wetland boundary.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size)	Absolute % Cover	Dominant Species?	Indicator Status
1			
2			
3			
4			
	= Total Cover		
Sapling/Shrub Stratum (Plot size)			
1			
2			
3			
4			
5			
	= Total Cover		
Herb Stratum (Plot size 1m² radial plot)			
1 Glyceria x occidentalis	15	X	OBL
2 Juncus effusus	15	X	FACW
3 Bellis perennis	2		NL
4 Callitriche sp	2		OBL
5			
6			
7			
8			
9			
10			
11			
	34 = Total Cover		
Woody Vine Stratum (Plot size)			
1			
2			
	= Total Cover		

% Bare Ground in Herb Stratum: 65%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of	Multiply by
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- 3 - Prevalence Index is ≤3.0[1]
- 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- 5 - Wetland Non-Vascular Plants[1]
- Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? Yes X No

Remarks: Herbaceous plot is 1m² radial plot toward wetland. Standing water was in plot over bare ground. Plot is on the edge of human built pond that is fed by a spring.

SOIL

Sampling Point: W11-TJW

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10"	10YR3/1	95	10YR 4/6	5	C	M	Gravelly Loam	
10-14"	10YR 4/4	100	Varisated (1)				Gravelly clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

Reaction to A.A. Dip @ 3" & 9"

(1) Possible Some Redox/Depletions, not orisinal Soil Surface as pond was dug out

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ✓ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ✓ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ✓ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ✓ No ___ Depth (inches): 2" deep

Water Table Present? Yes ___ No ___ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): 11"

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

This plot is in a human built pond, that has had outlet eroded on lowered, Fed by a spring

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site HUMSUN City/County Blocksburg / Humboldt Sampling Date 4/25/19

Applicant/Owner _____ State CA Sampling Point WITI U

Investigator(s) A.L., M.S. Section, Township, Range _____

Landform (hillslope, terrace, etc.) hillslope Local relief (concave, convex, none) Concave Slope (%) Moderately steep

Subregion (LRR) _____ Lat _____ Long _____ Datum _____

Soil Map Unit Name. _____ NWI classification _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	Is the Sampled Area within a Wetland? Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks.

Upland plot is 12 feet from mapped wetland boundary.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2			
3.			
4			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size _____)			
1			
2			
3			
4			
5			
	_____ = Total Cover		
Herb Stratum (Plot size 2m x 1m, rectangle)			
1 Trifolium subterraneum	25	X	NL
2 Plantago lanceolata	15		FACU
3 Hordeum murinum	5		FAC
4 Anthoxanthum odoratum	25	X	FACU
5 Festuca perennis (c.f.)	15		FAC
6 Geranium molle	2		UPL
7 Hypochaeris glabra	2		NL
8			
9			
10			
11			
	89 = Total Cover		49/14
Woody Vine Stratum (Plot size _____)			
1			
2			
	_____ = Total Cover		

% Bare Ground in Herb Stratum _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of	Multiply by
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

__ 1 - Rapid Test for Hydrophytic Vegetation

__ 2 - Dominance Test is >50%

__ 3 - Prevalence Index is ≤3.0[1]

__ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ 5 - Wetland Non-Vascular Plants[1]

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? Yes _____ No X

Remarks

SOIL

Sampling Point: W11-TIU

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-5	10YR3/2	100	—	—	—	—	Gravelly Loam	
5-17	10YR3/2	100	—	—	—	—	Silt Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site HUMSUN City/County Humboldt Sampling Date 4/25/19

Applicant/Owner _____ State CA Sampling Point W2TW

Investigator(s) A.L., M.S. Section, Township, Range _____

Landform (hillslope, terrace, etc.) _____ Local relief (concave, convex, none) _____ Slope (%) _____

Subregion (LRR) _____ Lat _____ Long _____ Datum _____

Soil Map Unit Name _____ NWI classification _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	Is the Sampled Area within a Wetland? Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size _____)	Absolute % Cover	Dominant Species?	Indicator Status
1			
2			
3			
4			
	= Total Cover		
Sapling/Shrub Stratum (Plot size _____)			
1			
2			
3			
4			
5			
	= Total Cover		
Herb Stratum (Plot size 1 m radial plot)			
1 Mentha pulegium	45%	X	OBL
2 Juncus patens	15%	X	FACW
3 Rumex crispus	5		FAC
4 Anthoxanthum odoratum	15	X	FACU
5 Hordeum murinum cf	10		FAC
6 Carex sp	5		
7			
8			
9			
10			
11			
	95 = Total Cover		
Woody Vine Stratum (Plot size _____)			
1			
2			
	= Total Cover		

% Bare Ground in Herb Stratum 15%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.6 (A/B)

Prevalence Index worksheet:

Total % Cover of	Multiply by
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Wetland Non-Vascular Plants[1]
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? Yes X No _____

Remarks

Wetland plot is 8 feet from mapped wetland boundary

SOIL

Sampling Point: W12TI-W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 2/1	100	—	—	—	—	Silt loam	
6-14	10YR 2/2	90	7.5YR 4/4	10	C	M	Silt loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ✓ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ✓ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ___ No ___ Depth (inches): _____

Water Table Present? Yes ✓ No ___ Depth (inches): 14"

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): Surface

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Obvious previous standing water (maybe one week ago)

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site Humsun City/County _____ Sampling Date 4-25-19

Applicant/Owner _____ State _____ Sampling Point W12T14

Investigator(s) A.L., M.C. Section, Township, Range _____

Landform (hillslope, terrace, etc.) _____ Local relief (concave, convex, none) _____ Slope (%) _____

Subregion (LRR) _____ Lat _____ Long _____ Datum _____

Soil Map Unit Name _____ NWI classification _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No X	Is the Sampled Area within a Wetland? Yes _____ No X
Hydric Soil Present?	Yes _____ No X	
Wetland Hydrology Present?	Yes _____ No X	

Remarks

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size 1 m radial)			
1. Trifolium subterraneum	30	X	NL
2. Plantago lanceolata	15		FACU
3. Cynosurus echinatus	15		NL
4. Anthoxanthum odoratum	20	X	FACU
5. Hypochaeris glabra	7		NL
6.			
7.			
8.			
9.			
10.			
11.			
	87 = Total Cover		
Woody Vine Stratum (Plot size _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 10

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Wetland Non-Vascular Plants[1]
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks

Upland plot is 5 feet from mapped wetland boundary.

SOIL

Sampling Point: W12TI-U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4"	10YR3/2		—	—	—	—	Silt loam	
4-18	10YR 3/2		—	—	—	—	Silt loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site HUMSUN City/County Humboldt Sampling Date 4/25/19

Applicant/Owner _____ State CA Sampling Point W12T2W

Investigator(s) A.L., M.S. Section, Township, Range _____

Landform (hillslope, terrace, etc.) _____ Local relief (concave, convex, none) _____ Slope (%) _____

Subregion (LRR) _____ Lat: _____ Long _____ Datum _____

Soil Map Unit Name _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? *	Yes _____	No _____	Is the Sampled Area within a Wetland? Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks: The drainage SE of this location is intermittent and lacked wetland vegetation. It likely only flows during rain storms. This wetland is a gully in a grazed pasture.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size 2m x 1m)			
1 Mentha pulegium	30	X	OBL
2 Carex sp.	5		unk
3 Anthoxanthum odoratum	15	X	FACU
* 4 Bulbostylis / Schoenoplectus?	7		unk
5 Montia fontana	3		FACW
6 Ranunculus muricatus	3		FACW
7 Callitriche sp.	7		OBL
8 other immature grass species	10		unk
9			
10			
11			
	80 = Total Cover		
Woody Vine Stratum (Plot size _____)			
1			
2			
	_____ = Total Cover		

% Bare Ground in Herb Stratum _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of		Multiply by	
OBL species	_____	x 1 =	_____
FACW species	_____	x 2 =	_____
FAC species	_____	x 3 =	_____
FACU species	_____	x 4 =	_____
UPL species	_____	x 5 =	_____
Column Totals	_____ (A)		_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Wetland Non-Vascular Plants[1]
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic

Hydrophytic Vegetation Present? * Yes _____ No _____

Remarks: Wetland plot is 2' from mapped wetland boundary. Due to the early season immature vegetation (lacking inflorescences) I can not complete the prevalence index. However given the genera that are present it seems

SOIL

Sampling Point: W12-T2W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 2/1	90	7.5YR 4/4	10	C	M	Silt Loam	
3-14	10YR 3/2	80	7.5YR 4/4	20	C	M	Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks: A. A. Dip. Reaction @ 3" & 9"

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ✓ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ✓ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (LRR A)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ✓ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (LRR A)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ✓ No ___ Depth (inches): _____

Water Table Present? Yes ___ No ___ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): Surface

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Humsun City/County: Humboldt Sampling Date: 4/25/19

Applicant/Owner: State: CA Sampling Point: W12T24

Investigator(s): AL, MS Section, Township, Range:

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): Slope (%):

Subregion (LRR): Lat: Long: Datum:

Soil Map Unit Name: NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No

Are Vegetation ____, Soil ____ or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____ No X	Is the Sampled Area within a Wetland? Yes ____ No X
Hydric Soil Present?	Yes ____ No X	
Wetland Hydrology Present?	Yes ____ No X	

Remarks

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size ____)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size ____)			
1. Plantago lanceolata	10		FACU
2. Trifolium subterraneum	35	X	NL
3. Hypochaeris glabra	15	X	NL
4. Ranunculus californicus	3		FAC
5. Mentha pulegium	2		OBL
6. Anthoxanthum odoratum	15		FACU
7. other immature grass	10		?
8.			
9.			
10.			
11.			
	90 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum: 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of	Multiply by
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Wetland Non-Vascular Plants[1]
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks:

Upland plot is 5 feet from mapped wetland boundary.

SOIL

Sampling Point: W12-720

Profile Description: (Describe to the depth needed to document the Indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/2		—	—	—	—	Gravelly loam	
6-18	10YR 3/2	—	—	—	—	—	Gravelly Silty Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required, check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: HumSun City/County Humboldt Sampling Date 4/25/19

Applicant/Owner: State CA Sampling Point W13T1W

Investigator(s): A.L. | M.S. Section, Township Range

Landform (hillslope, terrace, etc.): Local relief (concave, convex, none) Concave Slope (%)

Subregion (LRR): Lat. Long Datum

Soil Map Unit Name: NWI classification

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No	Is the Sampled Area within a Wetland? Yes X No
Hydric Soil Present?	Yes X No	
Wetland Hydrology Present?	Yes X No	

Remarks: Wetland 13 is a slight depression in grazed pasture. Abundant moss within plot.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size)			
1.			
2			
3			
4			
5			
	= Total Cover		
Herb Stratum (Plot size 2m x 1m Rectangle)			
1 Mentha pulegium	50	X	OBL
2 Ranunculus muricatus	5		FACW
3 Callitriche	10		OBL
4 Glyceria x occidentalis	5		OBL
5 Carex sp	5		?
6 Anthoxanthum odoratum	15		FACU
7			
8			
9			
10			
11			
	90 = Total Cover		
Woody Vine Stratum (Plot size)			
1			
2			
	= Total Cover		

% Bare Ground in Herb Stratum 5-1

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of	Multiply by
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- __ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- __ 3 - Prevalence Index is ≤3.0[1]
- __ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- __ 5 - Wetland Non-Vascular Plants[1]
- __ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No

Remarks: Wetland plot is 8 feet from mapped boundary.

SOIL

Sampling Point: 4W13-TW

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 2/2	90	7.5YR 5/6	10	C	M	Gravelly Loam	
3-13	10YR 2/1	100	—	—	—	—	Silt Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks: A. A. Dip reaction @ 3" & 8"

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required, check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ✓ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ✓ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ✓ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ✓ No ___ Depth (inches): 6.0"

Water Table Present? Yes ___ No ___ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): 1.0" Surface water

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site HUMSIN City/County Humboldt Sampling Date 4/25/19

Applicant/Owner _____ State CA Sampling Point W13T1U

Investigator(s) AL, MS Section, Township, Range _____

Landform (hillslope, terrace, etc.) lower hillslope Local relief (concave, convex, none) convex Slope (%) slight

Subregion (LRR) _____ Lat _____ Long _____ Datum _____

Soil Map Unit Name _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No X	Is the Sampled Area within a Wetland? Yes _____ No X
Hydric Soil Present?	Yes _____ No X	
Wetland Hydrology Present?	Yes _____ No X	

Remarks

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size _____)	Absolute % Cover	Dominant Species?	Indicator Status
1			
2			
3			
4			
	= Total Cover		
Sapling/Shrub Stratum (Plot size _____)			
1			
2			
3			
4			
5			
	= Total Cover		
Herb Stratum (Plot size 2m x 1m, Rectangle)			
1 Trifolium subterraneum	15	X	NL
2 Hypochaeris glabra	10		NL
3 Anthoxanthum odoratum	25	X	FACU
4 Cynosurus echinatus	5		NL
5 other immature grass	10		?
6 Poa annua	10		FAC
7 Plantago lanceolata	15	X	FACU
8			
9			
10			
11			
	90 = Total Cover		45
Woody Vine Stratum (Plot size _____)			
1			
2			
	= Total Cover		

% Bare Ground in Herb Stratum 7

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of	Multiply by
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Wetland Non-Vascular Plants[1]
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks

Upland plot is 5 feet from mapped boundary.

SOIL

Sampling Point: W13-T1U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5		100	—	—	—	—	Gravelly Silt Loam	
5-17		100	—	—	—	—	Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site HUMSUN City/County Humboldt Sampling Date 4/25/19
Applicant/Owner _____ State CA Sampling Point W14TPW
Investigator(s) A.L., M.S. Section, Township, Range _____
Landform (hillslope, terrace, etc.) hillslope Local relief (concave, convex, none) Concave Slope (%) _____
Subregion (LRR) _____ Lat _____ Long _____ Datum _____
Soil Map Unit Name _____ NWI classification _____
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	Is the Sampled Area within a Wetland? Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks Someone has driven through the pasture here. There is bare ground and standing water in tire tracks.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size _____)	Absolute % Cover	Dominant Species?	Indicator Status
1			
2			
3			
4			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size _____)			
1			
2			
3			
4			
5			
	_____ = Total Cover		
Herb Stratum (Plot size 2m x 1m Rectangle)			
1 Glyceria x occidentalis	3		OBL
2 Mentha pulegium	15	X	OBL
3 Callitriche sp.	15	X	OBL
4 Anthoxanthum odoratum	20	X	FACU
5 Bellis perennis	3		NL
6 Juncus effusus	10		FACW
7 Carex sp.	3		?
8 Ranunculus californicus	5		FAC
9			
10			
11			
	74 = Total Cover		37
Woody Vine Stratum (Plot size _____)			
1			
2			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 20%

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 66.6 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals	(A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
__ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
__ 3 - Prevalence Index is ≤3.0[1]
__ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ 5 - Wetland Non-Vascular Plants[1]
__ Problematic Hydrophytic Vegetation[1] (Explain)
[1]Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks Wetland test pit is 5 feet from mapped wetland boundary.

SOIL

Sampling Point: W14-T1W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR3/2	90	7.5YR4/4	10	C	M	Loam	
4-8	10YR3/2	85	7.5YR5/6	15	C	M	Gravelly clay Loam	
8-13	10YR4/3	85	10YR4/1	15	D	M	Gravelly clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes ✓ No ___

Remarks:

A 4 Dip Reaction @ 3" + 7"

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ✓ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ✓ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (LRR A)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ✓ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (LRR A)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ✓ No ___ Depth (inches): 1-0"

Water Table Present? Yes ___ No ___ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): 1.0" Surface water

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: HUMSIUN City/County: Humboldt Sampling Date: 4/25/19

Applicant/Owner: State: CA Sampling Point: W14T14

Investigator(s): A.L, M.S Section, Township, Range:

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope (%):

Subregion (LRR): Lat: Long: Datum:

Soil Map Unit Name: NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ____ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____ No X	Is the Sampled Area within a Wetland? Yes ____ No X
Hydric Soil Present?	Yes ____ No X	
Wetland Hydrology Present?	Yes ____ No X	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size ____)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size 2m x 1m Rectangle)			
1 Trifolium subterraneum	25	X	NL
2 Anthoxanthum odoratum	30	X	FACU
3 Poa annua	15		FAC
4 Hypochaeris glabra	7		NL
5 Bellis perennis	7		NL
6			
7			
8			
9			
10			
11			
	84% = Total Cover		
Woody Vine Stratum (Plot size ____)			42/16
1			
2			
	= Total Cover		

% Bare Ground in Herb Stratum 9%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

__ 1 - Rapid Test for Hydrophytic Vegetation

__ 2 - Dominance Test is >50%

__ 3 - Prevalence Index is ≤3.0[1]

__ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ 5 - Wetland Non-Vascular Plants[1]

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: Upland test plot is 5 feet from mapped wetland boundary.

SOIL

Sampling Point: W14-TU

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR3/2		—	—	—	—	Loam/Silt Loam	
8-18	10YR4/2		—	—	—	—	Gravelly Silt Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required, check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: HUMSUN City/County: Humboldt Sampling Date: 4/25/19

Applicant/Owner: _____ State: CA Sampling Point: W16TIW

Investigator(s): A.L., M.S. Section, Township, Range: _____

Landform (hillslope, terrace, etc.): roadside ditch Local relief (concave, convex, none): Concave Slope (%): _____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size _____)			
1			
2			
3			
4			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size _____)			
1			
2			
3			
4			
5			
	_____ = Total Cover		
Herb Stratum (Plot size 2m x 1m Rectangle)			
1 Mentha pulegium	25	X	OBL
2 Anthoxanthum odoratum	10		FACU
3 Montia fontana	7		FACW
4 Juncus patens	13	X	FACW
5 other immature grasses	7		—
6 Ranunculus californica	5		FAC
7			
8			
9			
10			
11			
	67 = Total Cover		335/13
Woody Vine Stratum (Plot size _____)			
1			
2			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 25%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of	Multiply by
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0*
- ___ 4 - Morphological Adaptations* (Provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Wetland Non-Vascular Plants*
- ___ Problematic Hydrophytic Vegetation* (Explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: Rectangular veg plot in ditch. Algal mats present on bare soil in some places. Wetland plot is 2 feet from mapped wetland boundary.

SOIL

Sampling Point: W16-TIW

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR3/2	90	7.5YR4/4	10	C	M	Loam	
4-8	2.5Y5/1	85	7.5YR 4/6	15	C	M	clay Loam	
8-14	G1 6/10Y	100	—	—	—	—	clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

A.A. Dip Rentim @ 9"

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required, check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✗ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ✗ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ✓ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ___ No ___ Depth (inches): _____

Water Table Present? Yes ___ No ___ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): Surface

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Ditch - Road Side

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: HUMSUN City/County: Humboldt Sampling Date: 4/25/19

Applicant/Owner: State: CA Sampling Point: W16TU

Investigator(s): A.L., M.S. Section, Township, Range:

Landform (hillslope, terrace, etc.): roadbank Local relief (concave, convex, none): Convex Slope (%):

Subregion (LRR): Lat: Long: Datum:

Soil Map Unit Name: NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____ No X	Is the Sampled Area within a Wetland? Yes ____ No X
Hydric Soil Present?	Yes ____ No X	
Wetland Hydrology Present?	Yes ____ No X	

Remarks

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size ____)	Absolute % Cover	Dominant Species?	Indicator Status
1			
2			
3			
4			
	= Total Cover		
Sapling/Shrub Stratum (Plot size ____)			
1			
2			
3			
4			
5			
	= Total Cover		
Herb Stratum (Plot size 2m x 1m, Rectangular ~~Plot~~)			
1 Anthoxanthum odoratum	10		FACU
2 Cynosurus echinatus	25	X	NL
3 Plantago lanceolata	15	X	FACU
4 Trifolium subterraneum	15	X	NL
5 Erodium botrys	15	X	FACU
6 Hypochaeris glabra	10		NL
7			
8			
9			
10			
11			
	90 = Total Cover		45/18
Woody Vine Stratum (Plot size ____)			
1			
2			
	= Total Cover		

% Bare Ground in Herb Stratum 3%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of	Multiply by
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

__ 1 - Rapid Test for Hydrophytic Vegetation

__ 2 - Dominance Test is >50%

__ 3 - Prevalence Index is ≤3.0

__ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ 5 - Wetland Non-Vascular Plants[1]

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic

Hydrophytic Vegetation Present? Yes ____ No X

Remarks

Upland plot is three feet from mapped wetland boundary

SOIL

Sampling Point: W16-TU

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-9	10YR 4/4	100	—	—	—	—	Loam	
9-19	10YR 4/6	100	—	—	—	—	Loam/clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required, check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (LRR A)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ____ No ✓ Depth (inches): _____

Water Table Present? Yes ____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes ____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: HUMSUN City/County: Humboldt Sampling Date: 4/25/19
Applicant/Owner: State: CA Sampling Point: W17T1W
Investigator(s): A.L. MS Section, Township, Range:
Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Slope (%):
Subregion (LRR): Lat: Long: Datum:
Soil Map Unit Name: NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No	Is the Sampled Area within a Wetland? Yes X No
Hydric Soil Present?	Yes X No	
Wetland Hydrology Present?	Yes X No	

Remarks

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size ____)	Absolute % Cover	Dominant Species?	Indicator Status
1			
2			
3			
4			
	= Total Cover		
Sapling/Shrub Stratum (Plot size ____)			
1			
2			
3			
4			
5			
	= Total Cover		
Herb Stratum (Plot size Rectangle, 2m x 1m)			
1 Poa pratensis	30	X	FAC
2 Juncus patens	25	X	FACW
3 Ranunculus californica	25	X	FAC
4 Rumex crispus	5		FAC
5			
6			
7			
8			
9			
10			
11			
	85 = Total Cover		42
Woody Vine Stratum (Plot size ____)			
1			
2			
	= Total Cover		

% Bare Ground in Herb Stratum: 10%

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of	Multiply by
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:
__ 1 - Rapid Test for Hydrophytic Vegetation
__ 2 - Dominance Test is >50%
__ 3 - Prevalence Index is ≤3.0[1]
__ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ 5 - Wetland Non-Vascular Plants[1]
__ Problematic Hydrophytic Vegetation[1] (Explain)
[1]Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic

Hydrophytic Vegetation Present? Yes X No

Remarks
Wetland plot is 8 feet from mapped wetland boundary.

SOIL

Sampling Point: W17-TIW

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR2/1	100	—	—	—	—	Silt Loam	
3-14	2.5Y3/1	85	7.5YR4/4	15	C	PL/M	Silt Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

A. A. Dip Reaction @ 3"+7"

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required, check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ✓ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ✓ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): _____

Water Table Present? Yes ___ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Humsun City/County: Humboldt Sampling Date: 4/25/19

Applicant/Owner: State: CA Sampling Point: W17 TIU

Investigator(s): A.L. M.S. Section, Township, Range:

Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Slope (%):

Subregion (LRR): Lat: Long: Datum:

Soil Map Unit Name: NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____ No X	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____ No X	
Wetland Hydrology Present?	Yes ____ No X	

Remarks

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size ____)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size ____)			
1 Poa pratensis	35	X	FAC
2 Geranium molle	5		
3 Bellis perennis	10		
4 Trifolium subterraneum	15		
5 Anthoxanthum odoratum	30	X	FACU
6			
7			
8			
9			
10			
11			
	95 = Total Cover		47 ✓
Woody Vine Stratum (Plot size ____)			
1			
2			
	= Total Cover		

% Bare Ground in Herb Stratum: 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of	Multiply by
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0
- ___ 4 - Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Wetland Non-Vascular Plants
- ___ Problematic Hydrophytic Vegetation (Explain)

Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic

Hydrophytic Vegetation Present? Yes ____ No X

Remarks

Upland plot is 5 feet from mapped wetland boundary.

SOIL

Sampling Point: W17-TIU

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR2/2	100	—	—	—	—	Loam	
10-17	10YR2/2	100	—	—	—	—	Silt Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required, check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Humsun City/County: Humboldt Sampling Date: 4/26/19

Applicant/Owner: State: CA Sampling Point: W17T2W

Investigator(s): A.L, MS Section, Township, Range:

Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Concave Slope (%):

Subregion (LRR): Lat: Long: Datum:

Soil Map Unit Name: NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No	Is the Sampled Area within a Wetland? Yes X No
Hydric Soil Present?	Yes X No	
Wetland Hydrology Present?	Yes X No	

Remarks:

VEGETATION – Use scientific names of plants.

* unknown species but prob. FAC or wetter

Tree Stratum (Plot size: 3m)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix sp	20		*
2. Acer macrophyllum	25	X	FACU
3.			
4.			
	45	= Total Cover	

Sapling/Shrub Stratum (Plot size: 3m radial)			
1. Rosa sp.	10		unk
2. Rubus armeniacus	15	X	FAC
3.			
4.			
5.			
	25	= Total Cover	

Herb Stratum (Plot size: 1m Radial plot)			
1. Eleocharis sp.	17	X	FACW*
2.			wetter
3. Oenanthe sarmentosa	17	X	OBL
4. Vernica americana	2		OBL
5. Ranunculus californicus	2		FAC
6. Glyceria x occidentalis	2		FACW*
7. Rumex sp	3		wetter
8.			
9.			
10.			
11.			
	43%	= Total Cover	21

Woody Vine Stratum (Plot size: ____)			
1.			
2.			
		= Total Cover	

% Bare Ground in Herb Stratum 55%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Wetland Non-Vascular Plants[1]
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No

Remarks:

Ponded area, with standing water near plot (within 1 meter). Wetland plot is 5 feet from mapped boundary.

SOIL

Sampling Point: UW17-T2W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR3/1	70	7.5YR4/4	30	C	M	Silt Loam	
3-14	10YR 4/1	60	7.5YR 4/6	40	C	M	Silty clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

A. A. Dip Reaction @ 3" & 9"

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ✓ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ✓ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ✓ Geomorphic Position (D2) pond
- ___ Shallow Aquitard (D3)
- ✓ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (LRR A)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): _____

Water Table Present? Yes ✓ No ___ Depth (inches): 5"

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): 5"

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: HUMSUN City/County: Humboldt Sampling Date: 4/26/19

Applicant/Owner: _____ State: _____ Sampling Point: W17T2U

Investigator(s): _____ Section, Township, Range: _____

Landform (hillslope, terrace, etc.): terrace above pond Local relief (concave, convex, none): Convex Slope (%): _____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	Is the Sampled Area within a Wetland? Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 3m)			
1. Salix sp	5		
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 3m)			
1. Rubus discolor	15		
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 1m Radial Plot)			
1. Equisetum sp.	5		?
2. Plantago lanceolata	7		FACU
3. Anthoxanthum odoratum	25	X	FACU
4. Bellis perennis	5		NL
5. Poa pratensis	25	X	FAC
6. Trifolium subterraneum	10		NL
7. Armipson parviflorum	3		NL
8. other Immature Grass	10		?
9.			
10.			
11.			
	85% = Total Cover		45/17
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 10%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species _____	x 1 =	_____
FACW species _____	x 2 =	_____
FAC species _____	x 3 =	_____
FACU species _____	x 4 =	_____
UPL species _____	x 5 =	_____
Column Totals: _____ (A)		_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

__ 1 - Rapid Test for Hydrophytic Vegetation

__ 2 - Dominance Test is >50%

__ 3 - Prevalence Index is ≤3.0[1]

__ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ 5 - Wetland Non-Vascular Plants[1]

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks:

Upland plot is 15 feet from mapped wetland boundary.

SOIL

Sampling Point: W17-T2U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-17	10YR3/2	100	—	—	—	—	Silt loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: HUMSUN City/County: Humboldt Sampling Date: 4/26/19

Applicant/Owner: _____ State: CA Sampling Point: W18TIW

Investigator(s): M.L. M.S Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): convex Slope (%): _____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	Is the Sampled Area within a Wetland? Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 1m x 1m plot)			
1. Glyceria x occidentale	40	X	OBL
2. Trifolium sp.	15		?
3. Ranunculus muricata	5		FACW
4. Poa pratensis	25	X	FAC
5. Alopecurus geniculatus	5		OBL
6. Poa annua	5		FAC
7.			
8.			
9.			
10.			
11.			
	95 = Total Cover		47
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Wetland Non-Vascular Plants[1]
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

End of wetland 18 was confirmed by soil test pits showing no hydric soils. Wetland 18 is an isolated wetland.

Wetland pit is 3 feet from mapped wetland boundary

SOIL

Sampling Point W18-TIW

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR2/1	95	7.5YR3/4	5	C	M	Silt Loam	
3-16	10YR3/1	85	10YR4/4	15	C	M	Silt Loam/Silty clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

A4. Dip Reaction @ 3"+q"

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required, check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres along Living Roots (C3)
- ✓ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ✓ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): _____

Water Table Present? Yes ___ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Standing water observed on 4/11/2019

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: HUMSUN City/County: Humboldt Sampling Date: 4/26/19

Applicant/Owner: State: CA Sampling Point: W18TU

Investigator(s): D.L, M.S. Section, Township, Range:

Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Concave Slope (%):

Subregion (LRR): Lat: Long: Datum:

Soil Map Unit Name: NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____ No X	Is the Sampled Area within a Wetland? Yes ____ No X
Hydric Soil Present?	Yes ____ No X	
Wetland Hydrology Present?	Yes ____ No X	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size ____)			
1			
2			
3			
4			
5			
	= Total Cover		
Herb Stratum (Plot size 1m x 1m)			
1 Trifolium subterraneum	15	X	NL
2 Plantago lanceolata	3		FACU
3 Parentucellia viscosa	2		NL
4 Ranunculus muricatus	25	X	FACW
5 Other immature grasses	10		?
6 Bellis perennis	3		NL
7 Trifolium sp.	10		?
8 Anthoxanthum odoratum	20	X	FACU
9 Poa annua	5		
10			
11			
	93 = Total Cover		
Woody Vine Stratum (Plot size ____)			
1			
2			
	= Total Cover		

% Bare Ground in Herb Stratum ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3 (A/B)

Prevalence Index worksheet:

Total % Cover of	Multiply by
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Wetland Non-Vascular Plants[1]
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks

Upland pit is five feet from mapped wetland boundary

SOIL

Sampling Point: W18-T10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-3	10YR2/2	100	—	—	—	—	Silt loam	
3-17	10YR3/2	100	—	—	—	—	Silt loam/Silty clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required, check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site Humsun City/County Humboldt Sampling Date 4/26/19

Applicant/Owner _____ State CA Sampling Point W19TIW

Investigator(s) A.L., M.S. Section, Township, Range _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none) _____ Slope (%) _____

Subregion (LRR) _____ Lat _____ Long _____ Datum _____

Soil Map Unit Name: _____ NWI classification _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	Is the Sampled Area within a Wetland? Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks: This is an isolated wetland. Soil pits were dug at both ends of feature to confirm non-hydric soils and end of swale.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size 2ft x 3ft Rectangle in swale)			
1. Carex cf. densa	50%	X	OBL
2. Mentha pulegium	7		OBL
3. Ranunculus muricata	7		FACW
4. Poa pratensis	15		FAC
5. other immature grasses	10		unknown
6.			
7.			
8.			
9.			
10.			
11.			
	89 = Total Cover		
Woody Vine Stratum (Plot size _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 5%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of	Multiply by
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Wetland Non-Vascular Plants[1]
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic Vegetation Present? Yes X No _____

Remarks: Wetland plot is 2½ feet from mapped wetland boundary

SOIL

Sampling Point: IW19-T1W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR3/1	90	7.5YR4/4	10	C	M	Silt Loam	
2-14	2.5Y2.5/1	95	10YR4/4	5	C	M	Silty clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

A.A. Dip reaction @ 3' 10"

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required, check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ✓ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (LRR A)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ✓ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (LRR A)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): _____

Water Table Present? Yes ___ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Standing water observed on 4/11/2019

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site Humsun City/County Humboldt Sampling Date 4/26/19

Applicant/Owner _____ State CA Sampling Point W19TIU

Investigator(s) A.L., M.C. Section, Township, Range _____

Landform (hillslope, terrace, etc.) _____ Local relief (concave, convex, none) _____ Slope (%) _____

Subregion (LRR) _____ Lat _____ Long _____ Datum _____

Soil Map Unit Name _____ NWI classification _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No X	Is the Sampled Area within a Wetland? Yes _____ No X
Hydric Soil Present?	Yes _____ No X	
Wetland Hydrology Present?	Yes _____ No X	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size _____)	Absolute % Cover	Dominant Species?	Indicator Status
1			
2			
3			
4			
	= Total Cover		
Sapling/Shrub Stratum (Plot size _____)			
1			
2			
3			
4			
5			
	= Total Cover		
Herb Stratum (Plot size 1m x 1m)			
1 Ranunculus muricatus	25	X	FACW
2 Plantago lanceolata	3		FACU
3 Parentucellia viscosa	5		FAC
4 Trifolium subterraneum	25	X	FACU
5 Anthoxanthum odoratum	10		FACU
6 Poa pratensis	10		FAC
7 other immature grass species	10		–
8 Trifolium dubium	3		FACU
9			
10			
11			
	91 = Total Cover		45
Woody Vine Stratum (Plot size _____)			
1			
2			
	= Total Cover		

% Bare Ground in Herb Stratum _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of	Multiply by
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Wetland Non-Vascular Plants[1]
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic

Hydrophytic Vegetation Present? Yes _____ No X

Remarks:

Upland plot is 10 feet from mapped wetland boundary

SOIL

Sampling Point: WQ-T1U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR3/1	100	—	—	—	—	Loam	
5-17	10YR2/2	100	—				Silt Loam	
			—					

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

Low chroma due to O.M. No Redox observed

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required, check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: HUMSUN City/County: Humboldt Sampling Date: 4/26/19

Applicant/Owner: State: CA Sampling Point: W19T2W

Investigator(s): A.L., M.S. Section, Township, Range:

Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Slope (%):

Subregion (LRR): Lat: Long: Datum:

Soil Map Unit Name: NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation, Soil, or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation, Soil, or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No	**Is the Sampled Area within a Wetland?** Yes X No
Hydric Soil Present?	Yes X No	
Wetland Hydrology Present?	Yes X No	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size)			
1			
2			
3			
4			
5			
	= Total Cover		
Herb Stratum (Plot size 3 ft x 1 ft in swale)			
1 Ranunculus Muricata	20	X	FACW
2 Carex densa	20	X	OBL
3 Mentha pulegium	7		
4 Anthoxanthum odoratum	15	X	FACU
5 Poa pratensis	15	X	FAC
6 other immature grass (unknown)	10		
7 Rumex pulcher ?	5		
8			
9			
10			
11			
	92 = Total Cover		46
Woody Vine Stratum (Plot size)			
1			
2			
	= Total Cover		

% Bare Ground in Herb Stratum 5%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.6 (A/B)

Prevalence Index worksheet:

Total % Cover of	Multiply by
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- 3 - Prevalence Index is ≤3.0
- 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- 5 - Wetland Non-Vascular Plants[1]
- Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic

Hydrophytic Vegetation Present? Yes X No

Remarks:

Wetland plot is 2 feet from mapped wetland boundary.

SOIL

Sampling Point: W19-T2W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR3/1	95	10YR4/4	5	C	M	Loam	
4-14	10YR3/1	90	10YR4/4	10	C	M	Silt Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

A. A. dip. Reaction @ 6"

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ✓ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ✓ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): _____

Water Table Present? Yes ___ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Standing water observed on 4/11/19

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site Humsun City/County Humboldt Sampling Date 4/26/19

Applicant/Owner _____ State CA Sampling Point W19T2U

Investigator(s) A.L., M.S. Section, Township, Range _____

Landform (hillslope, terrace, etc.) _____ Local relief (concave, convex, none) _____ Slope (%) _____

Subregion (LRR) _____ Lat _____ Long _____ Datum _____

Soil Map Unit Name _____ NWI classification _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	Is the Sampled Area within a Wetland? Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size _____)			
1			
2			
3			
4			
5			
	_____ = Total Cover		
Herb Stratum (Plot size _____)			
1 Trifolium subterraneum	25	X	NL
2 Plantago lanceolata	20	X	FACU
3 Ranunculus muricata	5		
4 Poa annua	10		
5 Triphysaria	5		
6 Anthoxanthum odoratum	10		
7 other immature grass	10		
8			
9			
10			
11			
	85 = Total Cover		
Woody Vine Stratum (Plot size _____)			
1			
2			
	_____ = Total Cover		

% Bare Ground in Herb Stratum _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of	Multiply by
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

__ 1 - Rapid Test for Hydrophytic Vegetation

__ 2 - Dominance Test is >50%

__ 3 - Prevalence Index is ≤3.0[1]

__ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ 5 - Wetland Non-Vascular Plants[1]

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks

Upland plot is 4½ feet from mapped wetland boundary

SOIL

Sampling Point: W19-T2U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR3/2	100	—	—	—	—		
5-18	10YR3/2	100	—	—	—	—		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required, check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ____ No ✓ Depth (inches): _____

Water Table Present? Yes ____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes ____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site Humsun City/County Humboldt Sampling Date 4/26/19

Applicant/Owner _____ State CA Sampling Point W20T1W

Investigator(s) A.L., M.S. Section, Township, Range _____

Landform (hillslope, terrace, etc.) _____ Local relief (concave, convex, none) _____ Slope (%) _____

Subregion (LRR) _____ Lat _____ Long _____ Datum _____

Soil Map Unit Name _____ NWI classification _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	Is the Sampled Area within a Wetland? Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2			
3			
4			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size _____)			
1			
2			
3			
4			
5			
	_____ = Total Cover		
Herb Stratum (Plot size 1ft x 3ft)			
1 Mentha pulegium	25	X	OBL
2 Ranunculus muricata	15	X	FACW
3 Callitriche sp.	20	X	OBL
4 Festuca arundinacea	5		FAC
5 Rumex sp.	10		
6			
7			
8			
9			
10			
11			
	75 = Total Cover		
Woody Vine Stratum (Plot size _____)			
1			
2			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 20%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of	Multiply by
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

__ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

__ 3 - Prevalence Index is ≤3.0

__ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ 5 - Wetland Non-Vascular Plants[1]

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks

Wetland plot is 1 ft away from mapped wetland boundary.

SOIL

Sampling Point: W20-TIW

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR3/2	100	—	—	—	—	Silt loam	
5-13	10YR3/2		10YR4/4	5	C	M	Silt loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

No Reaction to A.A. Pid. @ 3" & 9"

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required, check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres along Living Roots (C3)
- ✓ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ✓ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): _____

Water Table Present? Yes ___ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Standing water observed on 4/11/19

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Humsun City/County: Humboldt Sampling Date: 4/26/19

Applicant/Owner: State: CA Sampling Point: W20TIU

Investigator(s): A.L., M.S. Section, Township, Range:

Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Slope (%):

Subregion (LRR): Lat: Long: Datum:

Soil Map Unit Name: NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation, Soil, or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation, Soil, or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	No X
Hydric Soil Present?	Yes	No X
Wetland Hydrology Present?	Yes	No X
Is the Sampled Area within a Wetland?	Yes	No X

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size 1 m^2)			
1. Plantago lanceolata	15		FACU
2. Hypochaeris radicata	20	X	NL
3. Ranunculus californicus	5		FAC
4. Triphysaria	5		
5. Trifolium subterraneum	25	X	NL
6. Erodium botrys	5		FACU
7. Unknown immature grasses	15		
8.			
9.			
10.			
11.			
	90 = Total Cover		45
Woody Vine Stratum (Plot size)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 2%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
- 2 - Dominance Test is >50%
- 3 - Prevalence Index is ≤3.0[1]
- 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- 5 - Wetland Non-Vascular Plants[1]
- Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes No X

Remarks: Upland plot is 10 feet from mapped wetland boundary

SOIL

Sampling Point: W20-TU

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR3/2	100	—	—	—	—	Loam	
6-16	10YR3/2	100	—	—	—	—	Silt Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required, check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site Humsun City/County Humboldt Sampling Date 4/26/19
Applicant/Owner _____ State CA Sampling Point W21TW
Investigator(s) A.L., M.S. Section, Township, Range _____
Landform (hillslope, terrace, etc.) _____ Local relief (concave, convex, none) Concave Slope (%) _____
Subregion (LRR) _____ Lat _____ Long _____ Datum _____
Soil Map Unit Name _____ NWI classification _____
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	Is the Sampled Area within a Wetland? Yes _____ No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks: Wetland plot is within a shallow drainage.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size _____)			
1			
2			
3			
4			
	= Total Cover		
Sapling/Shrub Stratum (Plot size _____)			
1			
2			
3			
4			
5			
	= Total Cover		
Herb Stratum (Plot size 1m²)			
1 Mentha pulegium	15	X	OBL
2 Glyceria x occidentalis	5		
3 Poa annua	3		
4 Eleocharis sp	7		
5 Callitriche sp	15	X	OBL
6 Other immature grass	10		
7 Rumex sp	5		
8 Poa pratensis	30	X	FAC
9 Trifolium subterraneum	3		
10 Ranunculus muricata	3		
11			
	86 = Total Cover		43 is
Woody Vine Stratum (Plot size _____)			
1			
2			
	= Total Cover		

% Bare Ground in Herb Stratum 70%

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of	Multiply by
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
___ 1 - Rapid Test for Hydrophytic Vegetation
X 2 - Dominance Test is >50%
___ 3 - Prevalence Index is ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ 5 - Wetland Non-Vascular Plants[1]
___ Problematic Hydrophytic Vegetation[1] (Explain)
[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: Wetland plot is 5 feet from mapped wetland boundary.

SOIL

Sampling Point: W21-T1 W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	2.5Y3/2	80	7.5YR4/6	20	C	M	Loam	
3-14	2.5Y4/2	65	7.5YR4/4	35	C	M	Sandy Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

Reaction to A.A. pid @ 4"

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required, check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ✓ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ✓ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ✓ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ✓ No ___ Depth (inches): 4/in 5'

Water Table Present? Yes ___ No ___ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): Surface

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site HUMSUN City/County Humboldt Sampling Date 4/26/19

Applicant/Owner _____ State CA Sampling Point W21TU

Investigator(s) A.L., M.S. Section Township Range _____

Landform (hillslope terrace etc.) _____ Local relief (concave convex none) _____ Slope (%) _____

Subregion (LRR) _____ Lat _____ Long _____ Datum _____

Soil Map Unit Name _____ NWI classification _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____ Soil _____ or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____ Soil _____ or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	Is the Sampled Area within a Wetland? Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2			
3			
4			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size _____)			
1			
2			
3			
4			
5			
	_____ = Total Cover		
Herb Stratum (Plot size 1 m²)			
1 Trifolium subterraneum	30	X	NL
2 Trifolium dubium	9		
3 Poa pratensis	10		
4 Poa annua	20	X	FAC
5 unknown Trifolium sp.	3		
6 Bellis perennis	5		
7 unknown immature grass	15		
8 Ranunculus muricata	5		
9 Mentha pulegium	3		
10			
11			
	95 = Total Cover		49/20
Woody Vine Stratum (Plot size _____)			
1			
2			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of	Multiply by
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Wetland Non-Vascular Plants[1]
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks: Upland plot is two feet from mapped wetland boundary.

SOIL

Sampling Point: W21-TU

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 4/3	100	—	—	—	—	Silt loam	(1)
5-18	10YR 3/2	100	—	—	—	—	Silt loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

Few Redox- piton Berm, probably dug from wetlands, thus remaint Redox attributed to that.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No reaction to A-A drip

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Hamsun City/County: Humboldt Sampling Date: 5/9/19

Applicant/Owner: State: CA Sampling Point: W21T2W

Investigator(s): A.L., M.S. Section, Township, Range:

Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Slope (%):

Subregion (LRR): Lat: Long: Datum:

Soil Map Unit Name: NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No	Is the Sampled Area within a Wetland? Yes X No
Hydric Soil Present?	Yes X No	
Wetland Hydrology Present?	Yes X No	

Remarks:

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size:)			
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: Rectangle 3'x2')			
1. Glyceria x occidentalis	40	X	OBL
2. Mentha pulegium	15	X	OBL
3. Eleocharis sp. (FACW or wetter)	10		*FACW
4. Callitriche sp.	10		OBL
5. Alopecurus geniculatus	10		OBL
6. Poa pratensis	7		FAC
7. Rosa sp.	3		Unk
8.			
9.			
10.			
11.			
	95 = Total Cover		49.5/19
Woody Vine Stratum (Plot size:)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 2

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- 3 - Prevalence Index is ≤3.0[1]
- 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- 5 - Wetland Non-Vascular Plants[1]
- Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No

Remarks:

Shrub layer included with herbaceous layer as shrub cover in radial shrub plot would have been less than 5%.

Wetland pit is ~1 ft from mapped boundary.

SOIL

Sampling Point: W21-T2W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR3/1	90	7.5YR4/4	10	C	M	Loam	
3-7	10YR3/2	75	7.5YR4/4	25	C	M	Silt Loam	
7-14	10YR3/2	80	7.5YR4/6	20	C	M	Gravelly Sandy Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

positive reaction to A.A. dip @ 6" +/0"

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ✓ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ✓ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): _____

Water Table Present? Yes ___ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Standing water observed two weeks prior to 3/9/2019

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: HUMSUN City/County: _____ Sampling Date: 5/9/19

Applicant/Owner: ~~A.L., M.S~~ State: _____ Sampling Point: W21 T24

Investigator(s): A.L., M.S Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	Is the Sampled Area within a Wetland? Yes _____ No X
Hydric Soil Present?	Yes _____ No X	
Wetland Hydrology Present?	Yes _____ No X	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 1m²)			
1. Trifolium repens	30	X	FAC
2. Trifolium dubium	7		FACU
3. Ranunculus californicus	10		FAC
4. Festuca perennis	15	X	FAC
5. Poa annua	5		FAC
6. Bellis perennis	5		NL
7. Poa pratensis	10		FAC
8. Rumex acetosella	3		FACU
9.			
10.			
11.			
	85 = Total Cover		425/17
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Wetland Non-Vascular Plants[1]
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

Upland pit is 10' from mapped wetland boundary.

SOIL

Sampling Point: W21-T2U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 2/2	100	—	—	—	—	Silt Loam	
5-16	10YR 3/2	100	—	—	—	—	Loam / Silt Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: HUMSUN City/County: _____ Sampling Date: 5/9/19

Applicant/Owner: _____ State: _____ Sampling Point: U2 (T3 U)

Investigator(s): A.L., M.S. Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	Is the Sampled Area within a Wetland? Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 1m x 1m)			
1. Alopecurus geniculatus	5		OBL
2. Mentha pulegium	5		OBL
3. Trifolium subterraneum	15	X	NL
4. Glyceria x occidentalis	10		OBL
5. Poa pratensis	25	X	FAC
6. Ranunculus californicus	7		FAC
7. Festuca arundinacea	20	X	FAC
8. Festuca perenne	7		FAC
9.			
10.			
11.			
	94 = Total Cover		47/15
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.6 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species _____	x 1 =	_____
FACW species _____	x 2 =	_____
FAC species _____	x 3 =	_____
FACU species _____	x 4 =	_____
UPL species _____	x 5 =	_____
Column Totals: _____ (A)		_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Wetland Non-Vascular Plants[1]
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

Upland plot is ~ 5' from mapped wetland boundary.

SOIL

Sampling Point: W21-T3W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR3/2	90	10YR4/4	10	C	M	Loam	
3-14	10YR2/1	85	7.5YR4/6	15	C	M	Gravelly Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (except MLRA 1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks: A. A. Dip reaction @ 6" & 10"

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (LRR A)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (LRR A)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ___ No ___ Depth (inches): _____

Water Table Present? Yes ___ No ___ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No ___ Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Standing water observed two week prior to 5/9/2019

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: HUMSLIN City/County: _____ Sampling Date: 5/9/19

Applicant/Owner: _____ State: _____ Sampling Point: W21 T3U

Investigator(s): A.L., M.S. Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	Is the Sampled Area within a Wetland? Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. Trifolium subterraneum	60	X	NL
2. Poa pratensis	15		FAC
3. Mentha pulegium	5		OBL
4. Festuca perennis	5		FAC
5. Anthoxanthum odoratum	5		FACU
6. Festuca arundinacea	5		FAC
7.			
8.			
9.			
10.			
11.			
	95 = Total Cover		4/5
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

__ 1 - Rapid Test for Hydrophytic Vegetation

__ 2 - Dominance Test is >50%

__ 3 - Prevalence Index is ≤3.0[1]

__ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ 5 - Wetland Non-Vascular Plants[1]

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks:

Wetland plot is ~5' from mapped wetland boundary.

SOIL

Sampling Point: W21-TJU

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR2/2	100	—	—	—	—	Loam	
4-15	10YR3/2	100	—	—	—	—	Gravelly Silt Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: HUMSUN City/County: _____ Sampling Date: 5/9/19

Applicant/Owner: _____ State: _____ Sampling Point: W22TIW

Investigator(s): AL, M.S Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	Is the Sampled Area within a Wetland? Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 1 m²)			
1. Poa pratensis	10		FAC
2. Mentha pulegium	20	X	OBL
3. Juncus patens	7		FACW
4. Ranunculus californica	15	X	FAC
5. Anthoxanthum odoratum	15	X	FACU
6. Danthonia californica	7		FAC
7. Bromus diandrus	15	X	NL
8.			
9.			
10.			
11.			
	89 = Total Cover		44.5 / 19
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	20	x 1 =	20
FACW species	7	x 2 =	14
FAC species	32	x 3 =	96
FACU species	15	x 4 =	60
UPL species	0	x 5 =	0
Column Totals:	74 (A)		190 (B)

Prevalence Index = B/A = 2.56

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Wetland Non-Vascular Plants[1]
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

Wetland plot is ~10' from mapped wetland boundary.

SOIL

Sampling Point: W22-T/W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR2/2	97	7.5YR4/4	3	C	M	Loam	
3-12	10YR2/2	95	7.5YR4/6	5	C	M	Loam/Silt loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ____

Remarks:

Reaction to A.A. Dip @ 5"

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required, check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ✓ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ____ No ✓ Depth (inches): _____

Water Table Present? Yes ____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Appears to have ponded water recently

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: HUMSUN City/County: _____ Sampling Date: 5/9/19

Applicant/Owner: _____ State: _____ Sampling Point: W22TIU

Investigator(s): A.L., M.S. Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No X	Is the Sampled Area within a Wetland? Yes _____ No X
Hydric Soil Present?	Yes _____ No X	
Wetland Hydrology Present?	Yes _____ No X	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. Trifolium subterraneum	30	X	NL
2. Anthoxanthum odoratum	15		FACU
3. Plantago lanceolata	20	X	FACU
4. Ranunculus californicus	5		FAC
5. Trifolium dubium	3		FACU
6. Bromus diandrus	1		NL
7. Danthonia californica	1		FAC
8.			
9.			
10.			
11.			
	87 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

__ 1 - Rapid Test for Hydrophytic Vegetation

__ 2 - Dominance Test is >50%

__ 3 - Prevalence Index is ≤3.0[1]

__ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ 5 - Wetland Non-Vascular Plants[1]

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks:

Mapped Wetland boundary is ~5' from upland plot.

SOIL

Sampling Point: W22-T10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-14	10YR3/2	100	—	—	—	—	Gravelly Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Humsun City/County: _____ Sampling Date: 5/9/19

Applicant/Owner: _____ State: _____ Sampling Point: U23TW

Investigator(s): A.L., M.S. Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	Is the Sampled Area within a Wetland? Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks: Trees (Oregon white oak and Douglas-fir are nearby but outside of wetland (within 5m) but not included here since clearly not part of wetland

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: _____)			
1. _____			
2. _____			
3. _____			
4. _____			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1. _____			
2. _____			
3. _____			
4. _____			
5. _____			
	_____ = Total Cover		
Herb Stratum (Plot size: 1 m²)			
1. Carex densa	30	X	OBL
2. Juncus patens	10		FACW
3. Mentha pulegium	15	X	OBL
4. Ranunculus californica	7		FAC
5. Bellis perennis	10		NL
6. Poa pratensis	7		FAC
7. _____			
8. _____			
9. _____			
10. _____			
11. _____			
	79 = Total Cover		39 / 16
Woody Vine Stratum (Plot size: _____)			
1. _____			
2. _____			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 15%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species _____	x 1 =	_____
FACW species _____	x 2 =	_____
FAC species _____	x 3 =	_____
FACU species _____	x 4 =	_____
UPL species _____	x 5 =	_____
Column Totals: _____ (A)		_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

X 1 - Rapid Test for Hydrophytic Vegetation

__ 2 - Dominance Test is >50%

__ 3 - Prevalence Index is ≤3.0[1]

__ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ 5 - Wetland Non-Vascular Plants[1]

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

Wetland plot is ~ 3' from mapped wetland boundary.

SOIL

Sampling Point: W23-TIW

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR3/1	95	7.5YR4/4	5	C	M	clay loam	
4-13	GLY 4/10Y	90	10YR4/6	10	C	M	clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ✓ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required, check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ✓ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): _____

Water Table Present? Yes ___ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Appears to have been wet (standing water) recently

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: HUMSUN City/County: _____ Sampling Date: 5/9/19

Applicant/Owner: _____ State: _____ Sampling Point: WA3TLU

Investigator(s): A.L, M.S. Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No X	Is the Sampled Area within a Wetland? Yes _____ No X
Hydric Soil Present?	Yes _____ No X	
Wetland Hydrology Present?	Yes _____ No X	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 5m)	Absolute % Cover	Dominant Species?	Indicator Status
1. Pseudotsuga menziesii	20	X	FACU
2. Quercus garryana	30	X	FACU
3.			
4.			
	50 = Total Cover		25 / 10
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 1m²)			
1. Elymus glaucus	15	X	FACU
2. Bromus sp (carinatus?)	10	X	NL
3. Hypericum perforatum	5		FACU
4. Bellis perennis	10	X	NL
5. Sanicula crassicaulis	5		NL
6. Torilis arvense	5		NL
7. Fragaria vesca	5		FACU
8. Ranunculus californica	5		FAC
9. Geranium dissectum	5		NL
10.			
11.			
	65 = Total Cover		33 / 12
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 25 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

__ 1 - Rapid Test for Hydrophytic Vegetation

__ 2 - Dominance Test is >50%

__ 3 - Prevalence Index is ≤3.0[1]

__ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ 5 - Wetland Non-Vascular Plants[1]

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks:

Upland plot is ~5' from mapped wetland boundary.

SOIL

Sampling Point: W23-TIU

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 4/2	100	—	—	—	—	Gravelly Loam	
4-12	10YR 4/3	100	—	—	—	—	Clay Loam	Few Redox / variation
12-16	10YR 4/3	90	7.5YR 5/6	10	C	M	Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Humsun City/County: _____ Sampling Date: 5/9/19

Applicant/Owner: _____ State: _____ Sampling Point: W24T1W

Investigator(s): A.L., M.S. Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	Is the Sampled Area within a Wetland? Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks:
* The Eleocharis is not flowering and can't be identified to species

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 1.5m x 1.5m Rectangle)			
1. Ranunculus californica	7		FAC
2. Eleocharis sp. (FACW median)	15	X	FACW
3. Trifolium barbigerum	15	X	FACW
4. Hypericum anagalloides	7		OBL
5. Plantago lanceolata	15	X	FACU
6. Hypochaeris radicata	25	X	FACU
7. Juncus sp	5		FACW
8. Cyperus eragrostis	3		FACW
9.			
10.			
11.			
	92 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species 0	x 1 = 0
FACW species 38	x 2 = 76
FAC species 7	x 3 = 21
FACU species 40	x 4 = 160
UPL species 0	x 5 = 0
Column Totals: 85 (A)	257 (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Wetland Non-Vascular Plants[1]
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:
Wetland plot is ~10' from mapped wetland boundary.

SOIL

Sampling Point: W24-TIW

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	613/104	100	—	—	—	—	clay loam	
6-13	61 4/104	96	10YR 4/6	4	C	M	clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

No reaction to A.A. Dip

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ✓ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ✓ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): _____

Water Table Present? Yes ___ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Dry other than other areas observed on 5/9/19

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: HUMSUN City/County: _____ Sampling Date: 5/9/19

Applicant/Owner: B State: _____ Sampling Point: W24 T1U

Investigator(s): A.L., M.S Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	Is the Sampled Area within a Wetland? Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 1m x 1m)			
1. Festuca perennis	15	X	FAC
2. Bromus hordeaceous	15	X	FACU
3. Ranunculus californica	20	X	FAC
4. Danthonia californica	10		FAC
5. Aira caryophyllaceae	5		FACU
6. Plantago lanceolata	7		FACU
7. Bromus diandrus	5		NL
8.			
9.			
10.			
11.			
	77 = Total Cover		38.5 / 15.4
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 20%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.6 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species _____	x 1 =	_____
FACW species _____	x 2 =	_____
FAC species _____	x 3 =	_____
FACU species _____	x 4 =	_____
UPL species _____	x 5 =	_____
Column Totals: _____ (A)		_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Wetland Non-Vascular Plants[1]
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

Upland plot is three feet from mapped wetland boundary

SOIL

Sampling Point: W2-T1-U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR3/2	100	—	—	—	—	Loam	
4-16	10YR4/2	100	—	—	—	—	Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required, check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Humsun City/County: Sampling Date: 5/9/19

Applicant/Owner: State: Sampling Point W25TIW

Investigator(s): A.L., M.S Section, Township, Range:

Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Slope (%):

Subregion (LRR): Lat: Long: Datum:

Soil Map Unit Name: NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ____ (If no, explain in Remarks)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ____ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	Is the Sampled Area within a Wetland? Yes X No ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: Rectangle 3' x 1')			
1. Carex densa	20	X	OBL
2. Mentha pulegium	30	X	OBL
3. Callitriche sp	15		OBL
4. Glyceria x occidentalis	10		OBL
5. Poa annua	5		FAC
6. Ranunculus californica	5		FAC
7. Poa pratensis	5		FAC
8. Trifolium subterraneum	5		NL
9.			
10.			
11.			
	95 = Total Cover		4/9/19
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Wetland Non-Vascular Plants[1]
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

Wetland plot is ~ 1 foot from mapped wetland boundary.

SOIL

Sampling Point W25-T1W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR3/1	95	7.5YR4/4	5	C	M	Loam	
5-12	10YR3/1	100					Silt Loam	<1% Redox

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

A.A. dip positive reaction @ 4"

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ✓ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ✓ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ✓ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ✓ No ___ Depth (inches): +2"

Water Table Present? Yes ___ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: HUMSUN City/County: _____ Sampling Date: 5/9/19

Applicant/Owner: _____ State: _____ Sampling Point: W25TIU

Investigator(s): A.L., M.S Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No X	Is the Sampled Area within a Wetland? Yes _____ No X
Hydric Soil Present?	Yes _____ No X	
Wetland Hydrology Present?	Yes _____ No X	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 1 m^2)			
1. Plantago lanceolata	15	Y	FACU
2. Trifolium subterraneum	35	X	NL
3. Anthoxanthum odoratum	20	X	FACU
4. Hypochaeris radicata	15	Y	FACU
5. Ranunculus californicus	5		FAC
6. Bromus hordeaceus	5		FACU
7.			
8.			
9.			
10.			
11.			
	95 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species _____	x 1 =	_____
FACW species _____	x 2 =	_____
FAC species _____	x 3 =	_____
FACU species _____	x 4 =	_____
UPL species _____	x 5 =	_____
Column Totals _____ (A)		_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

__ 1 - Rapid Test for Hydrophytic Vegetation

__ 2 - Dominance Test is >50%

__ 3 - Prevalence Index is ≤3.0[1]

__ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ 5 - Wetland Non-Vascular Plants[1]

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks:

Upland plot is ~ 8 feet from mapped wetland boundary.

SOIL

Sampling Point: W25-T10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR3/2	100	—	—	—	—	Silt Loam	
4-16	10YR3/2	100	—	—	—	—	Gravelly loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ____ No ✓ Depth (inches): _____

Water Table Present? Yes ____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes ____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:



about GHD

GHD is one of the world's leading professional services companies operating in the global markets of water, energy and resources, environment, property and buildings, and transportation. We provide engineering, environmental, and construction services to private and public sector clients.

www.ghd.com

Appendix 2P

Supplemental Waters Investigation Report

Waters Investigation Report

Hum Sun, LLC

Humboldt County APN 217-253-001

February 16, 2021

Prepared by

Natural Resources Management Corporation

1434 3rd Street

Eureka CA 95501

707-442-1735

Introduction

An Aquatic Resources Report for Sun Farms Development Project was published by GHD in Eureka, CA on September 18, 2019. In this Report, an area on Humboldt County APN 217-253-001 was identified in Figure 1.5 of the Report (Appendix A, Aquatic Resources Delineation Map) as "Possible Existing Wetland not delineated". Due to the proximity of this feature to proposed development on the parcel, NRM botanists and wetland specialists Claire Brown and Jenell Jackson visited the site to investigate the presence or absence of potential jurisdictional Waters of the United States and or Waters of the State of California. The investigation was restricted to the extent of the feature described above. This report is an abbreviated summary of the findings of that investigation. It is not a formal delineation report and is instead intended to supplement the work done for the 2018 GHD Report.

Hydrologic Conditions

The Scotia National Weather Service (NWS) station had recorded 18.42 inches of accumulated precipitation between October 1, 2020 and February 05, 2021 (NOAA 2021). 'Normal' accumulation calculated for that period is 29.09 inches. However, that station recorded a total of 11.39 inches of precipitation between January 1, 2021 and February 05, 2021. 'Normal calculation for that period is 9.94 inches.

Findings

A three-parameter wetland investigation was conducted within the vicinity of the feature identified in the GHD Report as the "Possible Existing Wetland," defied as the Study Area in Figure 1.

The Study Area mostly includes a steep, forested slope below Alderpoint Road, which transitions down to an adjacent agricultural flat via several rolling "knolls" vegetated by white and black oaks (*Quercus garryana,* FACU and *Quercus kellogii,* UPL), some Douglas-firs (*Pseudotsuga menziesii*, FACU) and California bay laurels (*Umbellularia californica,* FAC). There is a low point near the center of the Study Area, still several feet higher than the adjacent flat, but which is a focal point for runoff from the immediate surrounding landform. The low point is vegetated by Oregon ash (*Fraxinus latifolia*, FACW) with an understory of rushes (*Juncus patens*, FACW), *Juncus effusus ssp. pacificus*, FACW). Soils at this this low point were noticeably saturated to surface at the time of the investigation. The surrounding landform was not saturated.

Wetland investigation Plot 1 was established within the relative low point dominated by wetland indicator vegetation. Wetland investigation Plot 2 was established upslope of Plot 1, on the "knoll" landform dominated by a mix of oaks, Douglas-fir and California Bay laurel.

At Plot 1, dominance by hydrophytic vegetation was established, and soils met the Hydric Soil Indicator F6 Redox Dark Surface. Hydrology Indicators A2 High Water Table, A3 Saturation and D2 Geomorphic position were met. The water table was measured at a depth of 5 inches below surface.

At Plot 2, vegetation was established as FAC dominant via the Dominance Test, but no hydric soil indicators or hydrology indicators were met.

The boundaries and extent of a potential 3-parameter jurisdictional wetland were established by interpreting the landform as it related to the plot data. This feature is approximately 0.61 acres in size and can be categorized as seasonal palustrine forested wetland.

The remaining portion of the Study Area, or "Possible Existing Wetland," was determined to be 'Upland.'

See Figure 1, Photos, and Wetland Determination Data forms below.



Figure 1. Waters Investigation Map

Photos



Photo 1. Looking northwest toward Study Area



Photo 2. Looking northwest along southwest side of Study Area. Forested wetland in photo right corner



Photo 3. Looking northwest along Study Area. Forested Wetland in photo right- center, behind human.



Photo 4. Looking north at forested wetland, to right of human.



Photo 5. Looking north at forested wetland.



Photo 6. Looking north west toward Plot 2 (at shovel).



Photo 7. Looking southeast over Plot 2, towards forested wetland and Plot 1.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Humboldt HWY assumed wetland City/County: Humboldt Sampling Date: 2/4/2021

Applicant/Owner: Hanson Lower Flat State: CA Sampling Point: 109 Plot 1

Investigator(s): Jarvis Section, Township, Range:

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Concave Slope (%): 1%

Subregion (LRR): Lat: 40.31083 Long: -123.6852 Datum: NAD83

Soil Map Unit Name: NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes Y No (If no, explain in Remarks.)

Are Vegetation ~, Soil ~, or Hydrology ~ significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation ~, Soil ~, or Hydrology ~ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No	Is the Sampled Area within a Wetland?	Yes X No
Hydric Soil Present?	Yes X No		
Wetland Hydrology Present?	Yes X No		

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 10 x 10 m)	Absolute % Cover	Dominant Species?	Indicator Status
1. Fraxinus latifolia	50	✓	FACW
2. Quercus kelloggii	5		UPL
3.	<1		
4.			
	55 = Total Cover		

Sapling/Shrub Stratum (Plot size: 10 x 10 m)			
1. Umbellularia californica	<1		FAC
2. Rubus armeniacus	3	✓	FAC
3. Symphoricarpos albus	1		FACU
4.			
5.			
	4 = Total Cover		

Herb Stratum (Plot size: 10x10m)			
1. Juncus patens	35	✓	FACW
2. Poa sp.	5		
3. water parsley Oenanthe sarm	<1		OBL
4. Juncus effusus	36	✓	FACW
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	10 = Total Cover		

Woody Vine Stratum (Plot size:)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 5%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- 3 - Prevalence Index is ≤3.0[1]
- 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- 5 - Wetland Non-Vascular Plants[1]
- Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No

Remarks:

EST TOTAL SIZE OF WETLAND - 30 Ft x 80 Ft

SOIL

Sampling Point: 1101

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 3/1						SILTY CLAY LOAM	Some frg. rocks, fine
8-14	10YR 3/2		10YR 3/4	10	C	M		
			5Y 7/2	2	C	M		sandstone inclusions
14-18	10YR 3/2							sandstone inclusions

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (except MLRA 1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

1-8 - earthworms / dead roots / organic matter

8-14 - decomposing rock. problematic but distinct from redox features.

14-18

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (LRR A)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (LRR A)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): _____

Water Table Present? Yes ✓ No ___ Depth (inches): 5

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): 1

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

water table wait - 15 min

40.31094742. – 123.65859567

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: "Assumed Wetland" polygon City/County: _____ Sampling Date: 2-5-2021

Applicant/Owner: HumSun - lower flat State: CA Sampling Point: Plot 2

Investigator(s): Claire Brown, Jarell Jackson Section, Township, Range: _____

Landform (hillslope, terrace, etc.): hillslope / microterrace Local relief (concave, convex, none): convex Slope (%): 6

Subregion (LRR): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ✓, Soil ✓, or Hydrology ✓ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation X, Soil ✓, or Hydrology ✓ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	Is the Sampled Area within a Wetland? Yes ____ No X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks: on slope above flat - veg plot shape represents a small "microterrace" below slope up to ridge point R.H. Veg community may not be as representative if all slope above flat

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 2800 ft²)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2. Umbellularia californica	15	Y	FAC
3. Quercus garryana	40	Y	FACU
4. Douglas fir	10		FACU
	65 = Total Cover		

Sapling/Shrub Stratum (Plot size: 2800 ft²)			
1. Umbellularia californica	3	Y	FAC
2. Toxicodendron diversilobum	5	Y	FAC
3.			
4.			
5.			
	8 = Total Cover		

Herb Stratum (Plot size: 2800 ft²)			
1. Elymus glaucus	15	Y	FAC
2. Sanicula crassicaulis	1		
3. Chlorogalum pomeridianum	1		
4. fungus ?	1		
5. Stachys rigida	1		
6. Anthriscus	1		
7. Bromus carinatus	2		
8. Galium aparine	1		
9. Pathogen sp	1		
10.			
11.			
	24 = Total Cover		

Woody Vine Stratum (Plot size: 2800 ft²)			
1. Lonicera hispidula	25	X	FACU
2.			
	25 = Total Cover		

% Bare Ground in Herb Stratum _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species 0	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ___ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ 5 - Wetland Non-Vascular Plants[1]
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

FAC dominant

SOIL

Sampling Point: 2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 3/2	100					clay loam, full of Rocks, large stone
8-14	10YR 3/1	100					very crumbly, friable texture

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) **(LRR A)**
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) **(LRR A)**
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): _____

Water Table Present? Yes ____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): _____

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Appendix 2Q

Proposal and Justification for the Development of a Compensatory Mitigation and Monitoring Plan

Proposal and Justification for the Development of a Compensatory Mitigation and Monitoring Plan

Hum Sun, LLC

Humboldt County APNs 217-253-001, 217-055-022

September 14, 2021

Updated September 28, 2022

Prepared by

Claire Brown

Natural Resources Management Corporation

1434 3rd Street

Eureka CA 95501

707-442-1735

Introduction

Project proponents Hum Sun, LLC seek agency pre-consultation on the development of appropriate compensatory mitigation to offset proposed impacts to existing low-quality seasonal wetlands (Waters of the State) on their property. This document provides background on the type and quality of the wetlands proposed to be impacted and outlines the overall water quality and habitat benefits that a well-developed Mitigation and Monitoring Plan could achieve. Agency pre-consultation is needed to guide the development of such a plan. The goal here is to seek agency input and approval for moving forward with the appropriate permit applications.

Hum Sun, LLC is seeking to develop 12 acres of cannabis cultivation on their property. This development will also include the construction of four (4) rainwater catchment ponds.

An Aquatic Resources Report for Hum Sun Farms Development Project was published by GHD in Eureka, CA on September 18, 2019. In this Report, 2.22 acres of seasonal wetlands were identified within the Study Area. Utilizing wetland delineation GIS files provided by the GHD, NRM has determined that proposed infrastructure would directly impact a total of 0.73 acres of seasonal wetlands. Cannabis cultivation infrastructure would directly impact 0.71 acres at one location (Impact Site 1), and pond construction would impact 0.02 acres at three (3) other locations (Impact Sites 2-3). See Table 1 for an impact summary. In addition to direct impacts to potential wetlands, project development will place cannabis cultivation and pond infrastructure within the 100-foot seasonal wetland protection setbacks outlined in SRWQCB ORDER WQ 2019-0001-DWQ. An additional 0.3 acres of potential seasonal wetlands will be located within the 100 buffer of project infrastructure. This potential seasonal wetland would fall within the 100-foot setback outside the footprint of direct impacts. See *Wetland Impacts Resulting from Proposed Development Project* (NRM 2021) for

additional details. For wetlands directly impacted by the project the goal is to create new, 3-pararmeter wetland at a ratio of 1.3: 1 with enhancement of existing wetland and riparian areas at an additional 1.9 : 1. For a total ratio of creation and enhancement combined of 3.2:1, as deemed appropriate. For all wetland impacts, including those wetlands that will not be directly impacted but will be in the 100 ft buffer of project infrastructure, the project will create new wetland and enhance existing wetland/riparian at a 2.3 to 1 ratio (See Table 2).

Table 1. Summary of Proposed Wetland Impacts

Infrastructure	Wetland ID#	Area Impacted (Sqft)	Area Impacted (Acre)
Pond A	24	265	0.006
Pond C	14	505	0.01
Pond C	15	231	0.005
Lower Field Infrastructure	18	1439	0.03
Lower Field Infrastructure	19	5174	0.12
Lower Field Infrastructure	20	624	0.01
Lower Field Infrastructure	21	23844	0.55
Total Impacts		**32,082**	**0.73**

Table 2. Summary of Ratio of Mitigation Areas to Impact Areas.

Impacts	**Acres**	**Mitigation**	**Acres**	**Ratio of mitigation to impacts**
Direct Impacts	0.73	<u>Creation</u>		New created wetland: 1.3 to 1
		Little Larrabee Creek	0.71	
		Honey Hole	0.27	
		Total	0.98	
		<u>Enhancement</u>		New created wetland and wetland enhancement: 3.2 to 1
		Little Larrabee Creek	0.71	
		Honey Hole	0.7	
		Total	1.41	
Buffer Impacts	0.3			
Total impacts	1.03	Total mitigation	2.39	New created wetland and enhancement: 2.3 to 1

Impact Site 1.

The project proponent proposes to develop cannabis cultivation infrastructure on historic agricultural flat directly adjacent to Alderpoint Rd. The site consists of a historically manipulated flat on an old floodplain terrace of Little Larrabee Creek This site is referred to as the 'Lower Field.'

Current Condition

GHD identified and mapped 0.98 acres of seasonal wetlands in the 'Lower Field' area. The Report identifies these features as Wetlands 17-21 (GHD 2019). These wetlands occur in slight depressions in the flat and generally drain towards Little Larrabee creek to the northwest. They are defined by dominance by hydrophytic vegetation and seasonal soil saturation, with periodic surface water following storm events. The GHD Report does not specifically identify a relationship with elevated groundwater levels. See their Report for a description of these features (GHD 2019).

Additionally, In February of 2021, NRM staff discovered that a Class III ephemeral watercourse passes under Alderpoint road via a culvert and then outlets onto the flat. The watercourse is channelized for approximately 80 feet and then dissipates, flowing into/becoming Wetland 21. This watercourse had water flowing on February 23, 2021, but was dry on March 5, 2021, indicating that it only flows following storm events.

Overall, the wetlands and watercourse at this site are heavily impacted by cattle grazing. Cattle utilize the site frequently, consuming hydrophytic vegetation, adding manure to surface water draining toward Little Larrabee creek and likely preventing any successful amphibian breeding by hoof stomp. The Class III ephemeral drainage is still indirectly connected to Little Larrabee creek via the outlet of Wetland 21. The presence of cattle in the area, as well as the historically altered landform, reduce the overall habitat and hydrological contribution of these features to the watershed.

Proposed Impacts

Design plans would impact 0.71 acres of wetlands. These wetlands would be filled, except for a portion of the Wetland 21/Class III ephemeral channel which would be channelized and revegetated (see below).



Photo 1. Looking North across Lower Field.



Photo 2. Looking south at Class III emerging onto flat.



Photo 3. Looking north at Class III emerging onto flat.



Photo 4. Looking south at where Class III dissipates onto flat.

Proposed Mitigation Site 1: Little Larrabee Creek Floodplain Terrace

Overview

Given the historically manipulated and currently impacted condition of the wetlands and watercourse at Impact Site 1, we believe that compensatory mitigation can result in an overall improvement to water quality and wetland habitat in the area. We would like to propose compensatory mitigation including both the creation of wetlands and the enhancement of riparian forest habitat. We propose the creation of 0.71 acres of wetland, and the enhancement of 0.71 acres of Riparian Forest habitat along Little Larrabee Creek. See Figure 1.

Ephemeral Channel Construction and Revegetation

The Class III ephemeral watercourse (that crosses Alderpoint Rd and dissipates into Wetland 2) will be channelized to direct surface flow directly along the east side of the flat. This channel will be engineered to drain Wetland 21 and re-direct surface flow into a wetland creation area along Little Larrabee Creek (see Wetland Creation Area 1 below). The wetland creation area will in turn direct overflow to Little Larrabee creek. This portion of the proposal is part of the proposed impacts to wetlands (as channel creation will drain part of wetland 21), but also involves providing surface water to a wetland creation area, where it can sink and spread along the floodplain terrace directly along Little Larrabee, providing increased water quality and habitat benefits there (see Wetland Creation Area 1 below).

The constructed channel will be designed to slightly meander, with a few rock armored bends. The channel banks will be vegetated with native shrubs to shade water and provide some cover habitat.



Photo 5. Looking north. Photo left (Behind shovel) is low point where channel will be constructed.



Photo 6. Looking south. Photo left is low point where channel will be constructed.



Photo 7. Looking north toward area where channel will dissipate into Wetland creation Area 1.1

Wetland Creation Area 1.1

Directly northwest of the 'Lower Field' development site is Little Larrabee creek, flowing Northeast. Much of the floodplain terrace is Oregon ash forest (along with Oregon white oaks), but directly adjacent to the outlets of Wetlands 21 and 20 is open, vegetated by non-native pasture grasses and forbs. Creation of an enhanced channel (See Ephemeral Channel Construction and Revegetation above) will direct surface flow from the Class III channel and Wetland 21 toward these riparian forests and open areas, providing an opportunity to create floodplain wetlands and enhance riparian forest habitat. It is well understood that floodplain wetlands help to maintain dry season flows in salmon streams. Currently, water in the ephemeral channel saturates the heavily grazed agricultural flat. Moving the water to protected areas along the creek could allow ephemeral flows to be stored for longer periods in saturated sediments directly adjacent to Little Larrabee, potentially contributing colder hyporheic (and unpolluted) flow for longer periods. This area will be referred to as Wetland Creation Area 1 and is shown in Figure 1.

We propose the following wetland creation scenario that provides an opportunity to improve water quality in an important steelhead stream and restore a valuable, rare, and sensitive riparian habitat type (Oregon Ash Forest).

1) Cattle would be permanently excluded from the area via adequate fencing. This alone would significantly improve water quality.

2) The wetland creation area would be manually treated to remove invasive plants (Himalayan blackberry)

3) The constructed ephemeral channel (see Ephemeral Channel Construction and Revegetation above) would be connected (via earthwork) to the floodplain terrace and directed to spread and saturate floodplain soils. Appropriate soil and hydrological engineering would be utilized to design a floodplain wetland mosaic that "sinks and spreads" ephemeral flows, and has a well-designed surface flow outlet to Little Larrabee creek. Any impacts to existing native vegetation would avoided.

4) The newly constructed wetland mosaic will be planted with Oregon Ash, sedges and rushes. Invasive shrubs would continue to be treated for the duration of the monitoring period.



Photo 8. Looking north at area Wetland Creation 1.1 site (where constructed channel will dissipate)



Photo 9. Where flow from Wetland 21 currently re-channelizes and delivers to Little Larrabee creek. Wetland creation Area 1.1 will drain to this feature.



Photo 10. Reference condition for design of Wetland creation and enhancement, along east fence (outside influence of cattle)

Wetland Creation Area 1.2

Directly northwest across Little Larrabee Creek from the 'Lower Field' development site is additional floodplain terrace, situated at similar elevation. This area is less developed than the 'Lower Field' development area but is also highly impacted by cattle. The northern extent of this floodplain section is Oregon Ash forest, but a greater portion is vegetated by nonnative pasture grasses and invasive shrubs such as Himalayan blackberry *(Rubus armeniacus*) and sweetbriar (*Rosa rubiginosa*). This area will be referred to as Wetland Creation Area 2 and is shown in Figure 1.

A Class II intermittent stream flows off the adjacent hillslope to northwest, bisects Mitigation Site 2, and then flows into Little Larrabee Creek. Where this watercourse channel transitions to the floodplain, its channel is deeply incised. There is direct evidence that the channel was artificially enhanced (ditched) at some time in the past. Vegetated piles of sediment line the south bank of the most incised portions of the channel, appearing to be material that was excavated. We infer that this channel was artificially ditched to drain the surrounding floodplain, presumably to increase pasture quality for cattle. Flat land is scarce in the area, and it is reasonable to assume that evidence of artificial drainage indicates that previous managers wished to drain natural wetland area to provide additional upland, low gradient pasture for cattle. The current cattle manager on the property keeps calf-cow pairs in this area immediately after birth for easy supplemental feeding, due to its easy terrain and proximity to the road.

The intermittent channel is not only incised but has abundant evidence of active erosion. Cattle cross it regularly at various points, contributing plenty of manure and additional sediment churned up by their hooves. Manure and sediment are then contributed directly into Little Larrabee creek.

We presume that the original, natural condition of this watercourse was to spread into a wetland mosaic, seasonally saturating a portion of the floodplain. We also presume that this seasonally saturated floodplain terrace *may* have been open herbaceous vegetation maintained by indigenous burning but judging from reference sites up and down little Larrabee creek, was probably vegetated by Oregon ash forest with understory of sedges and rushes.

It is well understood that floodplain wetlands help to maintain dry season flows in salmon streams. Currently, water in the ephemeral channel flows immediately into Little Larrabee, therefore only contributing to flow levels following winter storms when they are already high. The natural state of this system was likely one where ephemeral flows were stored for longer periods in saturated sediments, potentially contributing colder hyporheic (and unpolluted) flow for longer periods.

We propose the following wetland creation scenario that provides an opportunity to improve water quality in an important steelhead stream and restore a valuable, rare, and sensitive riparian habitat type.

1) Cattle would be permanently excluded from the area via adequate fencing. This alone would significantly improve water quality.

2) The mitigation area would be manually treated to remove invasive blackberry and rose

3) The incised and degraded intermittent channel would be reconnected (via earthwork) to the floodplain elevation and directed to spread and saturate floodplain soils. Appropriate soil and hydrological engineering would be utilized to design a floodplain wetland mosaic that “sinks and spreads” ephemeral flows, and has a well-designed surface flow outlet to Little Larrabee creek.

4) The newly constructed wetland mosaic will be planted with Oregon Ash, sedges and rushes. Invasive shrubs would continue to be treated for the duration of the monitoring period.



Photo 11. Looking southwest toward where intermittent channel emerges onto floodplain terrace (old road crossing)



Photo 12. Looking east along channel where it emerges onto flat. Wetland creation area 1.2 to right of human.



Photo 13. Incised condition of intermittent channel. Sediment from excavation visible photo right. Looking southeast.



Photo 14. Cow damage on banks of channel.



Photo 15. 4 feet of incision on channel. Wetland creation area 1.2 behind (south of) channel bank.

Riparian Forest Enhancement

In addition to the wetland creation areas described above, 0.71 additional acres of floodplain terrace along Little Larrabee creek will be planted with Oregon Ash and White oak to enhance and increase this sensitive riparian habitat. These riparian forests comprise a unique and rare (S3.2) vegetation type, providing important habitat to a huge range of wildlife species. This is a great opportunity to restore area that was likely to have been historically cleared for agriculture.



Photo 16. Looking west across north end of Lower Flat. Forest enhancement site on south side of Little Larabee creek is photo right.



Photo 17. Looking east at Forest Enhancement site on north side of the Little Larabee creek terrace.

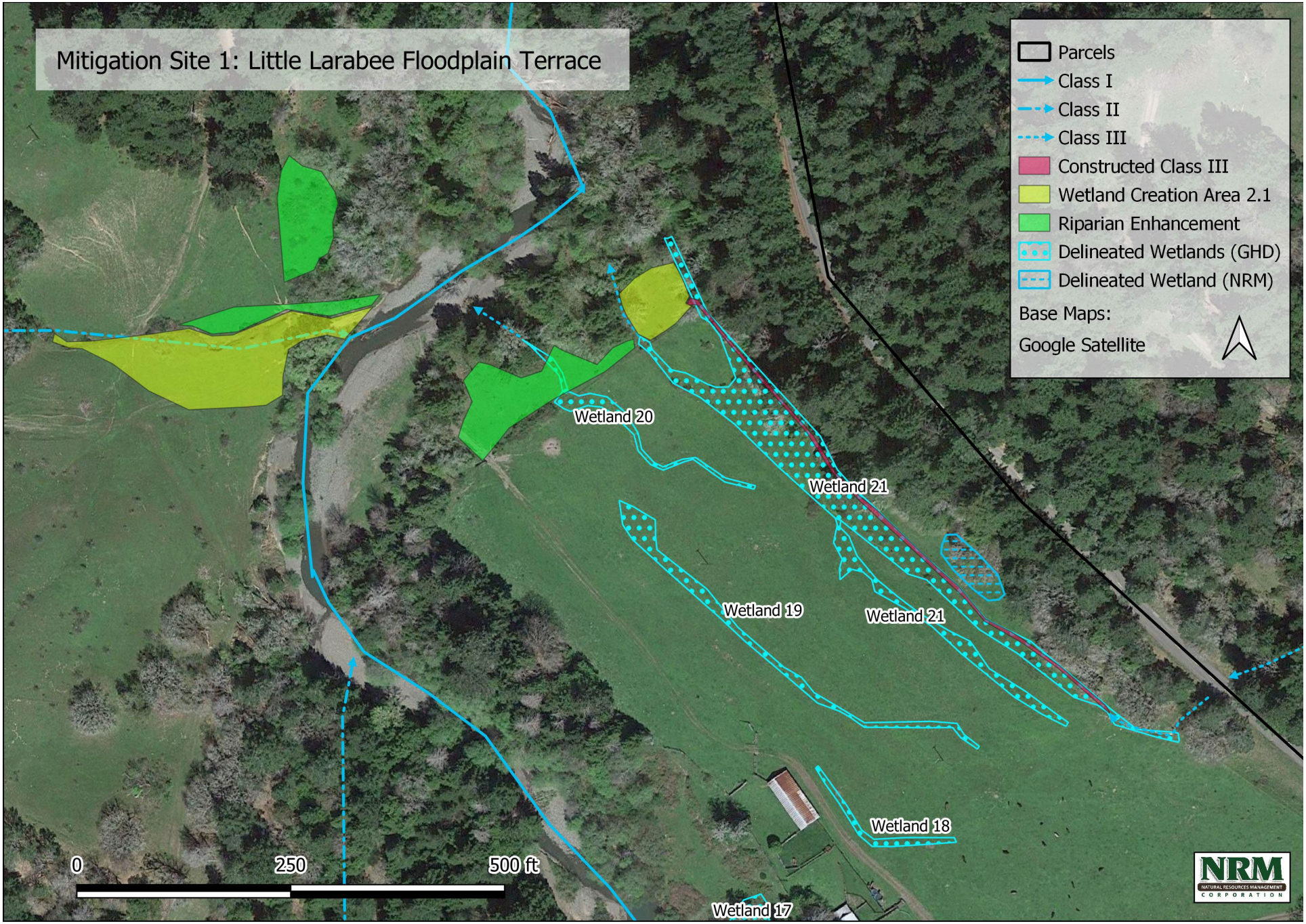


Figure 1. Mitigation Site 1, Lower Field. Wetland ID corresponds to GHD 2019.

Impact Sites 2-3 : Pond Development

Project development plans include the construction of 4 ponds, distributed across the ownership. Two (2) of these ponds would directly impact seasonal wetlands identified by GHD in 2019. GHD determined that these features were wetlands and not ephemeral watercourses. See Table 1 for a summary of which pond-wetland impacts.

Current Condition

These seasonal wetlands are identified as Wetlands 24, 14, and 15 in the GHD Report. See Appendix B for their descriptions. Overall, these features can be described as moderate to low quality due to impacts by cattle. There is evidence that cattle use some of these areas as wallows, reducing water quality and habitat availability to amphibians and other vertebrates. Most of the features have native plant cover but are dominated by non-native vegetation such as pennyroyal.

Proposed Impacts

A total of 0.02 acres of wetland would be impacted by the construction of the two ponds. These wetlands would be graded in the process of excavating the pond basins.

Mitigation Site 2: Honey Hole

Overview

GHD identified a complex of spring-fed perennially saturated hillslope wetlands in the northwest extent of the ownership (Wetlands 4-7). These features are dominated by native wetland vegetation such as rushes. This area is referred to as the 'Honey Hole'. 2020 and 2021 site visits by NRM revealed that more wetlands (than identified by GHD) exist in the Honey Hole area, including what appears to be a historically excavated stock pond. These wetlands are high value due to their native vegetation but are heavily utilized by cattle as wallows. All of the wetland features had a lot of soil disturbance from hoof-punch and manure deposition. In February of 2021, NRM observed the excavated stock pond being used by breeding pacific chorus frogs.

This area appears to have complex hydrology, with surface water features emerging at breaks in slope or soil parent material transitions and then re-infiltrating. Most of the features identified by GHD serve as the heads of Class III ephemeral channels.

Given the cattle- impacted status of the existing wetlands, and the presence of low gradient areas likely to hold rainwater, we believe that compensatory mitigation design at this site can result in an overall improvement to water quality and wetland habitat in the area. We would like to propose compensatory mitigation including both the creation of wetlands and the enhancement of existing wetlands via protection from cattle. Here an additional 0.27 acres of wetland could be created and 0.7 acres enhanced via cattle exclusion.



Photo 18. Looking south across stock pond in Honey Hole area.



Photo 19. Rush (*Juncus spp*.)-dominated wetland typical of Honey Hole area.



Photo 20. Looking south at Wetland 4.



Photo 21. Looking North at Wetland 4 in summer.

Wetland Creation Area 2.1

A broad, low gradient portion of the 'Honey Hole' area was identified as 'Upland' by GHD. Approximately 0.6 acres of this area appears highly suitable for excavating a mosaic of basins engineered to retain both rainfall and hillslope runoff, allowing stormwater to saturate soils and create wetland conditions. A project engineer indicted that a soils report would be required to guarantee both suitability and stability, but initially thought the site would serve this purpose well.

We propose the following wetland creation scenario that provides an opportunity to increase surface water availability in an area already utilized by breeding amphibians.

1) Cattle would be permanently excluded from the area via adequate fencing. This alone would significantly improve water quality.

3) Appropriate soil and hydrological engineering would be utilized to design a mosaic of basins and berms that "sinks and spreads" rainfall and hillslope runoff and has a well-designed surface flow outlet to a nearby head of a Class III channel. During basin excavations, topsoil would be retained, some portions of the B horizon would be removed and utilized in berm creation, and then topsoil would be re-applied to facilitate plant growth. Effort would be made to create some basins with the ability to hold surface water long enough to promote successful amphibian breeding.

4) The newly constructed wetland mosaic will be planted with native sedges and rushes, with more 'upland' portions of the disturbed area planted with native grasses.



Photo 22. Looking south at Wetland Creation Site 2.1

Wetland Enhancement

Cattle would be excluded from the entire Honey Hole wetland complex, which will benefit native vegetation, improve water quality, and increase likelihood of successful amphibian breeding.

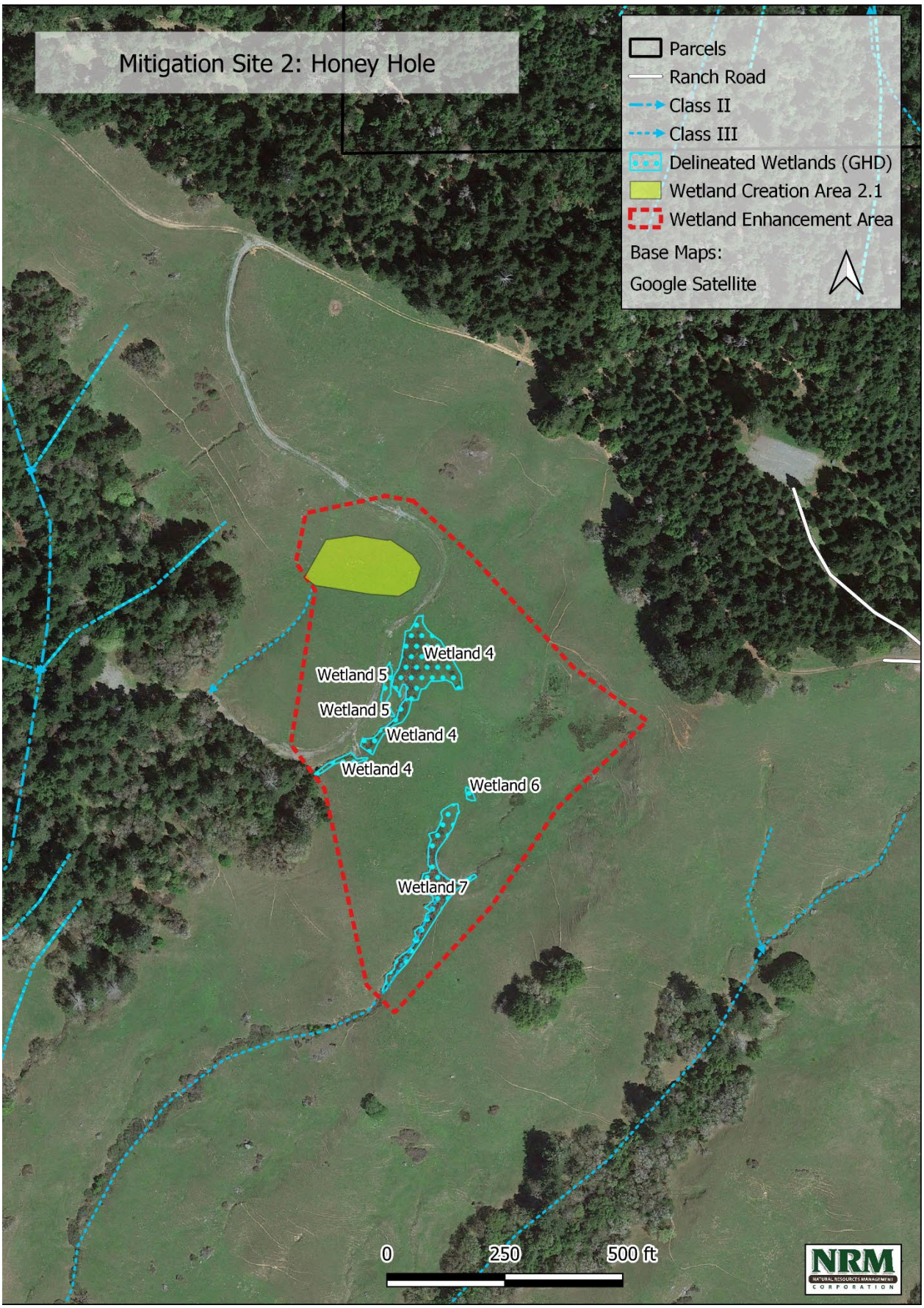


Figure 2. Mitigation Site 2: Honey Hole. Wetland ID corresponds to GHD 2019.

Appendix 2R

California Department of Fish and Wildlife (CDFW) Recommendations for HumSun 3, LLC Cannabis Cultivation APN 217-253-001

HumSun 3, LLC Cannabis Cultivation
APN 217-253-001
May 29, 2024

Project Description

The Project entails approximately 2.9 acres of commercial cannabis cultivation in pastureland northwest of Blocksburg, in rural Humboldt County. The Project scope has been scaled back to concentrate cultivation in the lower field site adjacent to Alderpoint Road, omitting outdoor cultivation and associated infrastructure along the ridge to the west. Three ridgetop wells will serve as the water source; rainwater catchment ponds and diversionary water sources proposed in earlier iterations of the Project are no longer necessary. Development of the lower field site would impact wetlands and require re-routing an ephemeral stream that currently flows onto the field from a culvert beneath Alderpoint Road. Other considerations include a nearby Northern Spotted Owl (NSO) Activity Center, potential impacts to Sensitive Natural Communities, and proximity to the riparian corridor of Larabee Creek and Cooper Creek. During the site visit on May 8, 2024, we discussed project constraints, potential site configuration, and mitigation opportunities.

CDFW Recommendations

<u>Wetland Mitigation</u>

- To achieve the most substantive wetland mitigation, the area beyond the fence along the northwestern edge of the field should be devoted to wetland creation and enhancement rather than stormwater treatment. Although we discussed the possibility of placing an LID feature at this location, expanding and enhancing existing wetlands and riparian vegetation would be more beneficial to Larabee Creek.
    - There is a higher-quality wetland at the toe of the slope near the northern corner of the field (40.311531, -123.659500), just outside the barbed wire fence. It's unclear whether it was assessed during prior wetland delineations; if not, please consider potential hydrological impacts associated with creating a Class IV drainage along the toe of the slope and account for any additional loss in wetland habitat when calculating total mitigation area. If the feature were retained, it could be extended to create more contiguous habitat.
- A 2:1 mitigation ratio would be suitable for lower quality pasture wetlands and could be achieved through a combination of wetland creation and more extensive out-of-kind riparian enhancement, provided there is no net loss of wetland habitat (i.e., 1:1 wetland creation). CDFW encourages the applicant to consult with the North Coast Regional Water Quality

Control Board to confirm permitting requirements before committing to mitigation ratios.

  - Mitigation should be prioritized in the riparian corridor of Larabee Creek and along the new Class III stream alignment. However, wetlands near the existing barn and residence present another location for wetland enhancement through invasive species management and revegetation.

Cattle Exclusion

- Excluding cattle from mitigation areas will be essential to creating and protecting meaningful, long-term mitigation. From the applicant's perspective, it would also make it easier to achieve success criteria within the specified timeframe. Wildlife-friendly fencing should be installed on the opposite banks to prevent cattle from accessing restored wetlands and riparian plantings.
- To protect mitigation areas, it may also be advisable to manage feral pigs through hazing, licensed sport hunting, depredation permits, or a combination thereof. Fencing designed to exclude pigs would also limit the passage of native wildlife and is therefore discouraged. CDFW's Wild Pig Management Program offers guidelines for the take of wild pigs, as well other resources to assist landowners and sport hunters. If the landowner wishes to pursue a depredation permit, they can begin that process by submitting an observation in Wildlife Incident Reporting (WIR). Once the permit is issued, they would have the option of taking pigs themselves or working with an APHIS trapper.

Rerouting Class III Channel

- Although the proposed alignment through the PG&E right-of-way would minimize development constraints, an alignment through the California bay woodland would provide more meaningful aquatic and wetland habitat. The PG&E right-of-way will also be subject to ongoing vegetation management activities, which would undermine replanting and restoration efforts.
- Channel design should avoid accidentally lowering the water table and impacting tree vigor and longevity.

Sensitive Natural Communities

- Where stands of *Festuca idahoensis – Danthonia californica* cannot be avoided, the Project should mitigate temporary and permanent impacts by restoring or expanding retained stands, prioritizing those protected within SMA buffers or outside the Project footprint.
- A ratio of 1:1 would be acceptable for advance mitigation that creates new stands or expands the acreage of existing stands. Out-of-kind mitigation (i.e., enhancement and restoration) should adhere to a higher ratio of at least 2:1. The restoration plan could include invasive species management and *Danthonia californica* plantings, as proposed in the 2022 revision of NRM's "Impacts Botanical Resources Sensitive Natural Communities."

Northern Spotted Owl

- As proposed, the project may have a potentially significant adverse effect on the Northern Spotted Owl (*Strix occidentalis caurina*; NSO). The Project proposes to utilize mixed light cultivation within 0.5 miles of a documented NSO Activity Center. Cultivation methods that utilize artificial light allow for an extension of the growing season which increases the period of overlap between cultivation operations and the NSO breeding season. Artificial light may disrupt nocturnal foraging and nesting of NSO through disorientation as well as decreased activity of prey species. Noise from road use, fans, and other equipment may disrupt hunting of NSO, which primarily uses hearing to hunt. Also, exposure to vehicle noise has been shown to increase stress hormone levels in NSO, which was particularly evident in males during times when they were exclusively responsible for feeding their mates and nestlings. The presence of NSO should be assumed. To minimized NSO disturbance the following avoidance measures should include, but are not limited to, the following:

- The prohibition of backup generators during the breeding season (February 1 to July 9), each year.

- Any ground-breaking or construction activities should be limited to occur outside of breeding season for NSO (February 1 to July 9).

- The construction of noise containment/dampening structures for all operation related pumps and fans; noise released shall be no more than 50 decibels measured from 100 ft or edge of habitat whichever is closer.

The applicant should provide a noise attenuation monitoring and management plan for this activity.

- That artificial light used for cannabis cultivation operations (i.e., ancillary nurseries) be fully contained within structures such that no light escapes (e.g., through automated blackout curtains) between 30 minutes prior to sunset and 30 minutes after sunrise to prevent disruption to crepuscular and nocturnal wildlife. Security lighting should be motion activated and comply with the International Dark-Sky Association standards and Fixture Seal of Approval Program; see: https://www.darksky.org/our-work/lighting/lighting-for-citizens/lighting-basics/. Standards include but are not limited to the following, 1) light shall be shielded and downward facing, 2) shall consist of Low-Pressure Sodium (LPS) light or low spectrum Light Emitting Diodes (LED) with a color temperature of 3000 kelvins or less and 3) only placed where needed. The applicant should provide a light attenuation monitoring and management plan for this activity within thirty days, following execution of the final permit.

Stormwater Management

- The project would result in a significant increase in impervious surfaces and should therefore include stormwater management practices to mitigate runoff to predevelopment levels. CDFW recommends incorporating low impact development (LID) features to capture, treat, and infiltrate stormwater and avoid discharge to wetlands and streams.
    - LID features could be located within the buffer of newly created wetlands or streams if they provide ecosystem benefits such as foraging habitat, shading, and groundwater recharge.
    - Vegetated bioswales and other LID features should be planted with locally appropriate native species.

Clarification of Project Scope

- CDFW would like additional clarification on the following topics:
    - What are the proposed uses for water from the hydrologically connected well near the residence?
    - Will the project entail tree removal?
    - Which roads and associated stream crossings will be used to access well sites on the ridge?

- Has the Project demonstrated that wells on the ridge are non-diversionary and meet production requirements for irrigation and other proposed uses?

Appendix 2S

Wetland Mitigation Summary – HumSun 2024

Wetland Mitigation Summary

Hum Sun 2024

APN# 217-253-001

Humboldt County, CA.

Prepared by
J. Regan Consulting
Eureka, CA.
August 2024

For
MAD RIVER PROPERTIES, INC.
MCKINLEYVILLE, CA.

Contents

Introduction 3
Setting 3
Proposed Mitigation 3
General Mitigation Guidelines 3
Site-Specific Recommendations 4
Conditions and Limitations 5

Attachment A: Proposed Wetland/Riparian Mitigation Plan Map

Introduction

This summary report is intended to provide details on compensatory mitigation for proposed impacts to wetlands in the project area. The proposed actions will impact approximately .87 acres (37,912 ft^2) of relatively low-quality wetland habitat. In an effort to maintain the wetland setting and native plant diversity that exists on site project proponents shall seek to create new wetlands in at least a 1:1 ratio (no net loss of wetland area) and provide an additional area of enhancement activities in and around existing riparian and wetland areas to bring total mitigation activities on site to more than twice the area of proposed impacts, a greater than 2:1 mitigation ratio. In order to reach that goal this proposed mitigation plan shall create approximately .88 acres (38,753 ft^2) of new wetlands, slightly exceeding the 1:1 ratio. An additional .20 acres (8,778 ft^2) of existing wetland area and approximately .45 acres (19,602 ft^2) of existing riparian area shall be enhanced by several restorative treatments and 1.1 acres (46,354 ft^2) of new riparian habitat shall be created along the banks of a small ephemeral stream that will be re-routed during development. In total 2.63 acres (114,563 ft^2) of mitigation shall be provided for the .87 acres of impact, a ratio of 3:1.

Setting

The study area is located in Humbolt County, California just north of the community of Blocksburg on Alderpoint Road. The project area is bound to the northeast by Alderpoint Road and surrounded on the remaining sides by Larabee Creek and Cooper Creeks. The site is currently a large open graze pasture surrounded by riparian forests composed of a mix of fir and oaks in drier sites and ash, bay, and willow in wetter areas. Animal grazing and trailing are evident and contribute to the low quality of some of the wetland sites.

APN#s

217-253-001

The subject parcel and all potential development occur outside of the California coastal zone.

Proposed Mitigation

In order to provide in kind replacement of habitats and features that will be lost as a result of project activities, wetland creation and wetland/riparian habitat enhancement actions shall follow several general guidelines, these shall apply to all sites unless otherwise noted.

General Mitigation Guidelines

- All work within wetland and riparian areas shall take place outside of the wet weather period and should be done in the driest time of the year before the onset of fall and winter rains.

- Created wetlands shall be designed in a manner that does not degrade the integrity of adjacent stream banks or allow significant sediment inputs to Larabee or Cooper Creeks.
- Soils removed during wetland creation shall be placed in a stable location outside of streamside management areas (SMA) or other riparian areas where they could enter the watercourse during wet weather. These soils may be incorporated into the development and used therein if appropriate.
- All bare soils within riparian areas that are a result of development activities shall be appropriately treated for erosion control. If grass seed is applied, native species which are locally sourced (if possible) shall be used. California oatgrass (*Danthonia californica*), blue wildrye (*Elymus glaucus*), California brome (*Bromus sitchensis* var. *carinatus*), and Idaho fescue (*Festuca idahoensis*) are native species already known to exist within the project area and should be prioritized for application within areas treated for erosion.
- All sites shall be included in an invasive species management strategy, this will ensure that mitigation planting areas are not overrun with noxious invasive species and will be part of ongoing management and maintenance of riparian enhancement areas.

Site-Specific Recommendations

These measures are recommended within each mapped treatment area.

Wetland Creation Areas

WC1, WC2, WC3– In these zones new riparian wetlands shall be created by shaping the ground to capture runoff from upslope as well as potential input from LID treated runoff from proposed development areas. These sites coincide with the edges of the existing wetlands and transition areas to riparian forest adjacent to Larabee Creek. Plantings in this zone should include: slough sedge (*Carex obnupta*), small flowered bullrush (*Scirpus microcarpus*), and lamp rush (*Juncus effusus*) which may be installed in the bottom and lower sideslopes of the wetlands. Arroyo willow (*Salix lasiolepis*), Oregon ash (*Fraxinus latifolia*), and California bay (*Umbellularia californica*) are appropriate tree and shrub species for planting on wetland edges and in the transition to riparian forest areas.

Wetland Enhancement Areas

WE1, WE2, WE3, WE4, WE5 – In these zones existing wetland features shall be enhanced by removal of invasive species, most notably Himalaya berry (*Rubus armeniacus*) and native species plantings shall be installed in order to bolster the vegetation community and potentially provide erosion control and slope stability after creation and restoration activities have ended. Plantings shall incorporate the same species listed above.

Riparian Enhancement Areas

RE1, RE2 – Within RE1 enhancement activities shall include the removal of invasive Himalaya berry and other invasive species along with sapling Douglas fir (*Pseudotsuga menziesii*) which although a native species can negatively affect oak woodland and hardwood dominated riparian areas. No trees over 8 inches diameter should be included in this treatment. Openings created by vegetation enhancement shall be replanted with tree, shrub, and herb species mentioned above with special care taken to provide soil stabilizing plantings in necessary areas. In the RE2 zone an area of new riparian habitat shall be created within the SMA associated with the newly routed ephemeral stream. This riparian zone may be planted with trees mentioned above but care should be taken to exclude tall tree or shrub plantings under the powerline and within the powerline right of way. Herbaceous wetland species listed above may be installed within and directly adjacent to the stream channel but more upland species may be installed in the SMA away from the active channel. Additional appropriate species include coyote brush (*Bacharris pilularis*), Oregon white oak (*Quercus garryana* var. *garryana)* or black oak (*Quercus kelloggii*) along with the Oregon ash and California bay included above. Areas in between tree plantings and all areas of bare soils may be planted with appropriate grass seed or plugs using the species mentioned in the general guidelines.

Conditions and Limitations

This report is based on conditions observed and recorded during field visits in 2023 and 2024. This report has not been reviewed nor has concurrence with the conclusions been obtained. Verification by agencies may be necessary in the future. Land use practices and regulations can change, thereby affecting conditions and results described herein.

This report and accompanying maps and data should be transmitted to the appropriate agents for review and included in any application for permits necessary for the completion of any proposed development projects within the study area.

The location and extent of mapped features is approximate. Maps are not to scale. In field survey and monumentation of pertinent features for buffering or mitigation planning may be required prior to the initiation of permitted activities.

Significance of features and/or habitats and the necessity for mitigation during development is decided by regional agents of the appropriate federal, state, and local agencies if and when the site is reviewed for permitting purposes.

This report was prepared for exclusive use; consultants are not liable for any actions arising out of the reliance of any third party on the information contained in this report.

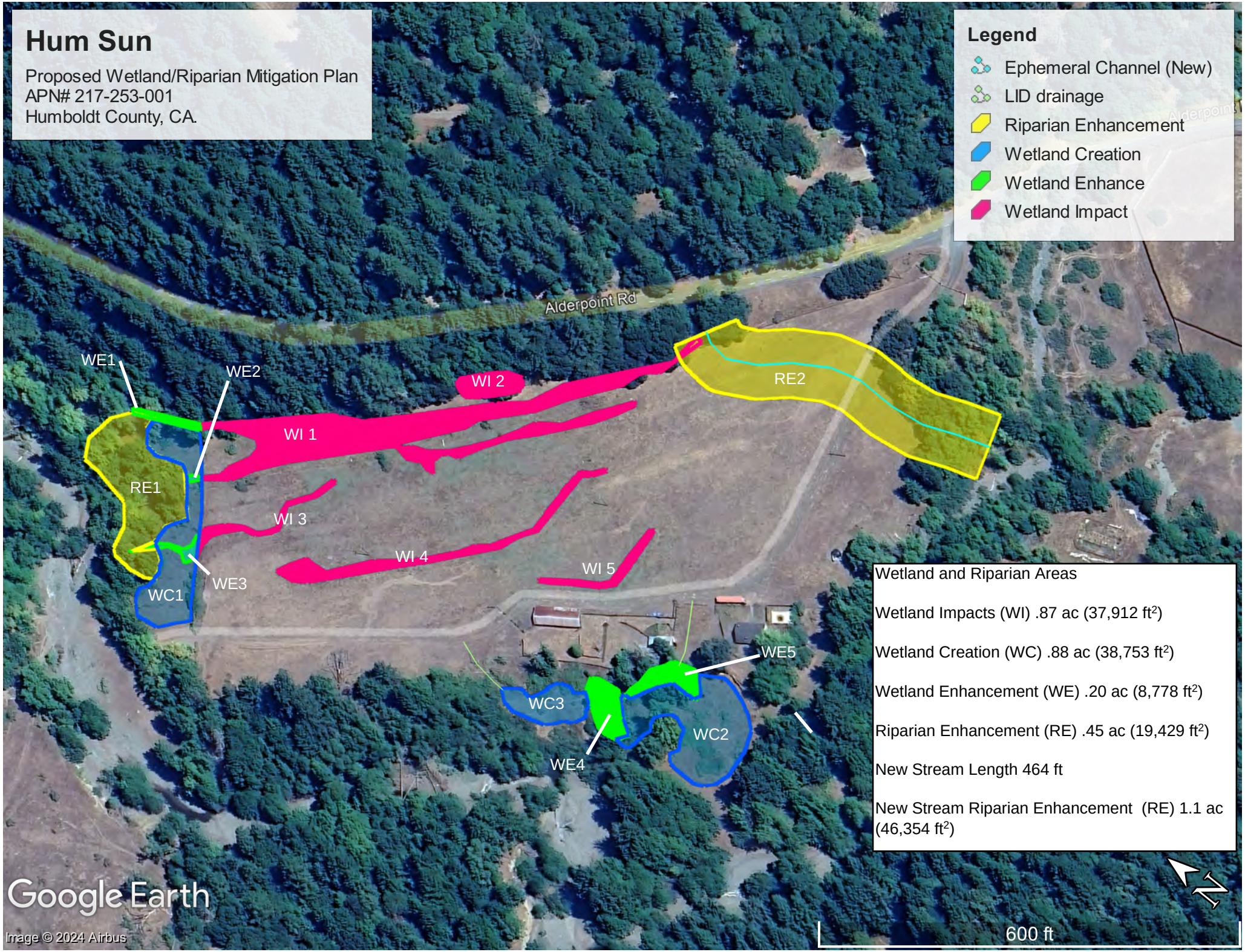
Please feel free to call with any questions.

James Regan



Botanist/Wetland Delineator
707-845-0821

Attachment C
Proposed Wetland/Riparian Mitigation Plan Map


Hum Sun
Proposed Wetland/Riparian Mitigation Plan
APN# 217-253-001
Humboldt County, CA.
Legend
Ephemeral Channel (New)
LID drainage
Riparian Enhancement
Wetland Creation
Wetland Enhance
Wetland Impact
Alderpoint Rd
WE1
WE2
WI 2
RE2
WI 1
RE1
WI 3
WI 4
WI 5
WE3
WC1
WE5
WC3
WC2
WE4
Wetland and Riparian Areas
Wetland Impacts (WI) .87 ac (37,912 ft²)
Wetland Creation (WC) .88 ac (38,753 ft²)
Wetland Enhancement (WE) .20 ac (8,778 ft²)
Riparian Enhancement (RE) .45 ac (19,429 ft²)
New Stream Length 464 ft
New Stream Riparian Enhancement (RE) 1.1 ac (46,354 ft²)
N
600 ft
Google Earth
Image © 2024 Airbus

Appendix 2T

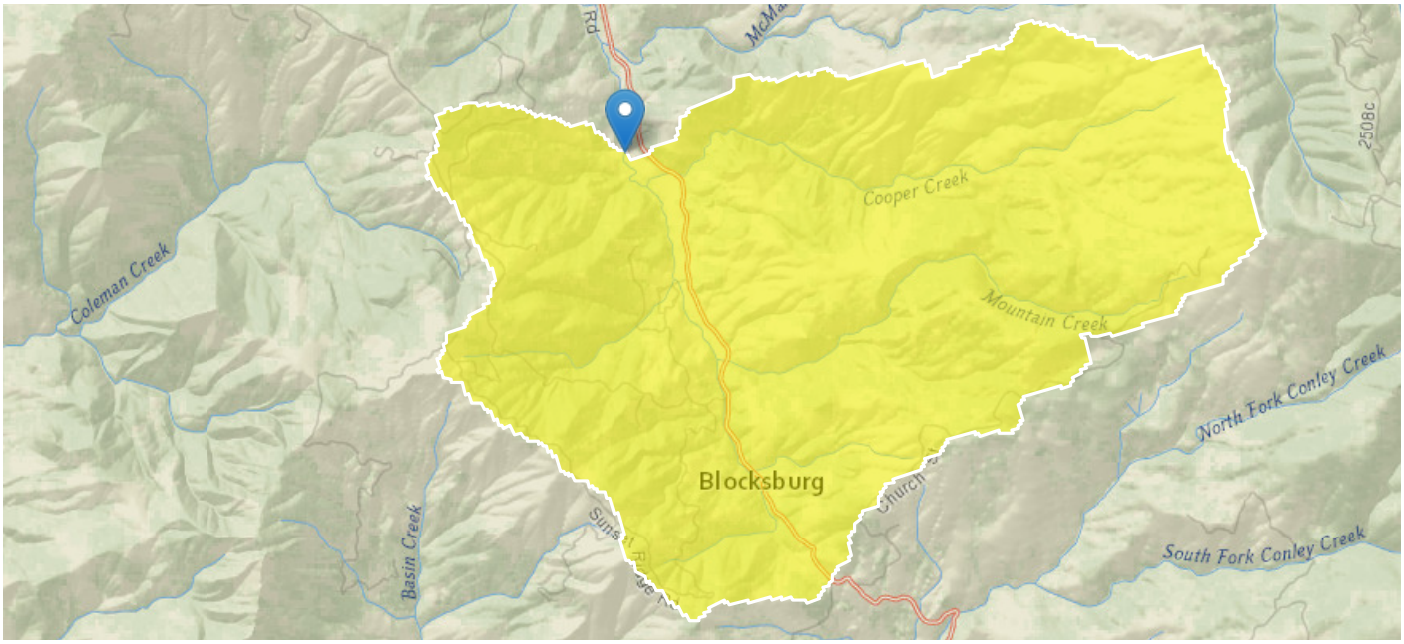
Phase I Cultural Resource Inventory Report for Hum Sun Ranch, LLC
(Confidential – On file with County)

Appendix 2U

StreamStats Report – Larabee Creek at HumSun

StreamStats Report - Larabee Creek @ HumSun

Region ID: CA
Workspace ID: CA20240827224410578000
Clicked Point (Latitude, Longitude): 40.31123, -123.66089
Time: 2024-08-27 15:44:37 -0700



Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
BASINPERIM	Perimeter of the drainage basin as defined in SIR 2004-5262	18.3	miles
BSLDEM30M	Mean basin slope computed from 30 m DEM	23.9	percent
CENTROXA83	X coordinate of the centroid, in NAD_1983_Albers, meters	-2296392.8	meters
CENTROYA83	Basin centroid horizontal (y) location in NAD 1983 Albers	2256955	meters
DRNAREA	Area that drains to a point on a stream	9.7	square miles
EL6000	Percent of area above 6000 ft	0	percent
ELEV	Mean Basin Elevation	2134	feet
ELEVMAX	Maximum basin elevation	4247	feet
FOREST	Percentage of area covered by forest	40.4	percent
JANMAXTMP	Mean Maximum January Temperature	51.34	degrees F
JANMINTMP	Mean Minimum January Temperature	35.37	degrees F
LAKEAREA	Percentage of Lakes and Ponds	0	percent
LC11DEV	Percentage of developed (urban) land from NLCD 2011 classes 21-24	0.8	percent

Parameter Code	Parameter Description	Value	Unit
LC11IMP	Average percentage of impervious area determined from NLCD 2011 impervious dataset	0	percent
LFPLENGTH	Length of longest flow path	5	miles
MINBELEV	Minimum basin elevation	1276	feet
OUTLETELEV	Elevation of the stream outlet in feet above NAVD88	1276	feet
PRECIP	Mean Annual Precipitation	64.3	inches
RELIEF	Maximum - minimum elevation	2972	feet
RELRELF	Basin relief divided by basin perimeter	162	feet per mi

Peak-Flow Statistics

Peak-Flow Statistics Parameters [2012 5113 Region 1 North Coast]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	9.7	square miles	0.04	3200
PRECIP	Mean Annual Precipitation	64.3	inches	20	125

Peak-Flow Statistics Flow Report [2012 5113 Region 1 North Coast]

PIL: Lower 90% Prediction Interval, PIU: Upper 90% Prediction Interval, ASEp: Average Standard Error of Prediction, SE: Standard Error, PC: Percent Correct (other -- see report)

Statistic	Value	Unit	PIL	PIU	ASEp
50-percent AEP flood	850	ft^3/s	349	2070	58.6
20-percent AEP flood	1510	ft^3/s	724	3150	47.4
10-percent AEP flood	1980	ft^3/s	985	3980	44.2
4-percent AEP flood	2590	ft^3/s	1330	5040	42.7
2-percent AEP flood	3040	ft^3/s	1560	5930	42.7
1-percent AEP flood	3510	ft^3/s	1760	7010	44.3
0.5-percent AEP flood	3950	ft^3/s	1970	7910	44.4
0.2-percent AEP flood	4540	ft^3/s	2220	9300	46

Peak-Flow Statistics Citations

Gotvald, A.J., Barth, N.A., Veilleux, A.G., and Parrett, Charles,2012, Methods for determining magnitude and frequency of floods in California, based on data through water year 2006: U.S. Geological Survey Scientific Investigations Report 2012–5113, 38 p., 1 pl. (http://pubs.usgs.gov/sir/2012/5113/)

Bankfull Statistics

Bankfull Statistics Parameters [Pacific Mountain System D Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	9.7	square miles	6.1776	8079.9147

Bankfull Statistics Parameters [Pacific Border P Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	9.7	square miles	6.169878	3938.976756

Bankfull Statistics Parameters [USA Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	9.7	square miles	0.07722	59927.7393

Bankfull Statistics Flow Report [Pacific Mountain System D Bieger 2015]

Statistic	Value	Unit
Bieger_D_channel_width	32.8	ft
Bieger_D_channel_depth	1.95	ft
Bieger_D_channel_cross_sectional_area	76.6	ft^2

Bankfull Statistics Flow Report [Pacific Border P Bieger 2015]

Statistic	Value	Unit
Bieger_P_channel_width	29.8	ft
Bieger_P_channel_cross_sectional_area	75.4	ft^2
Bieger_P_channel_depth	2	ft

Bankfull Statistics Flow Report [USA Bieger 2015]

Statistic	Value	Unit
Bieger_USA_channel_width	27.6	ft
Bieger_USA_channel_depth	1.96	ft
Bieger_USA_channel_cross_sectional_area	58.3	ft^2

Bankfull Statistics Flow Report [Area-Averaged]

Statistic	Value	Unit
Bieger_D_channel_width	32.8	ft
Bieger_D_channel_depth	1.95	ft
Bieger_D_channel_cross_sectional_area	76.6	ft^2
Bieger_P_channel_width	29.8	ft
Bieger_P_channel_cross_sectional_area	75.4	ft^2

Statistic	Value	Unit
Bieger_P_channel_depth	2	ft
Bieger_USA_channel_width	27.6	ft
Bieger_USA_channel_depth	1.96	ft
Bieger_USA_channel_cross_sectional_area	58.3	ft^2

Bankfull Statistics Citations

Bieger, Katrin; Rathjens, Hendrik; Allen, Peter M.; and Arnold, Jeffrey G.,2015, Development and Evaluation of Bankfull Hydraulic Geometry Relationships for the Physiographic Regions of the United States, Publications from USDA-ARS / UNL Faculty, 17p. (https://digitalcommons.unl.edu/usdaarsfacpub/1515?utm_source=digitalcommons.unl.edu%2Fusdaarsfacpub%2F1515&utm_medium=PDF&utm_campaign=PDFCoverPages)

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Application Version: 4.23.0
StreamStats Services Version: 1.2.22
NSS Services Version: 2.2.1

Appendix 2V

Hydrologic Isolation from Surface Waters, Well WCR2017-001709 APN: 217-052-001, 30885 Alderpoint Road, Blocksburg, California

LINDBERG GEOLOGIC CONSULTING
David N. Lindberg, CEG
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Received 9/26/2023 HCP&B

August 14, 2023 Project No: 0439.01

Hum Sun Ranch LLC
Mr. Alex Schmitt
65 Uranus Terrace
San Francisco, California 94114

Subject: Hydrologic Isolation from Surface Waters, Well WCR2017-001712
APN: 217-055-002, Alderpoint Road, Blocksburg, California

To Whom It May Concern:

As requested, Lindberg Geologic Consulting has assessed an existing permitted well on the above-referenced parcel to estimate its potential for hydrologic connectivity with any adjacent wells, wetlands, and or surface waters, and if pumping well WCR2017-001712 (-001712) might significantly impact such nearby wells, wetlands, and or surface waters. We estimate the elevation of this well to be 2,140 feet. The nearest surface waters in the vicinity of this well are a mapped spring to the south, and an unnamed ephemeral tributary of Larabee Creek to the north. An unnamed ephemeral tributary of Coleman Creek flows southwest, more than 2,300 feet southeast of well -001712 (Figure 1).

A California-Certified Engineering Geologist visited this site on August 1, 2023, to observe the subject well and local site conditions. Based on our research, observations, and our professional experience, it is our opinion that the subject well has a low likelihood of being hydrologically connected to surface waters in a manner that could affect adjacent wells, wetlands, or surface waters in the vicinity. We define the "vicinity" here as the area within a 1,000-foot radius of the subject well (Figure 1), a circle with an area of approximately 72 acres (Figures 1, and 3). The proposed use of this well is to irrigate cannabis. We are not aware of the volume of water to be extracted or the pumping schedule but expect that information will be provided by the applicant.

Based on the Humboldt County Assessor's Parcel Map (Figure 2), the subject parcel encompasses 396 acres. Our GPS located the subject well at latitude 40.3231° north, and longitude 123.69421 west (±9'). Well -001712 is in the southwest quarter of the northeast quarter of Section 2, T2S, R4E, and is 230 feet deep. The well is at an estimated elevation of 2,140 feet (Figure 1); the elevation of the bottom of the well is therefore 1,910 feet.

The USGS "Blocksburg, Calif." (1969), topographic map (Figure 1), and the Humboldt County WebGIS show one spring only within 1,000 feet of the well. The USGS mapped a spring approximately 865 feet south of well -001712, at an elevation of 2,000 feet. The uppermost mapped extent of an unnamed, northerly-flowing ephemeral tributary of Larabee Creek is more than 1,000 feet north of well -001712 at an elevation of 1,880 feet. More than 2,300 feet to the southeast, at an elevation of approximately 2,120 feet, the nearest ephemeral tributary of Coleman Creek flows

southwest. Based on the Humboldt County WebGIS and the USGS topographic map, well elevation was estimated to be 2,140 feet (Figure 1). Elevation of the ephemeral tributary of Larabee Creek to the north is 1,880 feet at its nearest point. The bottom elevation of the subject well is 1,910 feet, 30 feet higher than the nearest ephemeral tributary of Larabee Creek.

Well location is shown approximately on the attached figures, and was drilled by Fisch Drilling of Hydesville, in June 2017, under Humboldt County well permit #16/17-0865. Fisch is a licensed well-drilling contractor (C-57 #683865). Fisch submitted their well completion report (DWR 188) on June 19, 2017 (attached). The driller estimated a yield of 10 gallons per minute (gpm) on June 16, 2017, based on a 4-hour air lift pump test. Total drawdown during the pump test was 186 feet.

Again, the total drilled depth of this well is 230 feet. The borehole diameter from surface to total depth is ten inches. From the surface to 50 feet, a 5.563-inch diameter blank PVC casing was installed. From 50 feet to 2300 feet 5.563-inch slotted (0.032-inch milled slots) PVC well screen was installed. Per County requirements, a bentonite sanitary surface seal was installed from the surface to 20 feet. From 20 to 230 feet the annulus was filled with 3/8-inch pea gravel. The well is cased and sealed through any potential shallow subsurface aquifers in the uppermost 20 feet as required by regulation. Depth to first water was reported at 36 feet. Depth of static water in the completed, developed well was 44 feet when the driller conducted the pump test on June 16, 2017.

The nearest mapped spring is in Section 2, approximately 865 feet south of the subject well at elevation 2,000 feet, 30 feet higher than the bottom of the well screen. The next-nearest spring is approximately 2,100 feet west-northwest, in Section 2, at an estimated elevation of 2,080 feet. There are no other USGS-mapped springs within 5,000 feet of well -001712.

This parcel is located within California's Coast Range Geomorphic Province, in the Central Belt of the Franciscan Complex (McLaughlin et at., 2000), a seismically active region in which large earthquakes are expected to occur during the economic life span (70 years) of any developments on the subject property. Geologic mapping by McLaughlin et. al., (2000), shows that the site is underlain by mélange (cm1) of the Central Belt of the Franciscan Complex, as shown in Figure 4.

The United States Department of Agriculture (USDA) and the Natural Resources Conservation Service (NRCS) online Web Soil Survey describes the near-surface soils as gravelly loam to 16 inches below the surface, and very gravelly loam to a depth of 71 inches. We interpret the soils to be uniformly distributed across the portion of the subject parcel underlain by mélange on slopes of 15 to 30 percent. The Web Soil Survey estimates the depth of the water table to be more than 80 inches.

Materials reported on the geologic log of the driller's well completion report (attached) include 3 feet of "top soil". Below the top soil, 14 feet (3 to 17 feet) of "brown silty clay" was logged. From 17 to 21 feet "red clay" was logged, below which 10 feet (from 21 to 31 feet) of "large fractured brown sandstone" was encountered. From 31 to 62 feet the driller logged "red chirt" followed by 49 feet (62 to 111 feet) of "shale". From 111 to 118 feet "blue fractured sandstone" was logged. Below 118 feet, 3 feet of "red clay" was logged (118 to 121 feet). From 121 feet to 152 feet, the

driller logged 31 feet of "fractured shale", below which was 4 feet of "red clay" (152 to 156 feet). From 156 feet to 183 feet another 27 feet of "fractured shale" was recorded. Below the "fractured shale", from 183 to 223 feet, 40 feet of blue fractured sandstone was penetrated. In the final 7 feet (from 223 to 230 feet) the driller logged more "fractured shale". First water was encountered at a depth of 36 feet; the static water depth was 44 feet. Based on the driller's report the elevation of the first water-bearing unit was approximately 2,104 feet.

Below the surface, the earth materials encountered in the boring are likely mélange of the Central Belt Franciscan Complex, as mapped by McLaughlin et. al., (2000). Sheared, fractured, and folded metasedimentary rock materials can have variable hydraulic conductivity, but can also, under the right conditions, constitute significant aquifers. We interpret the lithologic sequence described by the driller to be within mélange (cm1) of the Franciscan Complex. Fractured and blue sections of the profile have some hydraulic conductivity, making these the primary water bearing units.

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

Based on observations, review of pertinent and available information, and our experience, it is our professional opinion that this well has a low potential of having any direct or significant connection to proximal surface waters. First water was reportedly encountered at 36 feet. This well is sealed with bentonite through the upper 20 feet of the section, sealing off water from any unconfined, near-surface aquifers which could enter the upper borehole.

When considered with the stratigraphy, and the underlying geologic structure, plus the distances (horizontal and vertically) from the nearest surface waters, and the depth of the producing zone of this well (44 to 230 feet), as well as the position of the well relative to the nearest surface waters in the vicinity, we conclude that the depth of the surface seal is sufficient to preclude the potential for hydraulic connectivity with perennial surface waters. No perennial surface watercourses are within 1,000 feet. The water source from which this well draws appears to be a subsurface aquifer not demonstrably connected to any surface waters or unconfined, near-surface aquifer(s). This well appears, in our professional opinion, likely to be hydraulically isolated from the nearby wells, surface waters, springs and wetlands.

According to the driller, the estimated yield of this well was 10 gpm on June 16, 2017. The drawdown was reported as 186-feet after Fisch Drilling 4-hour air-lift pump test. At 10 gpm, this well would potentially produce 14,400 gallons per day. As noted in the well completion report, this capacity may not be representative of this well's long-term yield. Additional drawdown and recovery testing would be necessary to estimate a sustainable long-term yield of the site well.

This subject well does not appear to be hydrologically connected to, or capable of influencing surface water flows in the ephemeral Larabee Creek or Coleman Creek tributaries. Nor does this well appear likely to be hydrologically connected to any springs, or ephemeral wetlands of which there appears to be only one. Given the horizontal distances, and the elevation differences between the subject well, and the surface waters of the nearest water bodies, the potential for significant hydrologic connectivity between surface water and groundwater in the Franciscan aquifer(s) appears unlikely.

We researched the California Department of Water Resources' database to find permitted wells within 1,000 feet of the subject well. Based on the information available at the present time, there is only one well (WCR2017-001679) that meets that criterion, and it is located approximately 700 feet southeast of the subject well on APN 217-055-002.

As groundwater mimics topography and responds to the force of gravity, in general any near surface unconfined aquifer will flow down slope in a direction subparallel to topography. The ground surface slopes primarily to the north; thus, the near surface unconfined aquifer flows northeast toward Larabee Creek and southwest toward the ephemeral tributary of Coleman Creek. When we visited, there was a solar-powered pump installed in the subject well.

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

The USDA-NRCS online Web Soil Survey shows the subject well within soils of the Burgsblock-Coolyork-Tannin complex, on slopes of 15 to 30 percent, (#451, Figure 7). The NRCS describes this as a well-drained soil. The Web Soil Survey's unit description is attached to this report. Mean annual precipitation is listed by the NRCS as between 49 to 90 inches per year. The capacity of the most limiting soil layer to transmit water (Ksat) is described as moderately high to high (0.20 to 2.00 in/hr) with a depth to the water table of greater than 80 inches.

If during the wet season, ten percent of the "low end" precipitation estimation of 49 inches is absorbed by the soils/bedrock and does not run off or be lost to evapotranspiration, then approximately 162 acre-feet, or more than 52 million gallons of water per year (MGPY), may be expected to recharge the local aquifers below the 396-acre subject property. Given the same amount of precipitation (49 inches) and the same 10 percent partitioned to recharge, then within the 1,000-foot radius of the subject well, recharge can be estimated to be more than 29 acre-feet, and 9.5 MGPY. Our estimates are conservative; USGS researchers estimate that in northwest California, approximately 33 percent of precipitation goes to recharge (Flint, et al., 2103).

On February 13, 2023, Governor Newsom signed Executive Order N-3-23 which, in part, extended a previous executive order (N-7-22) relating to the ongoing drought in California which the Governor had issued on March 28, 2022. In executive order N-7-22, the governor outlined measures the state will undertake to avoid and ameliorate the negative impacts of the current

drought. Among these measures, it was ordered that counties, cities, and other public agencies have been prohibited from approving permits for new groundwater wells (or alteration of existing wells) in basins "*subject to the Sustainable Groundwater Management Act and classified as medium- or high-priority without first obtaining written verification from a Groundwater Sustainability Agency managing the basin or area of the basin where the well is proposed*". This well is not within any basin subject to the Act, and there has been no Groundwater Sustainability Agency established with authority over the area where this permitted well is sited.

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

Based on our observations, research, and experience, it is our professional opinion that the well WCR2017-001712, near Blocksburg, has a low likelihood of being hydrologically connected to nearby surface waters or wells in a manner that might significantly have a negative impact or effect on proximal wetlands, wells, and or surface waters.

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

Sincerely,

David N. Lindberg, CEG
Lindberg Geologic Consulting

DNL:sll

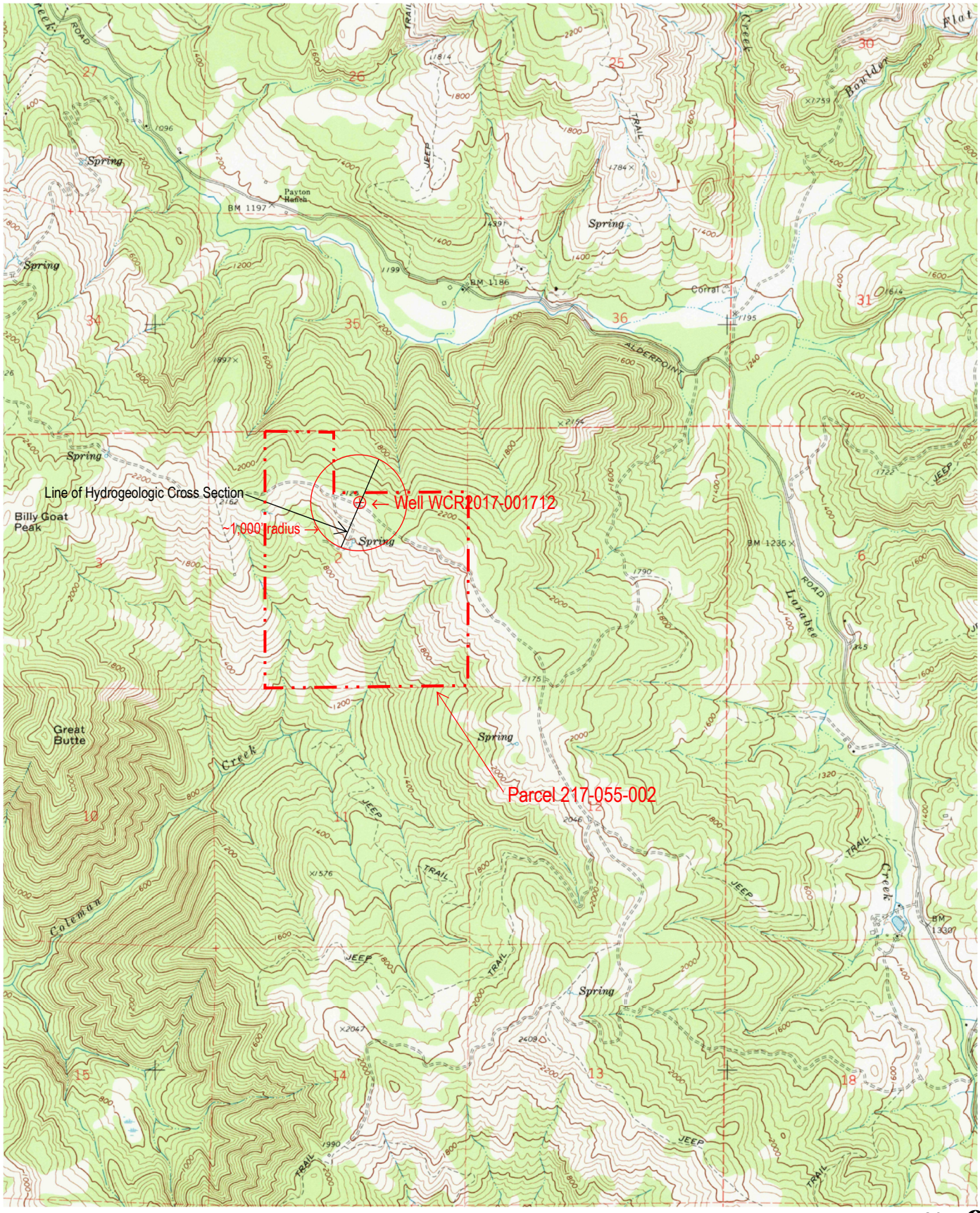
Attachments:
Figure 1: Topographic Well Location Map
Figure 2: Humboldt County Assessor's Parcel Map
Figure 3: Satellite Image of Well location
Figure 4: Geologic Map
Figure 4a: Geologic Map Explanation
Figure 5: Generalized Geologic Cross Section
Figure 6: Hydrogeologic Cross Section
Figure 7: USDA-NRCS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

State of California Well Completion Report:
WCR2017-001712, APN: 217-055-002 (Subject Well)
WCR2017-001679, APN: 217-055-002 (approximately 700 feet southeast of the subject well)

Web Soil Survey, NRCS Map Unit Description:
Burgsblock-Coolyork-Tannin complex, #451, 15 to 30 percent slopes.

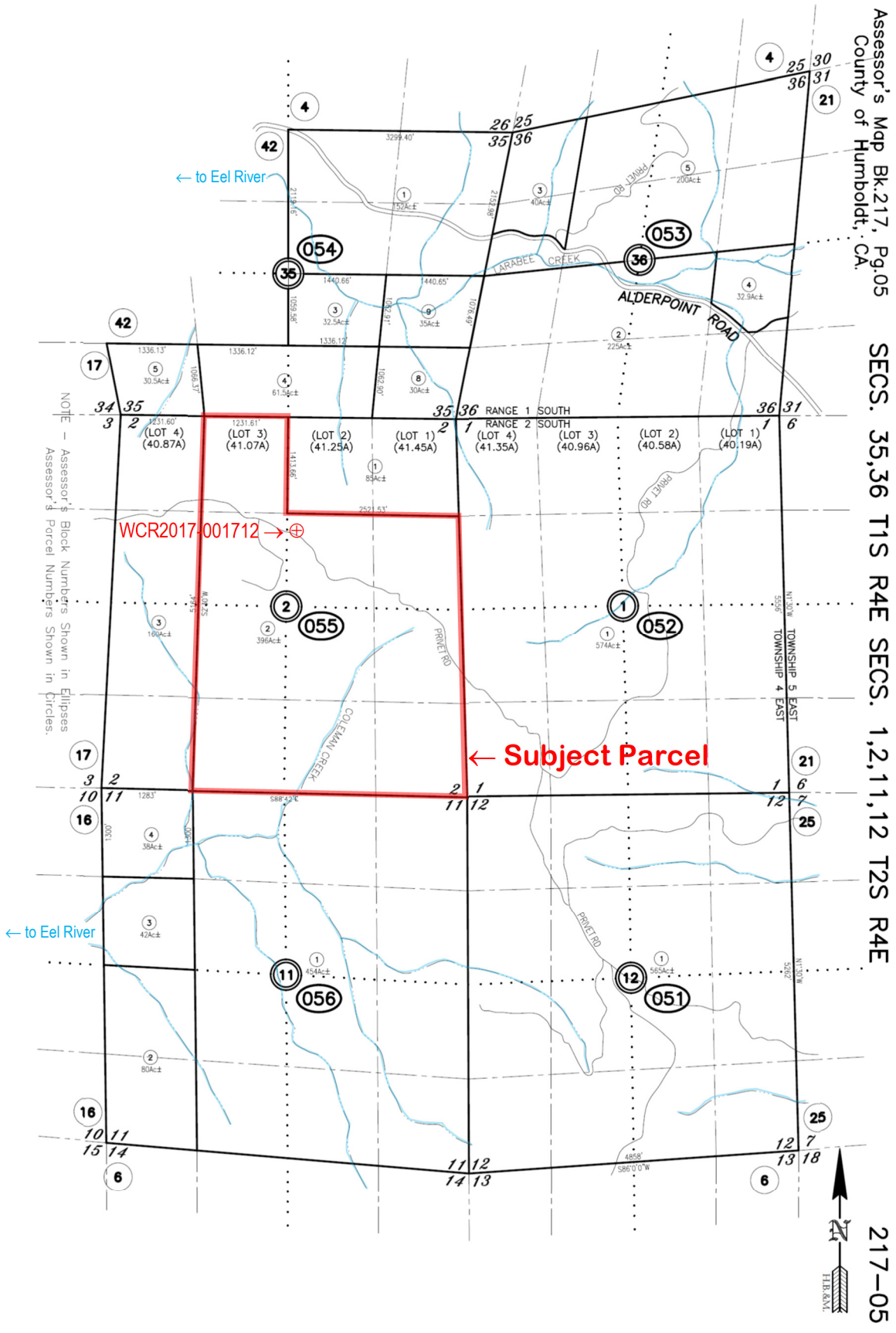
Reference:
Flint et al.: Fine-scale hydrologic modeling for regional landscape applications: the California Basin Characterization Model development and performance. Ecological Process, 2013, 2:25. (doi:10.1186/2192-1709-2-25)

Lindberg Geologic Consulting	Engineering-Geologic Well Connectivity Assessment Report	Figure 1
Post Office Box 306	30855 Alderpoint Road, Blocksburg, APN: 217-055-002	August 14, 2023
Cutten, CA 95534	Well WCR2017-001712, Hum Sun Ranch LLC, Mr. Alex Schmitt, Client	Project 0439.01
(707) 442-6000	Topographic Well-Site Location Map (all locations approximate)	1" ≈ 2,800'

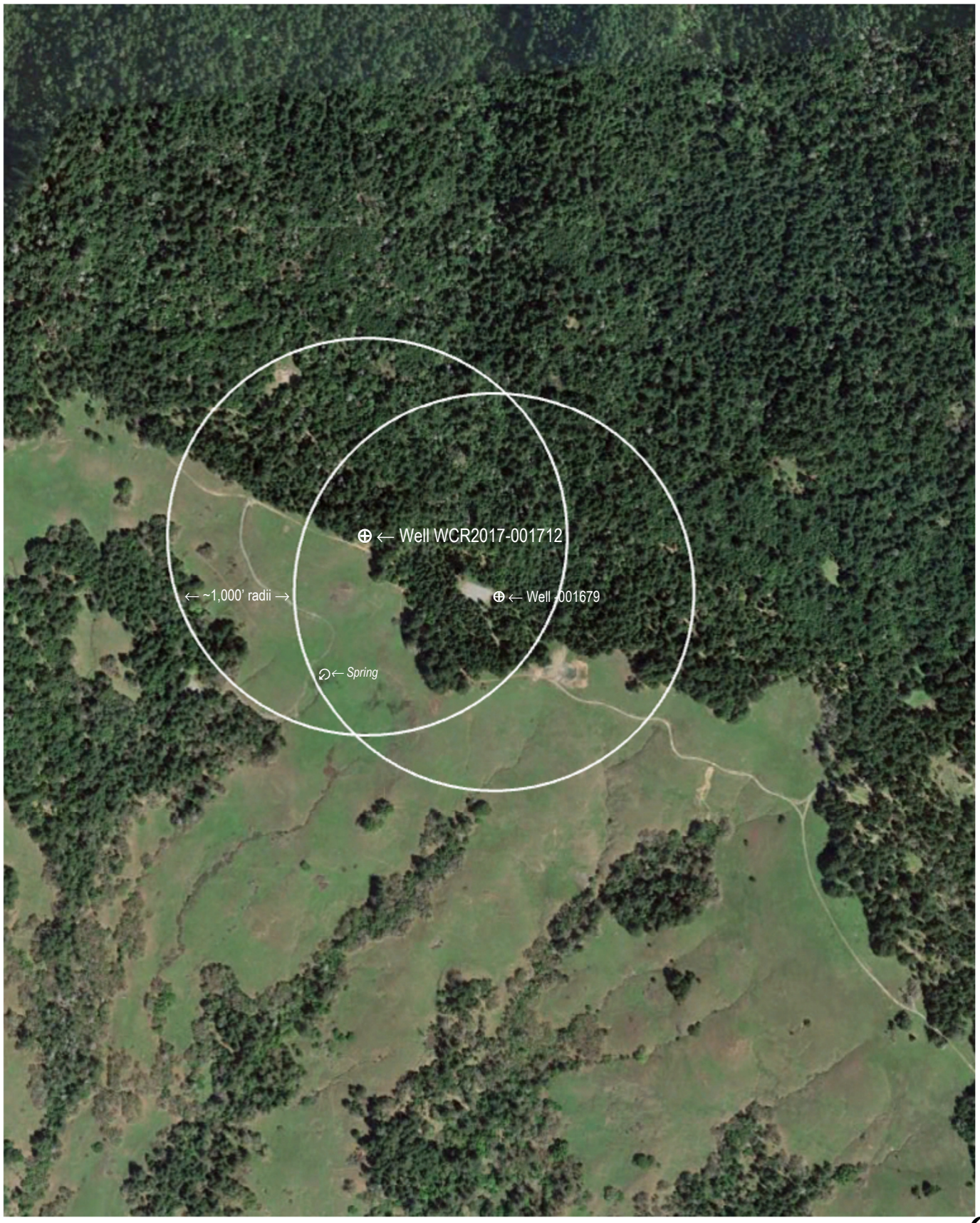


Modified from: "Blocksburg, Calif", 7.5" Topographic Quadrangle Map. 1969. N ≈

Lindberg Geologic Consulting	Engineering-Geologic Well Connectivity Assessment Report	Figure 2
Post Office Box 306	30855 Alderpoint Road, Blocksburg, APN: 217-055-002	August 14, 2023
Cutten, CA 95534	Well WCR2017-001712, Hum Sun Ranch LLC, Mr. Alex Schmitt, Client	Project 0439.01
(707) 442-6000	Humboldt County Assessor's Parcel Map (all locations approximate)	Scale as Shown

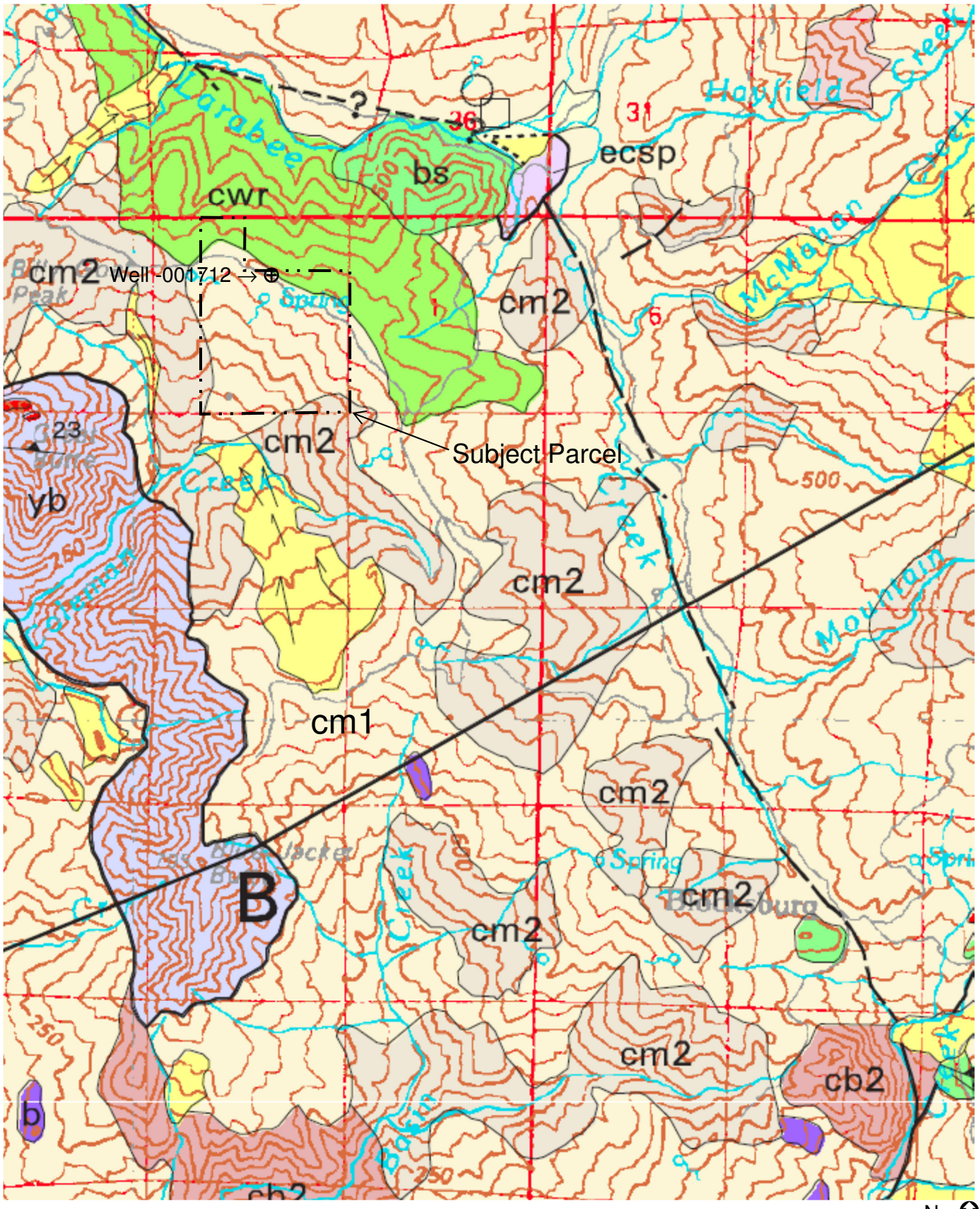


Lindberg Geologic Consulting	Engineering-Geologic Well Connectivity Assessment Report	Figure 3
Post Office Box 306	30855 Alderpoint Road, Blocksburg, APN: 217-055-002	August 14, 2023
Cutten, CA 95534	Well WCR2017-001712, Hum Sun Ranch LLC, Mr. Alex Schmitt, Client	Project 0439.01
(707) 442-6000	Satellite Image of Well Site Location (all locations approximate)	1" ≈ 680'



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

Lindberg Geologic Consulting	Engineering-Geologic Well Connectivity Assessment Report	Figure 4
Post Office Box 306	30855 Alderpoint Road, Blocksburg, APN: 217-055-002	August 14, 2023
Cutten, CA 95534	Well WCR2017-001712, Hum Sun Ranch LLC, Mr. Alex Schmitt, Client	Project 0439.01
(707) 442-6000	Geologic Map (all locations approximate)	1" ≈ 3,550'



Modified from: McLaughlin and Others, 2000. N ≈

Lindberg Geologic Consulting	Engineering-Geologic Well Connectivity Assessment Report	Figure 4a
P. O. Box 306	30855 Alderpoint Road, Blocksburg, APN: 217-055-002	August 14, 2023
Cutten, CA 95534	Well WCR2017-001712, Hum Sun Ranch LLC, Mr. Alex Schmitt, Client	Project 0439.01
(707) 442-6000	Geologic Map Explanation	No Scale

DESCRIPTION OF MAP UNITS

QUATERNARY AND TERTIARY OVERLAP DEPOSITS

- Qal — Alluvial deposits (Holocene and late Pleistocene?)
- Qm — Undeformed marine shoreline and aolian deposits (Holocene and late Pleistocene)
- Qt — Undifferentiated nonmarine terrace deposits (Holocene and Pleistocene)
- Qls — Landslide deposits (Holocene and Pleistocene)
- QTog — Older alluvium (Pleistocene and [or] Pliocene)
- QTw — Marine and nonmarine overlap deposits (late Pleistocene to middle Miocene)
- Ti — Volcanic rocks of Fickle Hill (Oligocene)

COAST RANGES PROVINCE

FRANCISCAN COMPLEX

-- Coastal Belt --

Coastal terrane(Pliocene to Late Cretaceous)

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

- co1 — Melange
- co2 — Melange
- co3 — Broken sandstone and argillite
- co4 — Intact sandstone and argillite
- cob — Basaltic Rocks (Late Cretaceous)
- cols — Limestone (Late Cretaceous)
- m — Undivided blueschist (Jurassic?)

King Range terrane (Miocene to Late Cretaceous)

- Krp — Igneous and sedimentary rocks of Point Delgada (Late Cretaceous)
- m — Undivided blueschist blocks (Jurassic?)

Sandstone and argillite of King Peak (middle Miocene to Paleocene[?]):

- krk1 — Melange and (or) folded argillite
- krk2 — Highly folded broken formation
- krk3 — Highly folded, largely unbroken rocks
- krl — Limestone
- krc — Chert
- krb — Basalt

False Cape terrane (Miocene? to Oligocene?)

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

Yager terrane (Eocene to Paleocene?)

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

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

-- Central belt --

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

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

- cm1 — Melange
- cm2 — Melange
- cb1 — Broken formation
- cb2 — Broken formation
- cwr — White Rock metasandstone of Jayko and others (1989) (Paleogene and [or] Late Cretaceous)
- chr — Haman Ridge graywacke of Jayko and others (1989) (Cretaceous?)
- cfs — Fort Seward metasandstone (age unknown)
- cls — Limestone (Late to Early Cretaceous)
- cc — Chert (Late Cretaceous to Early Jurassic)
- bs — Basaltic rocks (Cretaceous and Jurassic)
- m — Undivided blueschist blocks (Jurassic?)
- gs — Greenstone
- c — Metachert
- yb — Metasandstone of Yolla Bolly terrane, undivided
- b — Melange block, lithology unknown

-- Eastern Belt --

Pickett Peak terrane (Early Cretaceous or older)

Metasedimentary and metavolcanic rocks of the Pickett Peak terrane (Early Cretaceous or older):

- ppsm — South Fork Mountain Schist
- mb — Chinquapin Metabasalt Member (Irwin and others, 1974)
- ppv — Valentine Springs Formation
- mv — Metabasalt and minor metachert

Yolla Bolly terrane (Early Cretaceous to Middle Jurassic?)

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

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

Yolla Bolly terrane

- yb — Rocks of the Yolla Bolly terrane, undivided

GREAT VALLEY SEQUENCE AND COAST RANGE OPHIOLITE

Elder Creek(?) terrane

- ecms — Mudstone (Early Cretaceous)

Coast Range ophiolite (Middle and Late Jurassic):

- ecg — Layered gabbro
- ecsp — Serpentinite melange

Del Puerto(?) terrane

Rocks of the Del Puerto(?) terrane:

- dpms — Mudstone (Late Jurassic)

Coast Range ophiolite (Middle and Late Jurassic):

- dpt — Tuffaceous chert (Late Jurassic)
- dpb — Basaltic flows and keratophyric tuff (Jurassic?)
- dpd — Diabase (Jurassic?)
- dpsp — Serpentinite melange (Jurassic?)
- sp — Undivided Serpentinized peridotite (Jurassic?)

KLAMATH MOUNTAINS PROVINCE

Undivided Great Valley Sequence:

- Ks — Sedimentary rocks (Lower Cretaceous)

GREAT VALLEY SEQUENCE OVERLAP ASSEMBLAGE

Hayfork terrane

Eastern Hayfork subterrane:

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

Western Hayfork subterrane:

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

Rattlesnake Creek terrane

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

Western Klamath terrane

Smith River subterrane:

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

MAP SYMBOLS

- Contact
- Fault
- Thrust fault
- Trace of the San Andreas fault associated with 1906 earthquake rupture

Strike and dip of bedding:

- Inclined (10/20)
- Vertical
- Horizontal
- Overturned (10/20)
- Approximate (20)
- Joint (10)
- Strike and dip of cleavage (10)

Shear foliation:

- Inclined (10)
- Vertical

Folds:

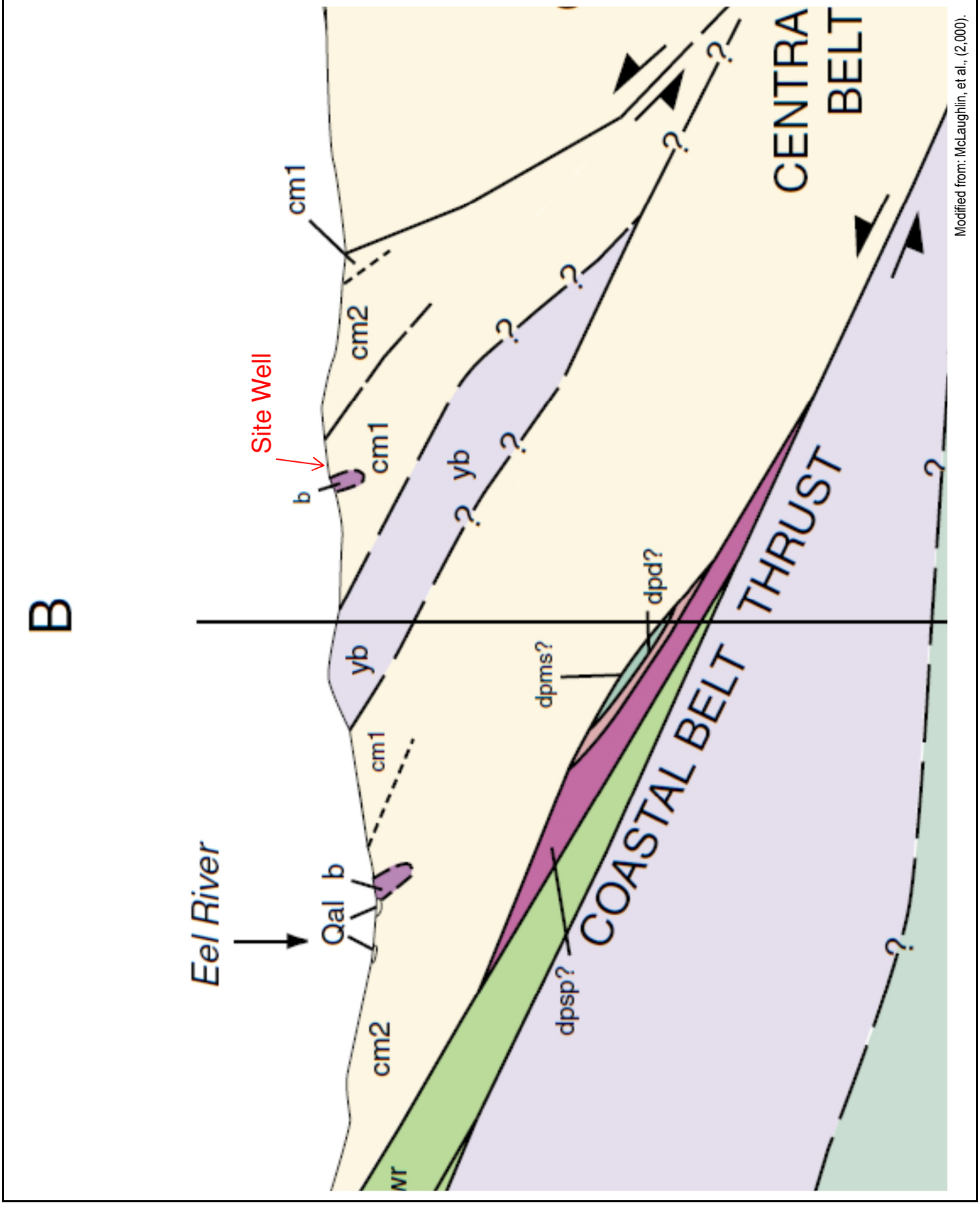
- Synclinal or synformal axis
- Anticlinal or antiformal axis
- Overturned syncline
- Landslide (Qls)

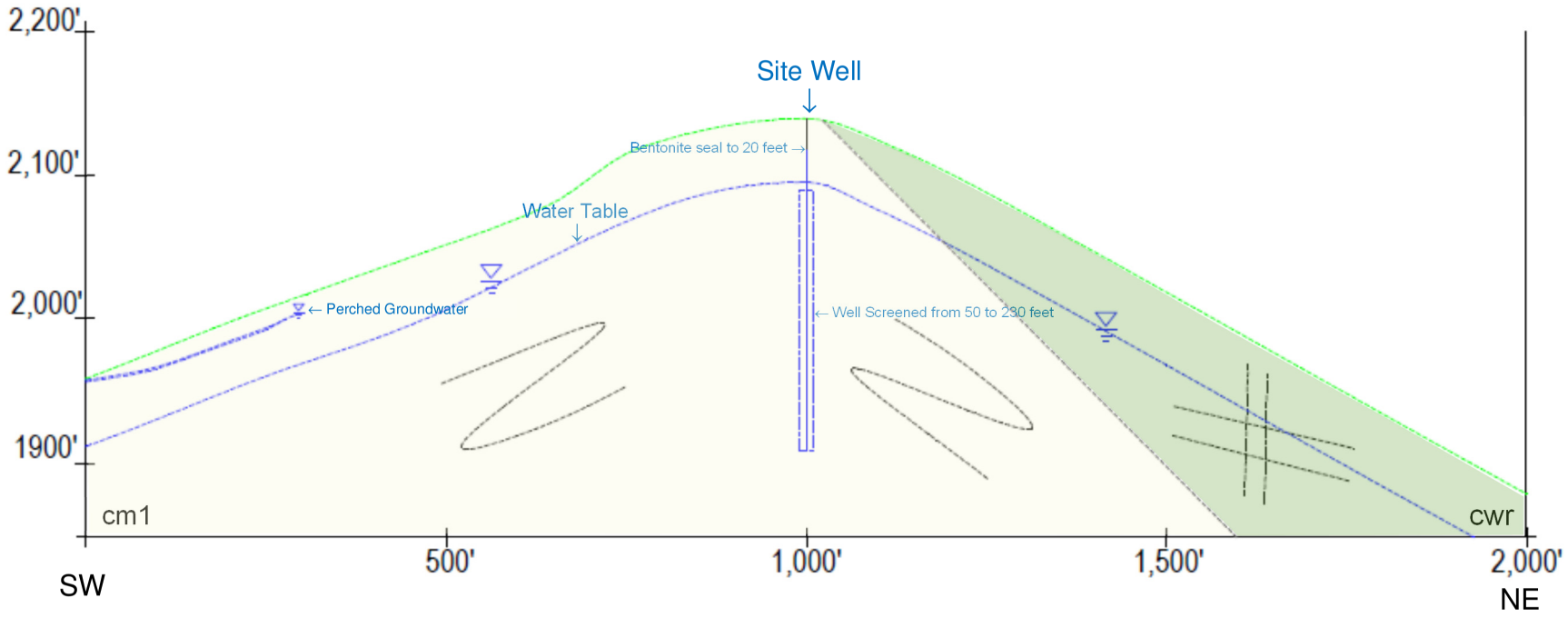
Melange Blocks:

- Serpentinite
- Chert
- Blueschist
- Greenstone
- Fossil locality and number (10)

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

Lindberg Geologic Consulting	Engineering-Geologic Well Connectivity Assessment Report	Figure 5
Post Office Box 306	30855 Alderpoint Road, Blocksburg, APN: 217-055-002	August 14, 2023
Cutten, CA 95534	Well WCR2017-001712, Hum Sun Ranch LLC, Mr. Alex Schmitt, Client	Project 0439.01
(707) 442-6000	Geologic Cross Section (locations approximate)	Not to Scale


B
Eel River
Qal
b
cm1
cm2
Site Well
b
cm1
yb
yb
cm1
cm2
dpms?
dpd?
dpsp?
COASTAL BELT THRUST
CENTRA
BELT
?
?
?



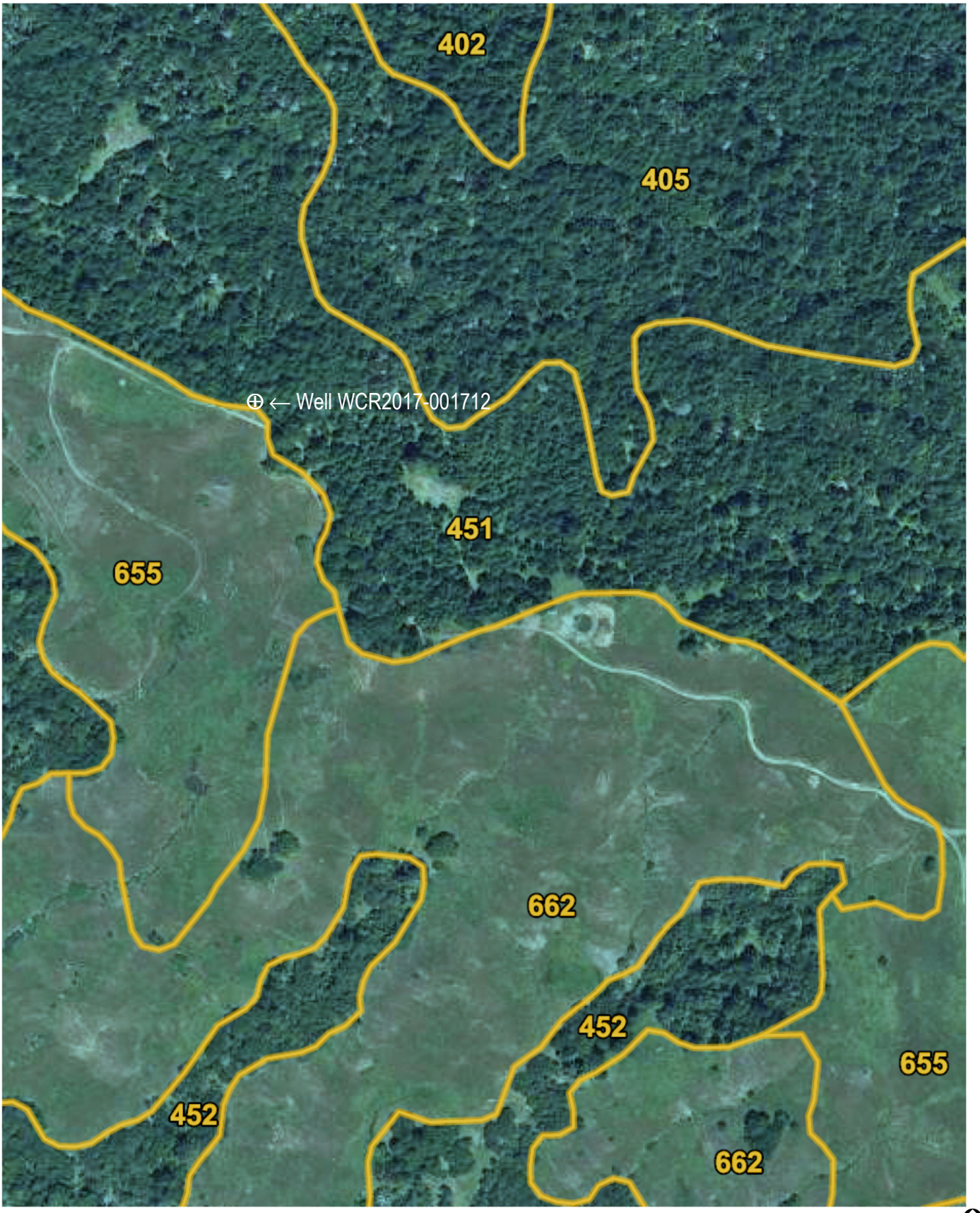
In this vertically exaggerated (~2x) cross section, the view is looking northwest along strike. Groundwater is presumed to flow from recharge areas on the ridge, toward the axis of the Eel River valley to the southwest, and the Larabee Creek valley to the northeast. In the northeastern part of the cross section, groundwater flows northeast toward the Larabee Creek in the White Rock sandstone (cwr). Bedrock subgrade in the area is, as mapped by McLaughlin et al. (2000), composed of Mélange (cm1) of the Central Belt of the Franciscan Complex, and White Rock sandstone (cwr). Mélange and sandstone are two of several lithologies identified within the Franciscan Complex. The bedrock units (cm1 & cwr) are overlain by thin gravelly surface soils below where the Site Well is located. Groundwater is envisioned as flowing through fractured zones in the cm1 and cwr. Fractures are interpreted to be the primary permeability, providing preferential flow paths for groundwater in this area. Note that this Site Well is sealed in the uppermost 20-foot section, and screened from 50 to 230 feet, and thus draws water from fractured sandstones and shales within the cm1 mélange unit and not from an unconfined near-surface aquifer(s). We attribute the mapped spring near the southwest end of the cross section as being fed by groundwater perched in a shallow subsurface aquifer of limited aerial extent.

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Engineering-Geologic Well Connectivity Assessment Report
30855 Alderpoint Road, Blocksburg, APN: 217-055-002
Well WCR2017-001712, Hum Sun Ranch LLC, Mr. Alex Schmitt, Client
Hydrogeologic Cross Section (all locations approximate)

Figure 6
August 14, 2023
Project 0439.01
2x V.E.

Lindberg Geologic Consulting	Engineering-Geologic Well Connectivity Assessment Report	Figure 7
Post Office Box 306	30855 Alderpoint Road, Blocksburg, APN: 217-055-002	August 14, 2023
Cutten, CA 95534	Well WCR2017-001712, Hum Sun Ranch LLC, Mr. Alex Schmitt, Client	Project 0439.01
(707) 442-6000	USDA – NRCS Soil Map (all locations approximate)	Scale not Determined



Modified from: USDA-NRCS Web Soil Survey, August 10, 2023. N ≈

State of California

Well Completion Report

WCR Form - DWR 188 Complete 06/23/2017

WCR2017-001712

Owner's Well Number 2 | Date Work Began 06/14/2017 | Date Work Ended 06/16/2017

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

Secondary Permit Agency | Permit Number 16/17-0865 | Permit Date 03/24/2017

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

Name XXXXXXXXXXXXXXXXXXX

Mailing Address XXXXXXXXXXXXXXXXXXX

XXXXXXXXXXXXXXXXXXX

City XXXXXXXXXXXXXXXXXXX State XX Zip XXXXX

Planned Use and Activity

Activity New Well

Planned Use Water Supply Domestic

Well Location

Address 30740 Alderpoint RD

City Blocksburg Zip 95514 County Humboldt

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

Dec. Lat. 40.3230450 Dec. Long. -123.6941630

Vertical Datum Horizontal Datum WGS84

Location Accuracy Location Determination Method

APN 217-055-002

Township 02 S

Range 04 E

Section 02

Baseline Meridian Humboldt

Ground Surface Elevation

Elevation Accuracy

Elevation Determination Method

Borehole Information

Orientation Vertical Specify

Drilling Method Direct Rotary Drilling Fluid Air

Total Depth of Boring 230 Feet

Total Depth of Completed Well 230 Feet

Water Level and Yield of Completed Wall

Depth to first water 36 (Feet below surface)

Depth to Static Water Level 44 (Feet) Date Measured 06/16/2017

Estimated Yield* 10 (GPM) Test Type Air Lift

Test Length 4 (Hours) Total Drawdown 186 (Feet)

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

Geologic Log - Free Form

Depth from Surface Feet	to Feet	Description
0	3	top soil
3	17	brown silty clay
17	21	red clay
21	31	large fractured brown sandstone
31	62	red chirt
62	111	shale
111	118	blue fractured sandstone
118	121	red clay
121	152	fractured shale
152	156	red clay
156	183	fractured shale
183	223	blue fractured sandstone
223	230	fractured shale

Casings

Casing #	Depth from Surface Feet	to Feet	Casing Type	Material	Casings Specifications	Wall Thickness (inches)	Outside Diameter (inches)	Screen Type	Slot Size if any (inches)	Description
1	0	50	Blank	PVC	OD: 5.563 in. | SDR: 21 | Thickness: 0.265 in.	0.265	5.563			

1	50	230	Screen	PVC	OD: 5.563 in. | SDR: 21 | Thickness: 0.265 in.	0.265	5.563	Milled Slots	0.032	

Annular Material

Depth from Surface Feet	to Feet	Fill	Fill Type Details	Filter Pack Size	Description
0	20	Bentonite	Other Bentonite		Sanitary Seal
20	230	Filter Pack	Other Gravel Pack	3/8 Inch	Pea Gravel

Other Observations:

Borehole Specifications

Depth from Surface Feet	to Feet	Borehole Diameter (inches)
0	230	10

Certification Statement

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

Name: FISCH DRILLING (Person, Firm or Corporation)

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

Signed: *electronic signature received* (C-57 Licensed Water Well Contractor) | 06/19/2017 (Date Signed) | 683865 (C-57 License Number)

Attachments

Scan.pdf - Location Map

WellReport_05222017_1_20170623_152053.pdf - WCR Final

DWR Use Only

Site Number / State Well Number

N — **Latitude Deg/Min/Sec**

W — **Longitude Deg/Min/Sec**

TRS:

APN:

State of California

Well Completion Report

WCR Form - DWR 188 Complete 08/14/2017

WCR2017-001697

Owner's Well Number 1 | Date Work Began 06/05/2017 | Date Work Ended 06/16/2017

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

Secondary Permit Agency | Permit Number 16/17-0864 | Permit Date 03/24/2017

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

Name XXXXXXXXXXXXXXXXXXX

Mailing Address XXXXXXXXXXXXXXXXXXX

XXXXXXXXXXXXXXXXXXX

City XXXXXXXXXXXXXXXXXXX | State XX | Zip XXXXX

Planned Use and Activity

Activity New Well

Planned Use Water Supply Irrigation - Agriculture

Well Location

Address 30740 Alderpoint RD

City Blocksburgq | Zip 95514 | County Humboldt

Latitude 40 Deg. 19 Min. 20.4635 Sec. N | Longitude -123 Deg. 41 Min. 31.1711 Sec. W

Dec. Lat. 40.3223510 | Dec. Long. -123.6919920

Vertical Datum | Horizontal Datum WGS84

Location Accuracy | Location Determination Method

APN 217-055-002

Township 02 S

Range 04 E

Section 02

Baseline Meridian Humboldt

Ground Surface Elevation

Elevation Accuracy

Elevation Determination Method

Borehole Information

Orientation Vertical | Specify

Drilling Method Other - UNDER-REAM DOWN-HOLE HAMMER | Drilling Fluid Air

Total Depth of Boring 200 Feet

Total Depth of Completed Well 200 Feet

Water Level and Yield of Completed Wall

Depth to first water 92 (Feet below surface)

Depth to Static Water Level 92 (Feet) | Date Measured 06/16/2017

Estimated Yield* 30 (GPM) | Test Type Air Lift

Test Length 4 (Hours) | Total Drawdown 108 (Feet)

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

Geologic Log - Free Form

Depth from Surface Feet to	Feet to	Description
0	3	TOP SOIL
3	86	BROWN FRACTURED SANDSTONE
86	112	BLUE FRACTURED SANDSTONE
112	136	RED CHIRT
136	168	BLUE SANDSTONE
168	171	SERPINTINE
171	188	RED CHIRT
188	200	SHALE

Casings

Casing #	Depth from Surface Feet to	Feet to	Casing Type	Material	Casings Specifications	Wall Thickness (inches)	Outside Diameter (inches)	Screen Type	Slot Size if any (inches)	Description
1	0	110	Blank	Low Carbon Steel	Grade: ASTM A53	0.188	6			
1	110	190	Screen	Low Carbon Steel	Grade: ASTM A53	0.188	6	Milled Slots	0.05	
1	190	200	Blank	Low Carbon Steel	Grade: ASTM A53	0.188	6			

Annular Material

Depth from Surface Feet to	Feet	Fill	Fill Type Details	Filter Pack Size	Description
0	20	Bentonite	Other Bentonite		Sanitary Seal
20	200	Filter Pack	Other Gravel Pack	3/8 Inch	Pea Gravel

Other Observations:

Borehole Specifications

Depth from Surface Feet to	Feet	Borehole Diameter (inches)
0	200	10

Certification Statement

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

Name: FISCH DRILLING (Person, Firm or Corporation)

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

Signed: *electronic signature received* (C-57 Licensed Water Well Contractor) | 06/16/2017 (Date Signed) | 683865 (C-57 License Number)

Attachments

Scan.pdf - Location Map

WellReport_05222017_1_20170814_155420.pdf - WCR Final

DWR Use Only

Site Number / State Well Number

Latitude Deg/Min/Sec N

Longitude Deg/Min/Sec W

TRS:

APN:

Humboldt County, South Part, California

451—Burgsblock-Coolyork-Tannin complex, 15 to 30 percent slopes

Map Unit Setting

National map unit symbol: hs7j
Elevation: 200 to 4,000 feet
Mean annual precipitation: 49 to 90 inches
Mean annual air temperature: 52 to 59 degrees F
Frost-free period: 240 to 280 days
Farmland classification: Not prime farmland

Map Unit Composition

Burgsblock and similar soils: 35 percent
Coolyork and similar soils: 30 percent
Tannin and similar soils: 20 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Burgsblock

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Center third of mountainflank
Down-slope shape: Concave, convex, linear
Across-slope shape: Linear, concave, convex
Parent material: Colluvium derived from sedimentary rock and/or residuum weathered from sedimentary rock

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A1 - 2 to 11 inches: gravelly loam
A2 - 11 to 16 inches: gravelly loam
Bt1 - 16 to 41 inches: very gravelly loam
Bt2 - 41 to 51 inches: very gravelly loam
Bt3 - 51 to 71 inches: very gravelly loam

Properties and qualities

Slope: 15 to 30 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 6.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: F005XZ022CA - Mesic Mountains >60"ppt
Hydric soil rating: No

Description of Coolyork

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Center third of mountainflank
Down-slope shape: Concave, convex, linear
Across-slope shape: Linear, concave, convex
Parent material: Colluvium derived from mudstone and/or colluvium derived from sandstone and/or residuum weathered from schist

Typical profile

A - 0 to 4 inches: loam
BAt - 4 to 14 inches: clay loam
Bt1 - 14 to 23 inches: clay loam
Bt2 - 23 to 43 inches: clay loam
C1 - 43 to 55 inches: gravelly loam
C2 - 55 to 71 inches: gravelly silt loam

Properties and qualities

Slope: 15 to 30 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)
Depth to water table: About 20 to 39 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 1 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 8.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: F005XZ020CA - Very Deep Mesic Mountains 40-60"ppt

Hydric soil rating: No

Description of Tannin

Setting

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

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 3 inches: loam
Bt1 - 3 to 14 inches: loam
Bt2 - 14 to 26 inches: loam
Bt3 - 26 to 49 inches: loam
Bt4 - 49 to 62 inches: sandy clay loam
BCt - 62 to 79 inches: sandy clay loam

Properties and qualities

Slope: 15 to 30 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: F005XZ022CA - Mesic Mountains >60"ppt
Hydric soil rating: No

Minor Components

Rockyglen

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

Wohly

Percent of map unit: 4 percent
Landform: Ridges, mountain slopes
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Mountaintop
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Chalkmountain

Percent of map unit: 3 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Concave, convex, linear
Across-slope shape: Linear, concave, convex
Hydric soil rating: No

Yorknorth

Percent of map unit: 2 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Hydric soil rating: No

Rock outcrop

Percent of map unit: 1 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Center third of mountainflank
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Data Source Information

Soil Survey Area: Humboldt County, South Part, California
Survey Area Data: Version 12, Sep 2, 2022

Appendix 2W

Hydrologic Isolation from Surface Waters, Well WCR2017-001697 APN: 217-055-002, Alderpoint Road, Blocksburg, California

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

Received 9/26/2023 HCP&B

August 12, 2023 Project No: 0439.01

Hum Sun Ranch LLC
Mr. Alex Schmitt
65 Uranus Terrace
San Francisco, California 94114

Subject: Hydrologic Isolation from Surface Waters, Well WCR2017-001697
APN: 217-055-002, Alderpoint Road, Blocksburg, California

To Whom It May Concern:

As requested, Lindberg Geologic Consulting has assessed an existing permitted well on the above-referenced parcel to estimate its potential for hydrologic connectivity with any adjacent wells, wetlands, and or surface waters, and if pumping well WCR2017-001697 (-001697) might significantly impact such nearby wells, wetlands, and or surface waters. We estimate the elevation of this well to be 2,170 feet. The nearest surface waters in the vicinity of this well are a pond, a mapped spring, and an unnamed ephemeral tributary of Larabee Creek, more than 980 feet to the north. An unnamed ephemeral tributary of Coleman Creek flows southwest, more than 1,600 feet southeast of well -001697 (Figure 1).

A California-Certified Engineering Geologist visited this site on August 1, 2023, to observe the subject well and local site conditions. Based on our research, observations, and our professional experience, it is our opinion that the subject well has a low likelihood of being hydrologically connected to surface waters in a manner that could affect adjacent wells, wetlands, or surface waters in the vicinity. We define the "vicinity" here as the area within a 1,000-foot radius of the subject well (Figure 1), a circle with an area of approximately 72 acres (Figures 1, and 3). The proposed use of this well is to irrigate cannabis. We are not aware of the volume of water to be extracted or the pumping schedule but expect that information will be provided by the applicant.

Based on the Humboldt County Assessor's Parcel Map (Figure 2), the subject parcel encompasses 396 acres. Our GPS located the subject well at latitude 40.32231° north, and longitude 123.69192 west (±9'). Well -001697 is in the southwest quarter of the northeast quarter of Section 2, T2S, R4E, and is 200 feet deep. The well is at an estimated elevation of 2,170 feet (Figure 1); the elevation of the bottom of the well is therefore 1,970 feet.

The USGS "Blocksburg, Calif." (1969), topographic map (Figure 1), and the Humboldt County WebGIS show the pond, one spring, and an ephemeral tributary of Larabee Creek to be within 1,000 feet of the well. More than 500 feet southeast of the well there is a small (<2,000 ft^2) pond in a borrow pit. The USGS mapped a spring approximately 740 feet southwest of well -001697, at an elevation of 2,000 feet. The uppermost mapped extent of an unnamed, northerly-flowing ephemeral tributary of Larabee Creek is more than 980 feet north of well -001697 at an elevation

of 1,880 feet. More than 1,600 feet to the southeast, at an elevation of approximately 2,120 feet, the nearest ephemeral tributary of Coleman Creek flows southwest. Based on the Humboldt County WebGIS and the USGS topographic map, well elevation was estimated to be 2,170 feet (Figure 1). Elevation of the ephemeral tributary of Larabee Creek to the north is 1,880 feet at its nearest point. The bottom elevation of the subject well is 1,970 feet, 90 feet higher than the nearest ephemeral tributary of Larabee Creek.

Well location is shown approximately on the attached figures, and was drilled by Fisch Drilling of Hydesville, in June 2017, under Humboldt County well permit #16/17-0864. Fisch is a licensed well-drilling contractor (C-57 #683865). Fisch submitted their well completion report (DWR 188) on June 16, 2017 (attached). The driller estimated a yield of 30 gallons per minute (gpm) on June 16, 2017, based on a 4-hour air lift pump test. Total drawdown during the pump test was 108-feet.

Again, the total drilled depth of this well is 200 feet. The borehole diameter from surface to total depth is ten inches. From the surface to 110 feet, a 6-inch diameter blank low carbon steel casing was installed. From 110 feet to 190 feet 6-inch slotted (0.05-inch slots) low carbon steel well screen was installed. From 190 feet to 200 feet a 6-inch blank low carbon steel casing was installed. Per County requirements, a bentonite sanitary surface seal was installed from the surface to 20 feet. From 20 to 200 feet the annulus was filled with 3/8-inch pea gravel. The well is cased and sealed through any potential shallow subsurface aquifers in the uppermost 20 feet as required by regulation. Depth to first water was reported at 92 feet. Depth of static water in the completed, developed well was also 92 feet when the driller conducted the pump test on June 16, 2017.

The pond located 560 feet southeast of the well has a surface area of less than 2,000 square feet (0.04 ac) and formed in the depression left when some rock was extracted. The nearest mapped spring is in Section 2, approximately 740 feet southwest of the subject well at elevation 2,000 feet, 40 feet higher than the bottom of the well screen. The next-nearest spring is approximately 2,700 feet west-northwest, in Section 2, at an estimated elevation of 2,080 feet. There are no other USGS-mapped springs within 4,000 feet of well -001697.

This parcel is located within California's Coast Range Geomorphic Province, in the Central Belt of the Franciscan Complex (McLaughlin et at., 2000), a seismically active region in which large earthquakes are expected to occur during the economic life span (70 years) of any developments on the subject property. Geologic mapping by McLaughlin et. al., (2000), shows that the site is underlain by mélange (cm1) of the Central Belt of the Franciscan Complex, as shown in Figure 4.

The United States Department of Agriculture (USDA) and Natural Resources Conservation Service (NRCS) online Web Soil Survey describes the near-surface soils as consisting of gravelly loam to 16 inches below the surface, and very gravelly loam to a depth of 71 inches. Soils are interpreted to be uniformly distributed across that portion of the subject parcel underlain by mélange on slopes of 15 to 30 percent. The depth of the water table is estimated to be more than 80 inches.

Materials reported on the geologic log of the driller's well completion report (attached) include 3 feet of "top soil". Below the top soil, 83 feet (3 to 86 feet) of "brown fractured sandstone" was logged. From 86 to 112 feet "blue fractured sandstone" was logged, below which 24 feet (from 112 to 136 feet) of "red chirt" was encountered. From 136 to 168 feet the driller logged "blue sandstone" followed by 3 feet (168 to171 feet) of "serpintine". From 171 to 188 feet "red chirt" was again logged. In the final 12 feet (from 188 to 200 feet) the driller logged "shale". First water was encountered at a depth of 92 feet. Based on the driller's report the elevation of the first water-bearing unit is approximately 2,078 feet.

Below the surface, the earth materials encountered in the boring are likely mélange of the Central Belt Franciscan Complex, as mapped by McLaughlin et. al., (2000). Sheared, fractured, and folded metasedimentary rock materials can have variable hydraulic conductivity, but can also, under the right conditions, constitute significant aquifers. We interpret the lithologic sequence described by the driller to be within mélange (cm1) of the Franciscan Complex. Fractured and blue sections of the profile have some hydraulic conductivity, making these the primary water bearing units.

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

Based on observations, review of pertinent and available information, and our experience, it is our professional opinion that this well has a low potential of having any direct or significant connection to proximal surface waters. First water was reportedly encountered at 92 feet. This well is sealed through the upper 20 feet, through any potential unconfined, near-surface aquifers with which it might potentially communicate hydraulically through the borehole.

When considered with the stratigraphy, and the underlying geologic structure, plus the distances (horizontal and vertically) from the nearest surface waters, and the depth of the producing zone of this well (92 to 190 feet), as well as the position of the well relative to the nearest surface waters in the vicinity, we conclude that the depth of the surface seal is sufficient to preclude the potential for hydraulic connectivity with perennial surface waters. No perennial surface watercourses are within 1,000 feet. The water source from which this well draws appears to be a subsurface aquifer not demonstrably connected to any surface waters or unconfined, near-surface aquifer(s). This well appears, in our professional opinion, likely to be hydraulically isolated from the nearby wells, surface waters, springs and wetlands.

According to the driller, the estimated yield of this well was 30 gpm on June 16, 2017. The drawdown was reported as 108-feet after Fisch Drilling 4-hour air-lift pump test. At 30 gpm, this well would potentially produce 43,200 gallons per day. As noted in the well completion report,

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

This subject well does not appear to be hydrologically connected to, or capable of influencing surface water flows in the ephemeral Larabee Creek or Coleman Creek tributaries. Nor does this well appear likely to be hydrologically connected to any springs, or ephemeral wetlands of which there appears to be only one. Given the horizontal distances, and the elevation differences between the subject well, and the surface waters of the nearest water bodies, the potential for significant hydrologic connectivity between surface water and groundwater in the Franciscan aquifer(s) appears unlikely.

We researched the California Department of Water Resources' database to find permitted wells within 1,000 feet of the subject well. Based on the information available at the present time, there is only one well (WCR2017-001712) that meets that criterion, and it is located approximately 700 feet from the subject well on APN 217-055-002.

As groundwater mimics topography and responds to the force of gravity, in general any near surface unconfined aquifer will flow down slope in a direction subparallel to topography. The ground surface slopes primarily to the north; thus, the near surface unconfined aquifer flows northeast toward Larabee Creek and southwest toward the ephemeral tributary of Coleman Creek. When we visited, there was a solar-powered pump installed in the subject well.

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

The USDA-NRCS online Web Soil Survey shows the subject well within soils of the Burgsblock-Coolyork-Tannin complex, on slopes of 15 to 30 percent, (#451, Figure 7). The NRCS describes this as a well-drained soil. The Web Soil Survey's unit description is attached to this report. Mean annual precipitation is listed by the NRCS as between 49 to 90 inches per year. The capacity of the most limiting soil layer to transmit water (Ksat) is described as moderately high to high (0.20 to 2.00 in/hr) with a depth to the water table of greater than 80 inches.

If during the wet season, ten percent of the "low end" precipitation estimation of 49 inches is absorbed by the soils/bedrock and does not run off or be lost to evapotranspiration, then approximately 162 acre-feet, or more than 52 million gallons of water per year (MGPY), may be expected to recharge the local aquifers below the 396-acre subject property. Given the same amount of precipitation (49") and the same 10 percent partitioned to recharge, then within the 1,000-foot radius of the subject well, recharge can be estimated to be more than 29 acre-feet, and 9.5 MGPY. Our estimates are conservative; USGS researchers estimate that in northwest California, approximately 33 percent of precipitation goes to recharge (Flint, et al., 2103).

On February 13, 2023, Governor Newsom signed Executive Order N-3-23 which, in part, extended a previous executive order (N-7-22) relating to the ongoing drought in California which the Governor had issued on March 28, 2022. In executive order N-7-22, the governor outlined measures the state will undertake to avoid and ameliorate the negative impacts of the current drought. Among these measures, it was ordered that counties, cities, and other public agencies have been prohibited from approving permits for new groundwater wells (or alteration of existing wells) in basins "*subject to the Sustainable Groundwater Management Act and classified as medium- or high-priority without first obtaining written verification from a Groundwater Sustainability Agency managing the basin or area of the basin where the well is proposed*". This well is not within any basin subject to the Act, and there has been no Groundwater Sustainability Agency established with authority over the area where this permitted well is sited.

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

Based on our observations, research, and experience, it is our professional opinion that the well WCR2017-001697, near Blocksburg, has a low likelihood of being hydrologically connected to nearby surface waters or wells in a manner that might significantly have a negative impact or effect on proximal wetlands, wells, and or surface waters.

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

Sincerely,

David N. Lindberg, CEG
Lindberg Geologic Consulting

DNL:sll

Attachments:
Figure 1: Topographic Well Location Map
Figure 2: Humboldt County Assessor's Parcel Map
Figure 3: Satellite Image of Well location
Figure 4: Geologic Map
Figure 4a: Geologic Map Explanation
Figure 5: Generalized Geologic Cross Section

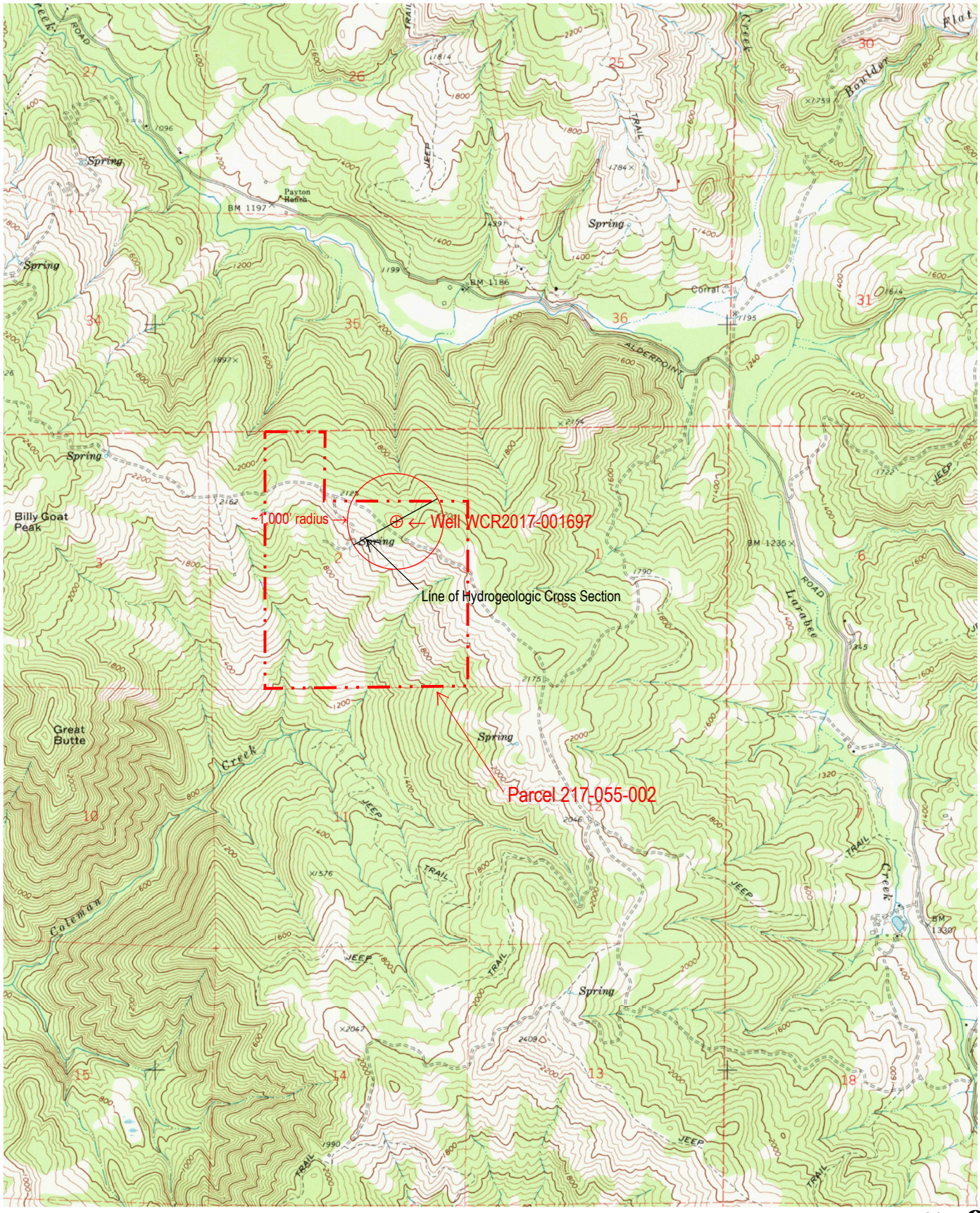
Figure 6: Hydrogeologic Cross Section
Figure 7: USDA-NRCS Soils Map

State of California Well Completion Report:
WCR2017-001697, APN: 217-055-002 (Subject Well)
WCR2017-001712, APN: 217-055-002 (approximately 700 feet northwest of the subject well)

Web Soil Survey, NRCS Map Unit Description:
Burgsblock-Coolyork-Tannin complex, #451, 15 to 30 percent slopes.

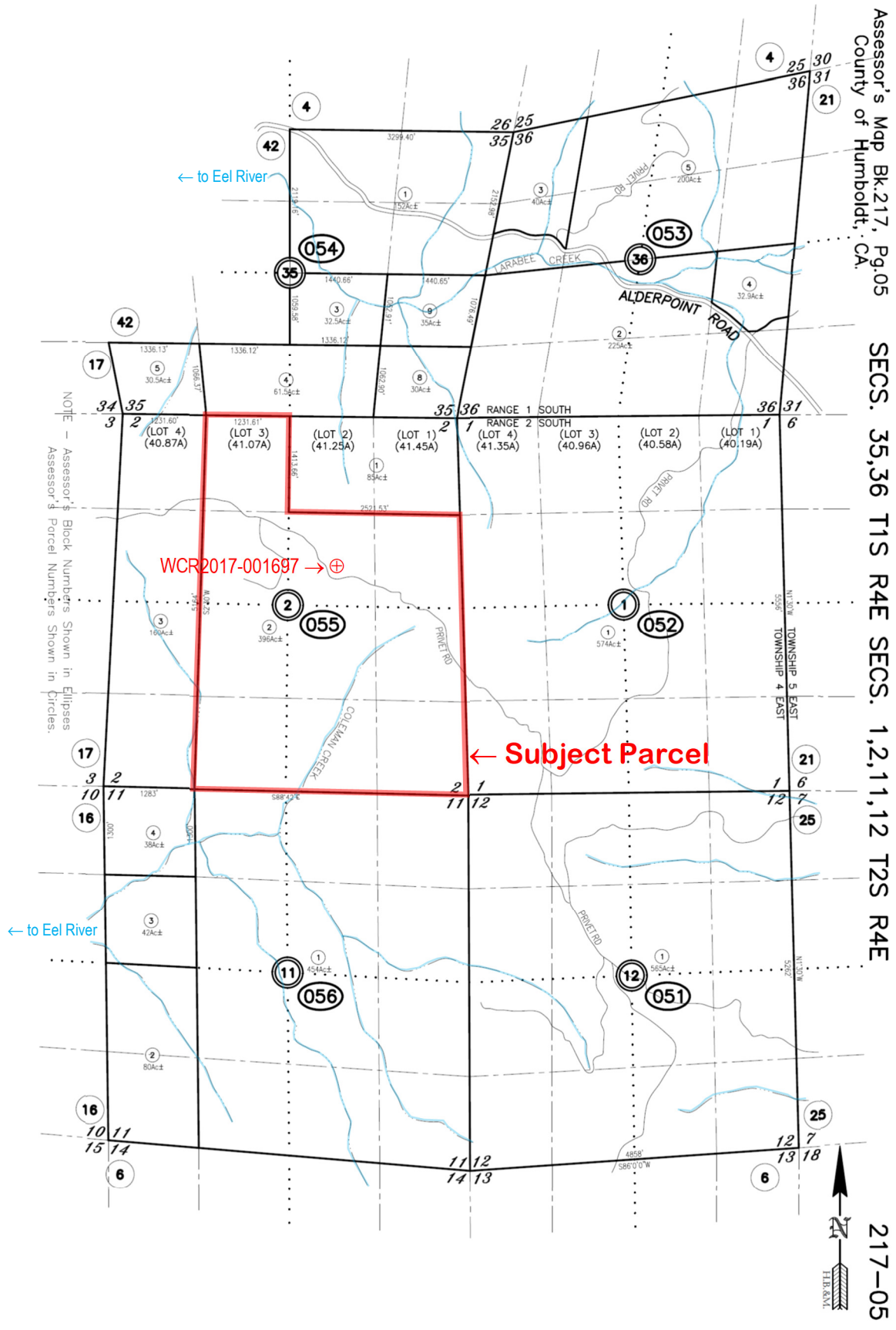
Reference:
Flint et al.: Fine-scale hydrologic modeling for regional landscape applications: the California Basin Characterization Model development and performance. Ecological Process, 2013, 2:25. (doi:10.1186/2192-1709-2-25)

Lindberg Geologic Consulting	Engineering-Geologic Well Connectivity Assessment Report	Figure 1
Post Office Box 306	30855 Alderpoint Road, Blocksburg, APN: 217-055-002	August 12, 2023
Cutten, CA 95534	Well WCR2017-001697, Hum Sun Ranch LLC, Mr. Alex Schmitt, Client	Project 0439.01
(707) 442-6000	Topographic Well-Site Location Map (all locations approximate)	1" ≈ 2,800'

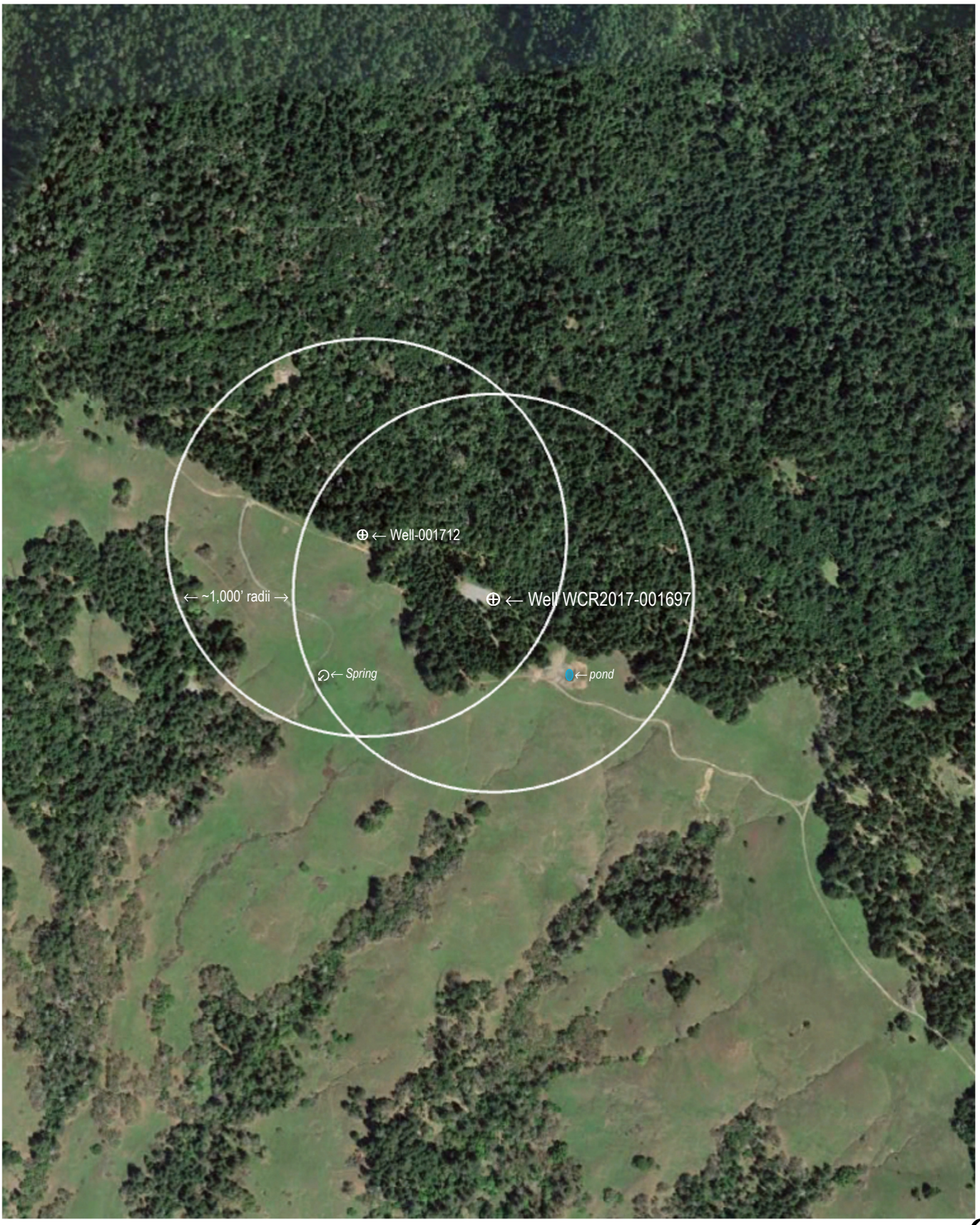


Modified from: "Blocksburg, Calif", 7.5" Topographic Quadrangle Map. 1969. N ≈

Lindberg Geologic Consulting	Engineering-Geologic Well Connectivity Assessment Report	Figure 2
Post Office Box 306	30855 Alderpoint Road, Blocksburg, APN: 217-055-002	August 12, 2023
Cutten, CA 95534	Well WCR2017-001697, Hum Sun Ranch LLC, Mr. Alex Schmitt, Client	Project 0439.01
(707) 442-6000	Humboldt County Assessor's Parcel Map (all locations approximate)	Scale as Shown

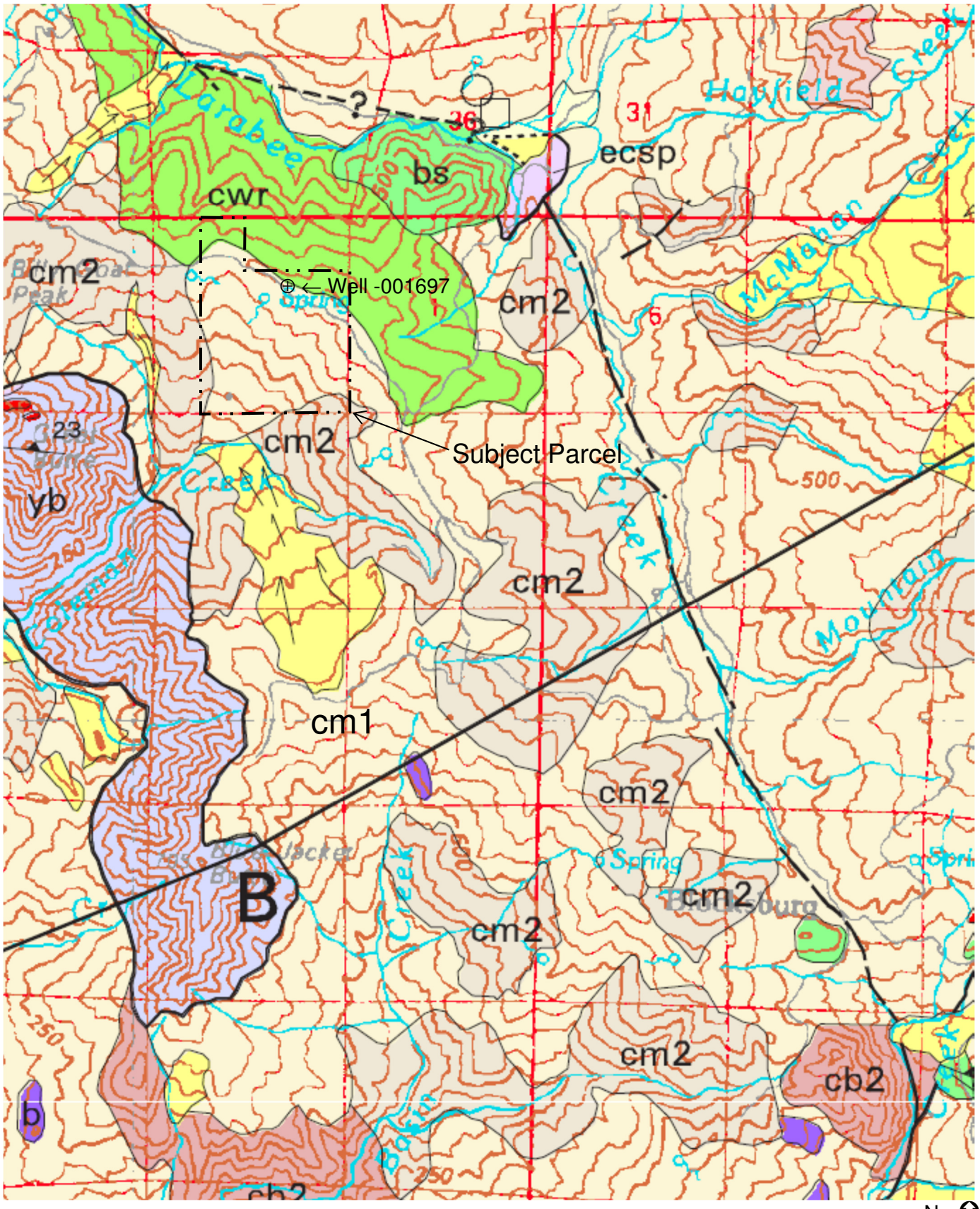


Lindberg Geologic Consulting	Engineering-Geologic Well Connectivity Assessment Report	Figure 3
Post Office Box 306	30855 Alderpoint Road, Blocksburg, APN: 217-055-002	August 12, 2023
Cutten, CA 95534	Well WCR2017-001697, Hum Sun Ranch LLC, Mr. Alex Schmitt, Client	Project 0439.01
(707) 442-6000	Satellite Image of Well Site Location (all locations approximate)	1" ≈ 680'



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

Lindberg Geologic Consulting	Engineering-Geologic Well Connectivity Assessment Report	Figure 4
Post Office Box 306	30855 Alderpoint Road, Blocksburg, APN: 217-055-002	August 12, 2023
Cutten, CA 95534	Well WCR2017-001697, Hum Sun Ranch LLC, Mr. Alex Schmitt, Client	Project 0439.01
(707) 442-6000	Geologic Map (all locations approximate)	1" ≈ 3,550'



Modified from: McLaughlin and Others, 2000. N ≈

Lindberg Geologic Consulting	Engineering-Geologic Well Connectivity Assessment Report	Figure 4a
P. O. Box 306	30855 Alderpoint Road, Blocksburg, APN: 217-055-002	August 12, 2023
Cutten, CA 95534	Well WCR2017-001697, Hum Sun Ranch LLC, Mr. Alex Schmitt, Client	Project 0439.01
(707) 442-6000	Geologic Map Explanation	No Scale

DESCRIPTION OF MAP UNITS

QUATERNARY AND TERTIARY OVERLAP DEPOSITS

- Qal — Alluvial deposits (Holocene and late Pleistocene?)
- Qm — Undeformed marine shoreline and aolian deposits (Holocene and late Pleistocene)
- Qt — Undifferentiated nonmarine terrace deposits (Holocene and Pleistocene)
- Qls — Landslide deposits (Holocene and Pleistocene)
- QTog — Older alluvium (Pleistocene and [or] Pliocene)
- QTw — Marine and nonmarine overlap deposits (late Pleistocene to middle Miocene)
- Ti — Volcanic rocks of Fickle Hill (Oligocene)

COAST RANGES PROVINCE

FRANCISCAN COMPLEX

-- Coastal Belt --

Coastal terrane(Pliocene to Late Cretaceous)

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

- co1 — Melange
- co2 — Melange
- co3 — Broken sandstone and argillite
- co4 — Intact sandstone and argillite
- cob — Basaltic Rocks (Late Cretaceous)
- cols — Limestone (Late Cretaceous)
- m — Undivided blueschist (Jurassic?)

King Range terrane (Miocene to Late Cretaceous)

- Krp — Igneous and sedimentary rocks of Point Delgada (Late Cretaceous)
- m — Undivided blueschist blocks (Jurassic?)

Sandstone and argillite of King Peak (middle Miocene to Paleocene[?]):

- krk1 — Melange and (or) folded argillite
- krk2 — Highly folded broken formation
- krk3 — Highly folded, largely unbroken rocks
- krl — Limestone
- krc — Chert
- krb — Basalt

False Cape terrane (Miocene? to Oligocene?)

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

Yager terrane (Eocene to Paleocene?)

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

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

-- Central belt --

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

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

- cm1 — Melange
- cm2 — Melange
- cb1 — Broken formation
- cb2 — Broken formation
- cwr — White Rock metasandstone of Jayko and others (1989) (Paleogene and [or] Late Cretaceous)
- chr — Haman Ridge graywacke of Jayko and others (1989) (Cretaceous?)
- cfs — Fort Seward metasandstone (age unknown)
- cls — Limestone (Late to Early Cretaceous)
- cc — Chert (Late Cretaceous to Early Jurassic)
- bs — Basaltic rocks (Cretaceous and Jurassic)
- m — Undivided blueschist blocks (Jurassic?)
- gs — Greenstone
- c — Metachert
- yb — Metasandstone of Yolla Bolly terrane, undivided
- b — Melange block, lithology unknown

-- Eastern Belt --

Pickett Peak terrane (Early Cretaceous or older)

Metasedimentary and metavolcanic rocks of the Pickett Peak terrane (Early Cretaceous or older):

- ppsm — South Fork Mountain Schist
- mb — Chinquapin Metabasalt Member (Irwin and others, 1974)
- ppv — Valentine Springs Formation
- mv — Metabasalt and minor metachert

Yolla Bolly terrane (Early Cretaceous to Middle Jurassic?)

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

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

Yolla Bolly terrane

- yb — Rocks of the Yolla Bolly terrane, undivided

GREAT VALLEY SEQUENCE AND COAST RANGE OPHIOLITE

Elder Creek(?) terrane

- ecms — Mudstone (Early Cretaceous)

Coast Range ophiolite (Middle and Late Jurassic):

- ecg — Layered gabbro
- ecsp — Serpentinite melange

Del Puerto(?) terrane

Rocks of the Del Puerto(?) terrane:

- dpms — Mudstone (Late Jurassic)

Coast Range ophiolite (Middle and Late Jurassic):

- dpt — Tuffaceous chert (Late Jurassic)
- dpb — Basaltic flows and keratophyric tuff (Jurassic?)
- dpd — Diabase (Jurassic?)
- dpsp — Serpentinite melange (Jurassic?)
- sp — Undivided Serpentinized peridotite (Jurassic?)

KLAMATH MOUNTAINS PROVINCE

Undivided Great Valley Sequence:

- Ks — Sedimentary rocks (Lower Cretaceous)

GREAT VALLEY SEQUENCE OVERLAP ASSEMBLAGE

Hayfork terrane

Eastern Hayfork subterrane:

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

Western Hayfork subterrane:

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

Rattlesnake Creek terrane

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

Western Klamath terrane

Smith River subterrane:

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

MAP SYMBOLS

- Contact
- Fault
- Thrust fault
- Trace of the San Andreas fault associated with 1906 earthquake rupture

Strike and dip of bedding:

- Inclined (10/20)
- Vertical
- Horizontal
- Overturned (10/20)
- Approximate (20)
- Joint (10)
- Strike and dip of cleavage (10)

Shear foliation:

- Inclined (10)
- Vertical

Folds:

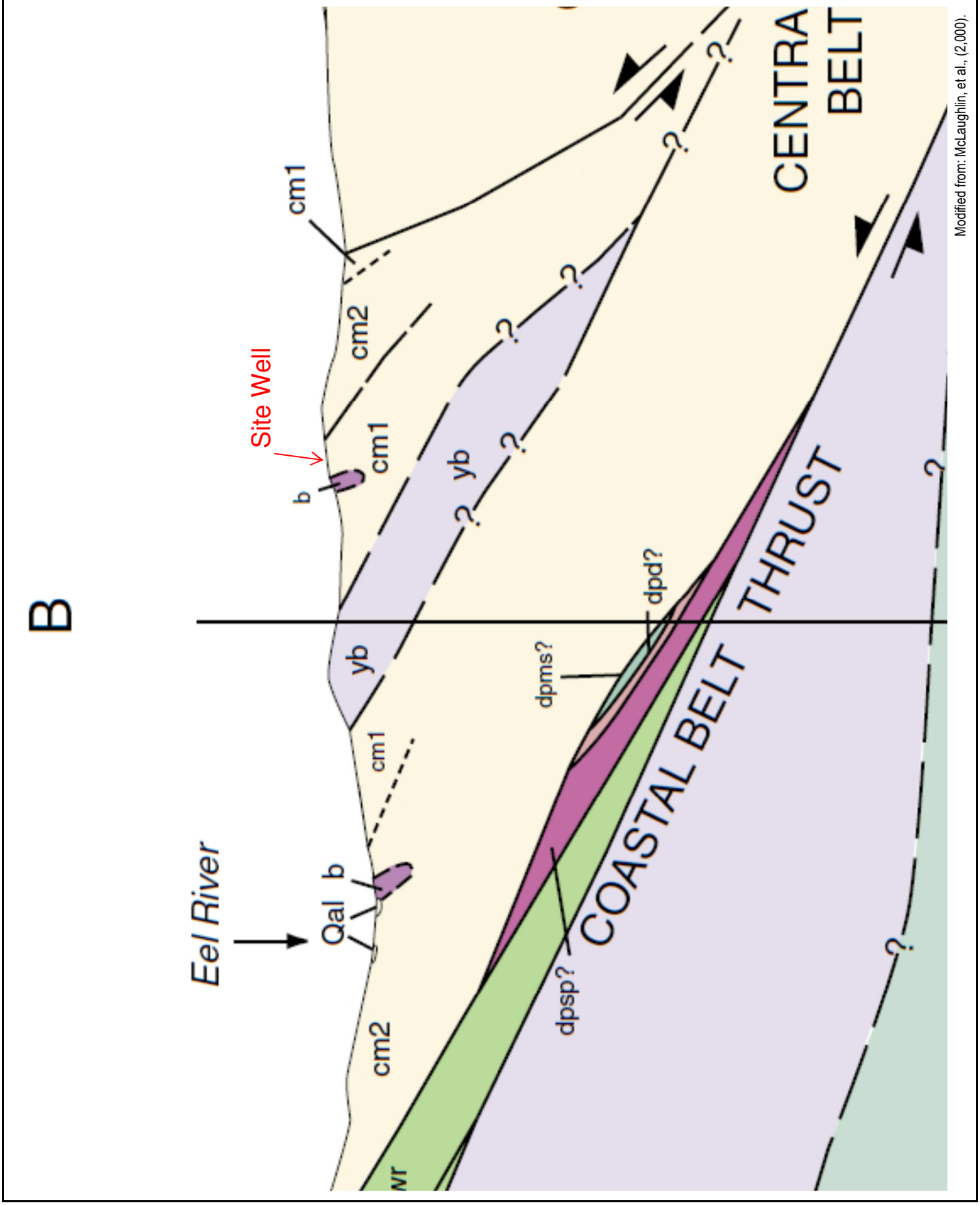
- Synclinal or synformal axis
- Anticlinal or antiformal axis
- Overturned syncline
- Landslide (Qls)

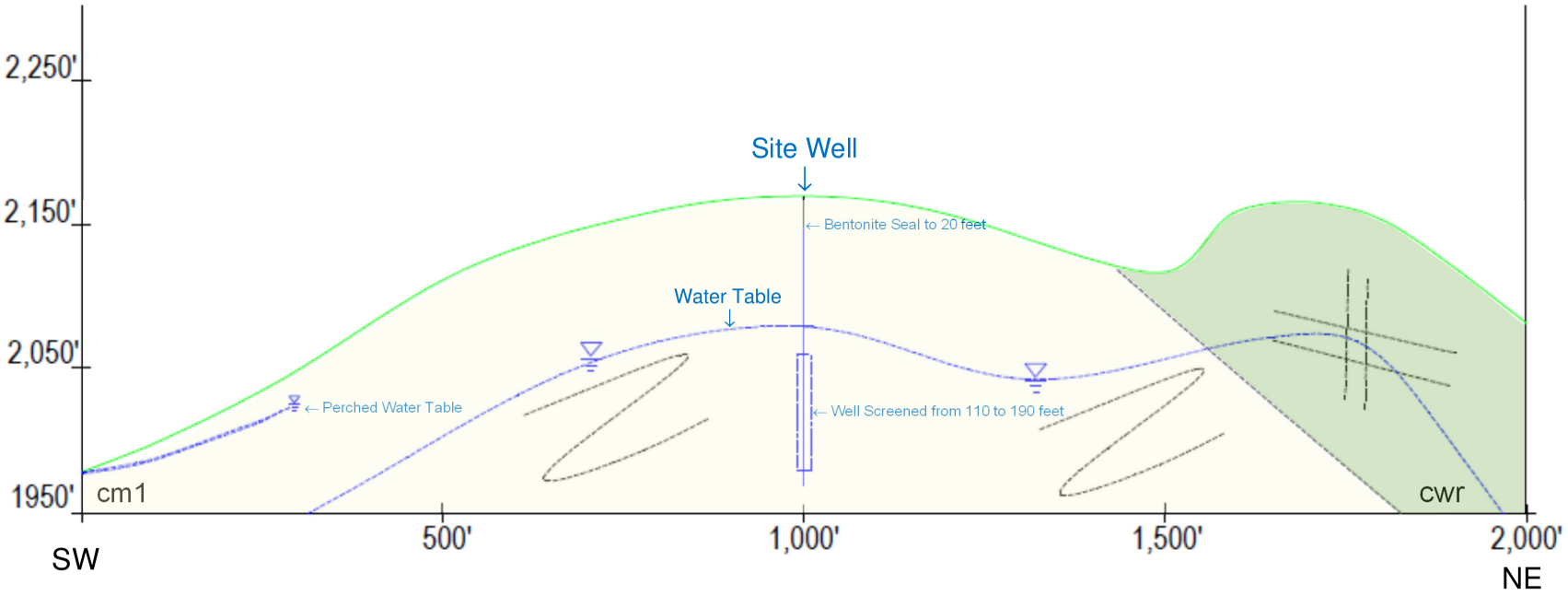
Melange Blocks:

- Serpentinite
- Chert
- Blueschist
- Greenstone
- Fossil locality and number (10)

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

Lindberg Geologic Consulting	Engineering-Geologic Well Connectivity Assessment Report	Figure 5
Post Office Box 306	30855 Alderpoint Road, Blocksburg, APN: 217-055-002	August 12, 2023
Cutten, CA 95534	Well WCR2017-001697, Hum Sun Ranch LLC, Mr. Alex Schmitt, Client	Project 0439.01
(707) 442-6000	Geologic Cross Section (locations approximate)	Not to Scale





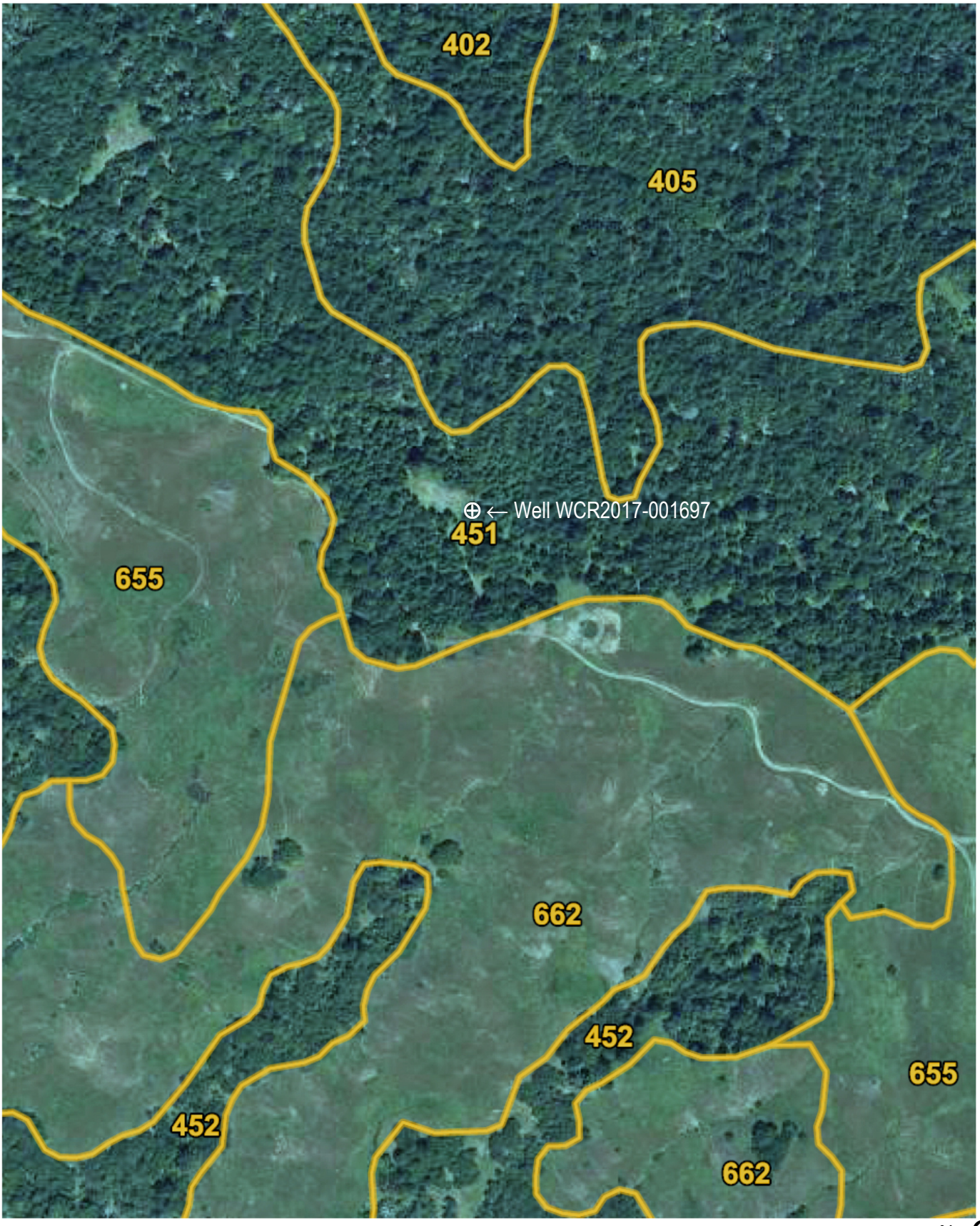
In this vertically exaggerated (~2x) cross section, the view is looking northwest along strike. Groundwater is presumed to flow from recharge areas on the ridge, toward the axis of the Eel River valley to the southwest, and the Larabee Creek valley to the northeast. In the northeastern part of the cross section, groundwater flows northeast toward the Larabee Creek in the White Rock sandstone (cwr). Bedrock subgrade in the area is, as mapped by McLaughlin et al. (2000), composed of Mélange (cm1) of the Central Belt of the Franciscan Complex, and White Rock sandstone (cwr). Mélange and sandstone are two of several lithologies identified within the Franciscan Complex. The bedrock units (cm1 & cwr) are overlain by thin gravelly surface soils below where the Site Well is located. Groundwater is envisioned as flowing through fractured zones in the cm1 and cwr. Fractures are interpreted to be the primary permeability, providing preferential flow paths for groundwater in this area. Note that this Site Well is sealed in the uppermost 20-foot section, and screened from 110 to 190 feet, and thus draws water from fractured sandstones and shales within the cm1 mélange unit and not from an unconfined near-surface aquifer(s). We attribute the mapped spring near the southwest end of the cross section as being fed by groundwater perched in a shallow subsurface aquifer of limited aerial extent.

Lindberg Geologic Consulting
Post Office Box 306
Cutten, CA 95534
(707) 442-6000

Engineering-Geologic Well Connectivity Assessment Report
30855 Alderpoint Road, Blocksburg, APN: 217-055-002
Well WCR2017-001697, Hum Sun Ranch LLC, Mr. Alex Schmitt, Client
Hydrogeologic Cross Section (all locations approximate)

Figure 6
August 12, 2023
Project 0439.01
2x V.E.

Lindberg Geologic Consulting	Engineering-Geologic Well Connectivity Assessment Report	Figure 7
Post Office Box 306	30855 Alderpoint Road, Blocksburg, APN: 217-055-002	August 12, 2023
Cutten, CA 95534	Well WCR2017-001697, Hum Sun Ranch LLC, Mr. Alex Schmitt, Client	Project 0439.01
(707) 442-6000	USDA – NRCS Soil Map (all locations approximate)	Scale not Determined



Modified from: USDA-NRCS Web Soil Survey, August 10, 2023. N ≈

State of California

Well Completion Report

WCR Form - DWR 188 Complete 08/14/2017

WCR2017-001697

Owner's Well Number 1 | Date Work Began 06/05/2017 | Date Work Ended 06/16/2017

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

Secondary Permit Agency | Permit Number 16/17-0864 | Permit Date 03/24/2017

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

Name XXXXXXXXXXXXXXXXXXX

Mailing Address XXXXXXXXXXXXXXXXXXX

XXXXXXXXXXXXXXXXXXX

City XXXXXXXXXXXXXXXXXXX | State XX | Zip XXXXX

Planned Use and Activity

Activity New Well

Planned Use Water Supply Irrigation - Agriculture

Well Location

Address 30740 Alderpoint RD

City Blocksburgq | Zip 95514 | County Humboldt

Latitude 40 Deg. 19 Min. 20.4635 Sec. N | Longitude -123 Deg. 41 Min. 31.1711 Sec. W

Dec. Lat. 40.3223510 | Dec. Long. -123.6919920

Vertical Datum | Horizontal Datum WGS84

Location Accuracy | Location Determination Method

APN 217-055-002

Township 02 S

Range 04 E

Section 02

Baseline Meridian Humboldt

Ground Surface Elevation

Elevation Accuracy

Elevation Determination Method

Borehole Information

Orientation Vertical | Specify

Drilling Method Other - UNDER-REAM DOWN-HOLE HAMMER | Drilling Fluid Air

Total Depth of Boring 200 Feet

Total Depth of Completed Well 200 Feet

Water Level and Yield of Completed Wall

Depth to first water 92 (Feet below surface)

Depth to Static Water Level 92 (Feet) | Date Measured 06/16/2017

Estimated Yield* 30 (GPM) | Test Type Air Lift

Test Length 4 (Hours) | Total Drawdown 108 (Feet)

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

Geologic Log - Free Form

Depth from Surface Feet to	Feet to	Description
0	3	TOP SOIL
3	86	BROWN FRACTURED SANDSTONE
86	112	BLUE FRACTURED SANDSTONE
112	136	RED CHIRT
136	168	BLUE SANDSTONE
168	171	SERPINTINE
171	188	RED CHIRT
188	200	SHALE

Casings

Casing #	Depth from Surface Feet to	Feet to	Casing Type	Material	Casings Specifications	Wall Thickness (inches)	Outside Diameter (inches)	Screen Type	Slot Size if any (inches)	Description
1	0	110	Blank	Low Carbon Steel	Grade: ASTM A53	0.188	6			
1	110	190	Screen	Low Carbon Steel	Grade: ASTM A53	0.188	6	Milled Slots	0.05	
1	190	200	Blank	Low Carbon Steel	Grade: ASTM A53	0.188	6			

Annular Material

Depth from Surface Feet to	Feet	Fill	Fill Type Details	Filter Pack Size	Description
0	20	Bentonite	Other Bentonite		Sanitary Seal
20	200	Filter Pack	Other Gravel Pack	3/8 Inch	Pea Gravel

Other Observations:

Borehole Specifications

Depth from Surface Feet to	Feet	Borehole Diameter (inches)
0	200	10

Certification Statement

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

Name: FISCH DRILLING (Person, Firm or Corporation)

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

Signed: *electronic signature received* (C-57 Licensed Water Well Contractor) | 06/16/2017 (Date Signed) | 683865 (C-57 License Number)

Attachments

Scan.pdf - Location Map

WellReport_05222017_1_20170814_155420.pdf - WCR Final

DWR Use Only

Site Number / State Well Number

Latitude Deg/Min/Sec N

Longitude Deg/Min/Sec W

TRS:

APN:

State of California

Well Completion Report

WCR Form - DWR 188 Complete 06/23/2017

WCR2017-001712

Owner's Well Number 2 | Date Work Began 06/14/2017 | Date Work Ended 06/16/2017

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

Secondary Permit Agency | Permit Number 16/17-0865 | Permit Date 03/24/2017

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

Name XXXXXXXXXXXXXXXXXXX

Mailing Address XXXXXXXXXXXXXXXXXXX

XXXXXXXXXXXXXXXXXXX

City XXXXXXXXXXXXXXXXXXX State XX Zip XXXXX

Planned Use and Activity

Activity New Well

Planned Use Water Supply Domestic

Well Location

Address 30740 Alderpoint RD

City Blocksburg Zip 95514 County Humboldt

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

Dec. Lat. 40.3230450 Dec. Long. -123.6941630

Vertical Datum Horizontal Datum WGS84

Location Accuracy Location Determination Method

APN 217-055-002

Township 02 S

Range 04 E

Section 02

Baseline Meridian Humboldt

Ground Surface Elevation

Elevation Accuracy

Elevation Determination Method

Borehole Information

Orientation Vertical Specify

Drilling Method Direct Rotary Drilling Fluid Air

Total Depth of Boring 230 Feet

Total Depth of Completed Well 230 Feet

Water Level and Yield of Completed Wall

Depth to first water 36 (Feet below surface)

Depth to Static Water Level 44 (Feet) Date Measured 06/16/2017

Estimated Yield* 10 (GPM) Test Type Air Lift

Test Length 4 (Hours) Total Drawdown 186 (Feet)

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

Geologic Log - Free Form

Depth from Surface Feet	to Feet	Description
0	3	top soil
3	17	brown silty clay
17	21	red clay
21	31	large fractured brown sandstone
31	62	red chirt
62	111	shale
111	118	blue fractured sandstone
118	121	red clay
121	152	fractured shale
152	156	red clay
156	183	fractured shale
183	223	blue fractured sandstone
223	230	fractured shale

Casings

Casing #	Depth from Surface Feet	to Feet	Casing Type	Material	Casings Specifications	Wall Thickness (inches)	Outside Diameter (inches)	Screen Type	Slot Size if any (inches)	Description
1	0	50	Blank	PVC	OD: 5.563 in. | SDR: 21 | Thickness: 0.265 in.	0.265	5.563			

1	50	230	Screen	PVC	OD: 5.563 in. | SDR: 21 | Thickness: 0.265 in.	0.265	5.563	Milled Slots	0.032	

Annular Material

Depth from Surface Feet	to Feet	Fill	Fill Type Details	Filter Pack Size	Description
0	20	Bentonite	Other Bentonite		Sanitary Seal
20	230	Filter Pack	Other Gravel Pack	3/8 Inch	Pea Gravel

Other Observations:

Borehole Specifications

Depth from Surface Feet	to Feet	Borehole Diameter (inches)
0	230	10

Certification Statement

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

Name: FISCH DRILLING (Person, Firm or Corporation)

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

Signed: *electronic signature received* (C-57 Licensed Water Well Contractor) | 06/19/2017 (Date Signed) | 683865 (C-57 License Number)

Attachments

Scan.pdf - Location Map

WellReport_05222017_1_20170623_152053.pdf - WCR Final

DWR Use Only

Site Number / State Well Number

N — **Latitude Deg/Min/Sec**

W — **Longitude Deg/Min/Sec**

TRS:

APN:

Humboldt County, South Part, California

451—Burgsblock-Coolyork-Tannin complex, 15 to 30 percent slopes

Map Unit Setting

National map unit symbol: hs7j
Elevation: 200 to 4,000 feet
Mean annual precipitation: 49 to 90 inches
Mean annual air temperature: 52 to 59 degrees F
Frost-free period: 240 to 280 days
Farmland classification: Not prime farmland

Map Unit Composition

Burgsblock and similar soils: 35 percent
Coolyork and similar soils: 30 percent
Tannin and similar soils: 20 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Burgsblock

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Center third of mountainflank
Down-slope shape: Concave, convex, linear
Across-slope shape: Linear, concave, convex
Parent material: Colluvium derived from sedimentary rock and/or residuum weathered from sedimentary rock

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A1 - 2 to 11 inches: gravelly loam
A2 - 11 to 16 inches: gravelly loam
Bt1 - 16 to 41 inches: very gravelly loam
Bt2 - 41 to 51 inches: very gravelly loam
Bt3 - 51 to 71 inches: very gravelly loam

Properties and qualities

Slope: 15 to 30 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 6.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: F005XZ022CA - Mesic Mountains >60"ppt
Hydric soil rating: No

Description of Coolyork

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Center third of mountainflank
Down-slope shape: Concave, convex, linear
Across-slope shape: Linear, concave, convex
Parent material: Colluvium derived from mudstone and/or colluvium derived from sandstone and/or residuum weathered from schist

Typical profile

A - 0 to 4 inches: loam
BAt - 4 to 14 inches: clay loam
Bt1 - 14 to 23 inches: clay loam
Bt2 - 23 to 43 inches: clay loam
C1 - 43 to 55 inches: gravelly loam
C2 - 55 to 71 inches: gravelly silt loam

Properties and qualities

Slope: 15 to 30 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)
Depth to water table: About 20 to 39 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 1 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 8.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: F005XZ020CA - Very Deep Mesic Mountains 40-60"ppt

Hydric soil rating: No

Description of Tannin

Setting

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

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 3 inches: loam
Bt1 - 3 to 14 inches: loam
Bt2 - 14 to 26 inches: loam
Bt3 - 26 to 49 inches: loam
Bt4 - 49 to 62 inches: sandy clay loam
BCt - 62 to 79 inches: sandy clay loam

Properties and qualities

Slope: 15 to 30 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: F005XZ022CA - Mesic Mountains >60"ppt
Hydric soil rating: No

Minor Components

Rockyglen

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

Wohly

Percent of map unit: 4 percent
Landform: Ridges, mountain slopes
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Mountaintop
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Chalkmountain

Percent of map unit: 3 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Concave, convex, linear
Across-slope shape: Linear, concave, convex
Hydric soil rating: No

Yorknorth

Percent of map unit: 2 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Hydric soil rating: No

Rock outcrop

Percent of map unit: 1 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Center third of mountainflank
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Data Source Information

Soil Survey Area: Humboldt County, South Part, California
Survey Area Data: Version 12, Sep 2, 2022

Appendix 2X

Hydrologic Isolation from Surface Waters, Well WCR2017-001712 APN: 217-055-002, Alderpoint Road, Blocksburg, California

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

Received 9/26/2023 HCP&B

August 10, 2023 Project No: 0439.01

Hum Sun Ranch LLC
Mr. Alex Schmitt
65 Uranus Terrace
San Francisco, California 94114

Subject: Hydrologic Isolation from Surface Waters, Well WCR2017-001709
APN: 217-052-001, 30885 Alderpoint Road, Blocksburg, California

To Whom It May Concern:

As requested, Lindberg Geologic Consulting has assessed an existing permitted well on the above-referenced parcel to estimate its potential for hydrologic connectivity with any adjacent wells, wetlands, and or surface waters, and if pumping well WCR2017-001709 (-001709) might significantly impact such nearby wells, wetlands, and or surface waters. The well is at an estimated elevation of 2,250 feet, and the nearest surface waters in the vicinity of this well is an unnamed ephemeral tributary of Coleman Creek (Figure 1), more than 650 feet to the west. An unnamed ephemeral tributary of Larabee Creek flows east-southeast more than 1,050 feet east-southeast of well -001709.

A California-Certified Engineering Geologist visited this site on August 1, 2023, to observe the subject well and local site conditions. Based on our research, observations, and our professional experience, it is our opinion that the subject well has a low likelihood of being hydrologically connected to surface waters in a manner that could affect adjacent wells, wetlands, or surface waters in the vicinity. We define the "vicinity" here as the area within a 1,000-foot radius of the subject well (Figure 1), a circle with an area of approximately 72 acres (Figures 1, and 3). The proposed use of this well is to irrigate cannabis. We are not aware of the volume of water to be extracted or the pumping schedule, but expect that information was provided by the applicant.

Based on the Humboldt County Assessor's Parcel Map (Figure 2), the subject parcel encompasses 574 acres. Our GPS located the subject well at latitude 40.31929° north, and longitude 123.68549 west (±9'). This well is in the northwest quarter of the southwest quarter of Section 1, T2S, R4E, and is 160 feet deep. The well is at an estimated elevation of 2,250 feet (Figure 1); the elevation of the bottom of the well is therefore 2,090 feet.

The USGS "Blocksburg, Calif." (1969), topographic map (Figure 1), and the Humboldt County WebGIS show no perennial waters within 1,000 feet of the well site. More than 650 feet west is an ephemeral tributary of Coleman Creek flowing southwest toward Eel River. More than 1,050 feet to the east-southeast, at an elevation of approximately 2,020 feet, an ephemeral tributary of Larabee Creek flows east-southeast. Approximately 1,500 feet north of the subject well an ephemeral tributary of Larabee Creek flows northerly. Based on the topographic map, well

elevation is 2,250 feet (Figure 1). Elevation of the ephemeral tributary of Coleman Creek to the west is 2,100 feet at its nearest point. The bottom elevation of the subject well is 2,090 feet, making the ephemeral tributary of Coleman Creek ten feet higher than the bottom of the well.

Well location is shown approximately on the attached figures, and was drilled by Fisch Drilling of Hydesville, in June 2017, under Humboldt County well permit #16/17-0863. Fisch is a licensed well-drilling contractor (C-57 #683865). Fisch submitted their well completion report (DWR 188) on June 19, 2017 (attached). The driller estimated a yield of 30 gallons per minute (gpm) on June 16, 2017, based on a 4-hour air lift pump test. Total drawdown during the pump test was 120-feet.

Again, the total drilled depth of this well is 160 feet. The borehole diameter from surface to total depth is ten inches. From the surface to 40 feet, a 5.563-inch diameter blank PVC casing was installed. From 40 feet to 160 feet a 5.563-inch slotted (0.032-inch slots) PVC casing was installed. Per County requirements, a bentonite sanitary surface seal was installed from the surface to 20 feet. From 20 to 160 feet the annulus was filled with 3/8-inch pea gravel. The well is cased and sealed through any potential shallow subsurface aquifers in the uppermost 20 feet as required by regulation. Depth to first water was reported at 42 feet. Depth to static water in the completed, developed well was reported at 40 feet when the driller conducted the pump test on June 16, 2017.

There are no springs mapped in Section 1, on the Blocksburg topographic map (Figure 1). The nearest mapped spring is in Section 2, approximately 2,700 feet west-northwest of the subject well. The next-nearest spring is approximately 3,600 feet south, in Section 12, at an estimated elevation of 2,090 feet. All other mapped springs are more than 4,000 feet away from the subject well.

This parcel is located within California's Coast Range Geomorphic Province, in the Central Belt of the Franciscan Complex (McLaughlin et at., 2000), a seismically active region in which large earthquakes are expected to occur during the economic life span (70 years) of any developments on the subject property. Geologic mapping by McLaughlin et. al., (2000), shows that the site is underlain by mélange (cm1) of the Central Belt of the Franciscan Complex, as shown in Figure 4.

The United States Department of Agriculture (USDA) and Natural Resources Conservation Service (NRCS) online Web Soil Survey describes the near-surface soils as consisting of gravelly loam to 16 inches below the surface, and very gravelly loam to a depth of 71 inches. Soils are interpreted to be uniformly distributed across that portion of the subject parcel underlain by mélange on slopes of 15 to 30 percent. The depth of the water table is more than 80 inches.

Materials reported on the geologic log of the driller's well completion report (attached) include 3 feet of "top soil". Below the top soil, 39 feet (3 to 42 feet) of "basalt" was logged. From 42 to 74 feet "blue fractured sandstone" was logged, below which 23 feet (from 74 to 104 feet) of "fractured shale" was encountered. From 104 to 113 feet the driller logged "blue clay" followed by 8-feet (113 to121-feet) of "fractured shale". From 121 to 136-feet "blue clay" was again logged. From 136 to 156-feet, 20 feet of "fractured shale" was logged. In the final 4 feet (from 156 to 160 feet) the driller logged "mulosh, (blue clay)". First water was encountered at a depth of 42 feet. Based on the driller's report the elevation of the first water-bearing unit is approximately 2,208 feet.

Below the surface, the earth materials encountered in the boring are likely mélange of the Central Belt Franciscan Complex, as mapped by McLaughlin et. al., (2000). Sheared, fractured, and folded metasedimentary rock materials can have variable hydraulic conductivity, but can also, under the right conditions, constitute significant aquifers. We interpret the lithologic sequence described by the driller to be within mélange (cm1) of the Franciscan Complex. Fractured sections of the profile apparently have favorable hydraulic conductivity, making them primary water bearing unit(s).

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

Based on observations, review of pertinent and available information, and our experience, it is our professional opinion that this well has a low potential of having any direct or significant connection to proximal surface waters. First water was reportedly encountered at 42 feet. This well is sealed through the upper 20 feet, through any potential unconfined, near-surface aquifers with which it might potentially communicate hydraulically through the borehole.

When considered with the stratigraphy, and the underlying geologic structure, plus the distances (horizontal and vertically) from the nearest ephemeral surface waters, and the depth of the producing zone of this well (42 to 160 feet), as well as the position of the well relative to the nearest surface waters in the vicinity, we conclude that the depth of the surface seal is sufficient to preclude the potential for hydraulic connectivity with perennial surface waters. No perennial surface waters are within 1,000 feet. The water source from which this well draws appears to be a subsurface aquifer not demonstrably significantly connected to any surface waters or unconfined, near-surface aquifer(s). This well appears, in our professional opinion, likely to be hydraulically isolated from nearby wells, surface waters, springs and wetlands.

According to the driller, the estimated yield of this well was 30 gpm on June 16, 2017. The drawdown was reported as 120-feet after Fisch Drilling 4-hour air-lift pump test. At 30 gpm, this well would potentially produce 43,200 gallons per day. As noted in the well completion report, this capacity may not be representative of this well's long-term yield. Additional drawdown and recovery testing would be necessary to estimate a sustainable long-term yield of the site well.

This subject well does not appear to be hydrologically connected to, or capable of influencing surface water flows in the Coleman Creek or Larabee Creek tributaries. Nor does this well appear likely to be hydrologically connected to any local springs, or ephemeral wetlands of which there appear to be none. Given the horizontal distances, and the elevation differences between the subject well, and the surface waters of the nearest water bodies, the potential for significant hydrologic connectivity between surface water and groundwater in the Franciscan aquifer(s) appears unlikely.

We researched the California Department of Water Resources' database to find permitted wells within 1,000 feet of the subject well. Based on the information available at the present time, there are no wells that meet that criterion.

As groundwater mimics topography and responds to the force of gravity, in general any near surface unconfined aquifer will flow down slope in a direction subparallel to topography. The ground surface slopes primarily to the north; thus, the near surface unconfined aquifer flows southwest toward the ephemeral tributary of Coleman Creek, and northeast toward Larabee Creek. When we visited, there was a solar-powered pump installed in the subject well.

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

The USDA-NRCS online Web Soil Survey shows the subject well within soils of the Burgsblock-Coolyork-Tannin complex, on slopes of 15 to 30 percent, (#451, Figure 7). The NRCS describes this as a well-drained soil. The Web Soil Survey's unit description is attached to this report. Mean annual precipitation is listed by the NRCS as between 49 to 90 inches per year. The capacity of the most limiting soil layer to transmit water (Ksat) is described as moderately high to high (0.20 to 2.00 in/hr) with a depth to the water table of greater than 80 inches.

If during the wet season, ten percent of the "low end" precipitation estimation of 49 inches is absorbed by the soils/bedrock and does not run off or be lost to evapotranspiration, then approximately 235 acre-feet, or more than 76 million gallons of water per year (MGPY), may be expected to recharge the local aquifers below this 574-acre subject property. Given the same amount of precipitation (49") and the same 10 percent partitioned to recharge, then within the 1,000-foot radius of the subject well, recharge can be estimated to be more than 29 acre-feet, and 9.5 MGPY. Our estimates are conservative; USGS researchers estimate that in northwest California, approximately 33 percent of precipitation goes to recharge (Flint, et al., 2103).

On February 13, 2023, Governor Newsom signed Executive Order N-3-23 which, in part, extended a previous executive order (N-7-22) relating to the ongoing drought in California which the Governor had issued on March 28, 2022. In executive order N-7-22, the governor outlined measures the state will undertake to avoid and ameliorate the negative impacts of the current drought. Among these measures, it was ordered that counties, cities, and other public agencies have been prohibited from approving permits for new groundwater wells (or alteration of existing wells) in basins "*subject to the Sustainable Groundwater Management Act and classified as medium- or high-priority without first obtaining written verification from a Groundwater Sustainability Agency managing the basin or area of the basin where the well is proposed*". This well is not within any basin subject to the Act, and there has been no Groundwater Sustainability Agency established with authority over the area where this permitted well is sited.

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

Based on our observations, research, and experience, it is our professional opinion that the well WCR2017-001790, near Blocksburg, has a low likelihood of being hydrologically connected to nearby surface waters or wells in a manner that might significantly have a negative impact or effect on proximal wetlands, wells, and or surface waters.

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

Sincerely,

David N. Lindberg, CEG
Lindberg Geologic Consulting

DNL:sll

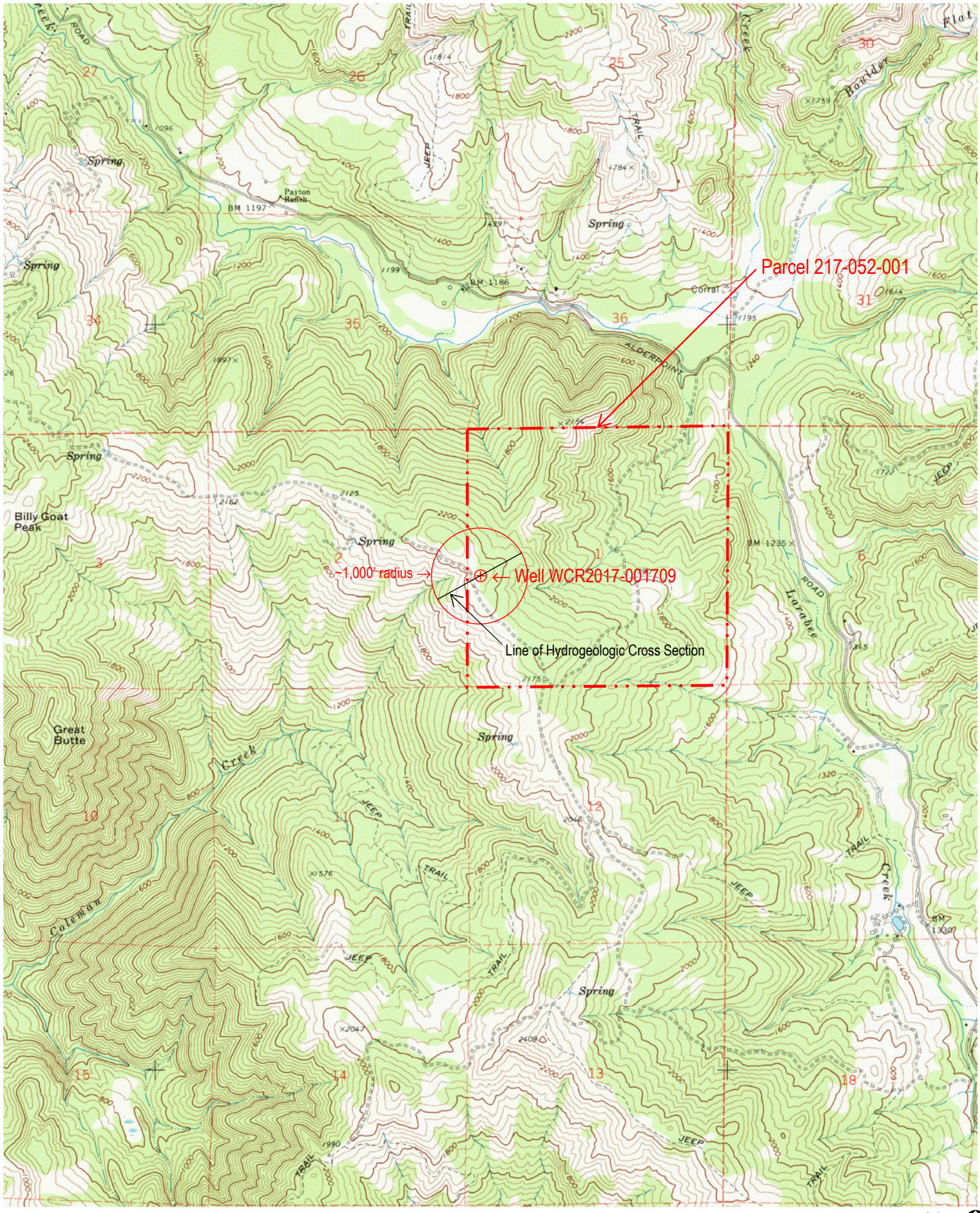
Attachments:
Figure 1: Topographic Well Location Map
Figure 2: Humboldt County Assessor's Parcel Map
Figure 3: Satellite Image of Well location
Figure 4: Geologic Map
Figure 4a: Geologic Map Explanation
Figure 5: Generalized Geologic Cross Section
Figure 6: Hydrogeologic Cross Section
Figure 7: USDA-NRCS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

State of California Well Completion Report:
WCR2017-001709, APN: 217-052-001 (Subject Well)

Web Soil Survey, NRCS Map Unit Description:
Burgsblock-Coolyork-Tannin complex, #451, 15 to 30 percent slopes.

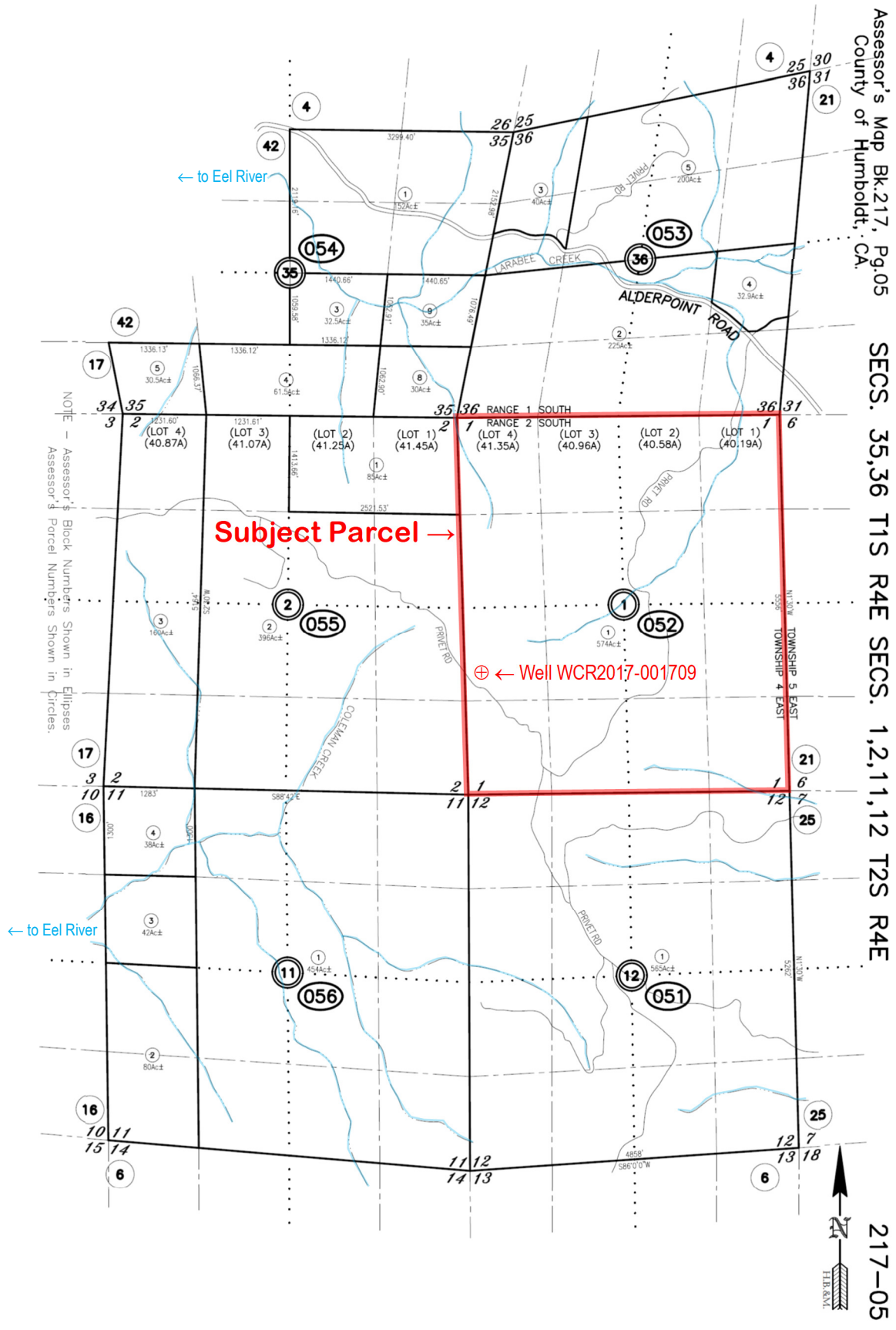
Reference:
Flint et al.: Fine-scale hydrologic modeling for regional landscape applications: the California Basin Characterization Model development and performance. Ecological Process, 2013, 2:25. (doi:10.1186/2192-1709-2-25)

Lindberg Geologic Consulting	Engineering-Geologic Well Connectivity Assessment Report	Figure 1
Post Office Box 306	30855 Alderpoint Road, Blocksburg, APN: 217-052-001	August 10, 2023
Cutten, CA 95534	Well WCR2017-001709, Hum Sun Ranch LLC, Mr. Alex Schmitt, Client	Project 0439.01
(707) 442-6000	Topographic Well-Site Location Map (all locations approximate)	1" ≈ 2,800'



Modified from: "Blocksburg, Calif", 7.5" Topographic Quadrangle Map. 1969. N ≈

Lindberg Geologic Consulting	Engineering-Geologic Well Connectivity Assessment Report	Figure 2
Post Office Box 306	30855 Alderpoint Road, Blocksburg, APN: 217-052-001	August 10, 2023
Cutten, CA 95534	Well WCR2017-001709, Hum Sun Ranch LLC, Mr. Alex Schmitt, Client	Project 0439.01
(707) 442-6000	Humboldt County Assessor's Parcel Map (all locations approximate)	Scale as Shown

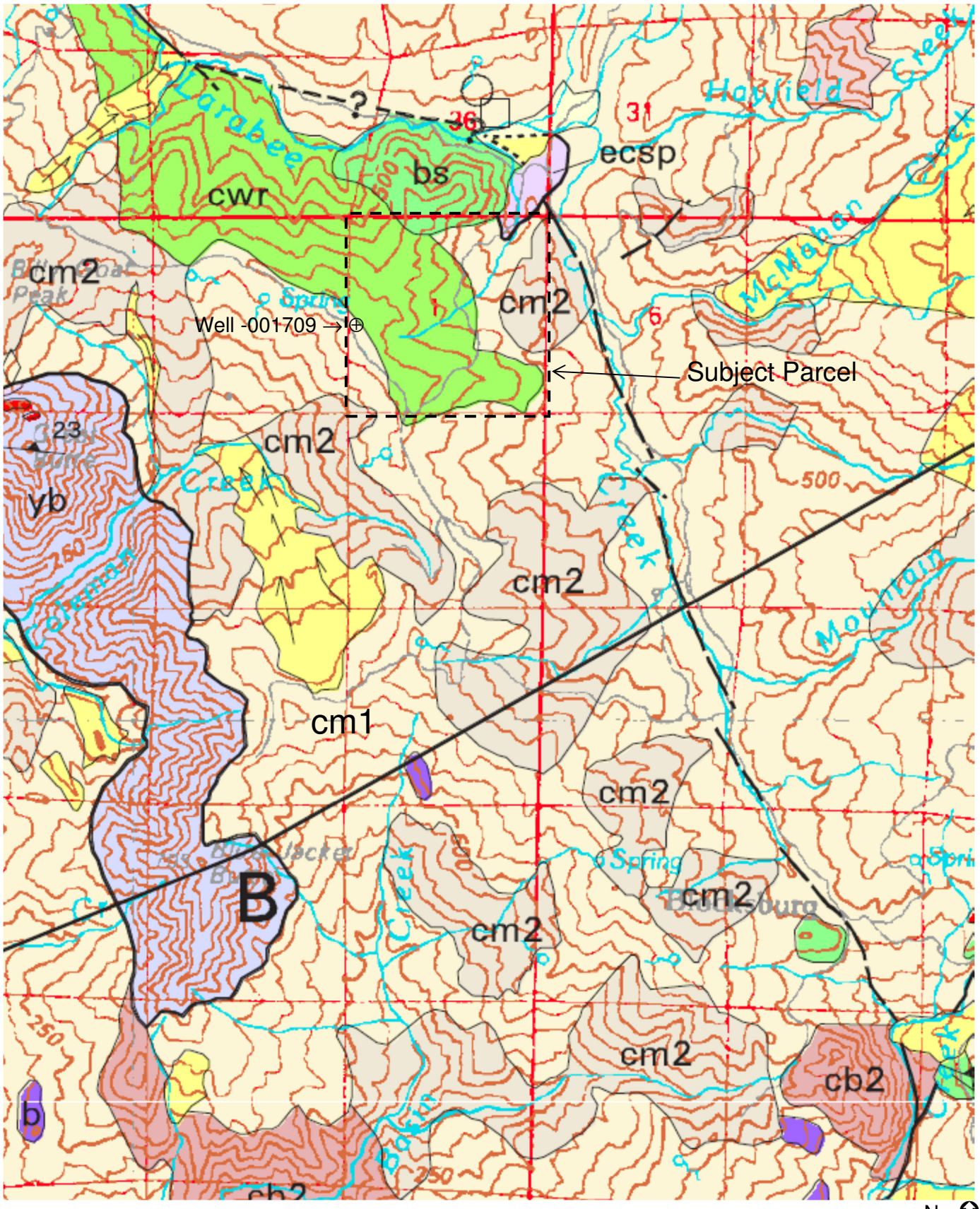


Lindberg Geologic Consulting	Engineering-Geologic Well Connectivity Assessment Report	Figure 3
Post Office Box 306	30855 Alderpoint Road, Blocksburg, APN: 217-052-001	August 10, 2023
Cutten, CA 95534	Well WCR2017-001709, Hum Sun Ranch LLC, Mr. Alex Schmitt, Client	Project 0439.01
(707) 442-6000	Satellite Image of Well-Site Location (all locations approximate)	1" ≈ 660'



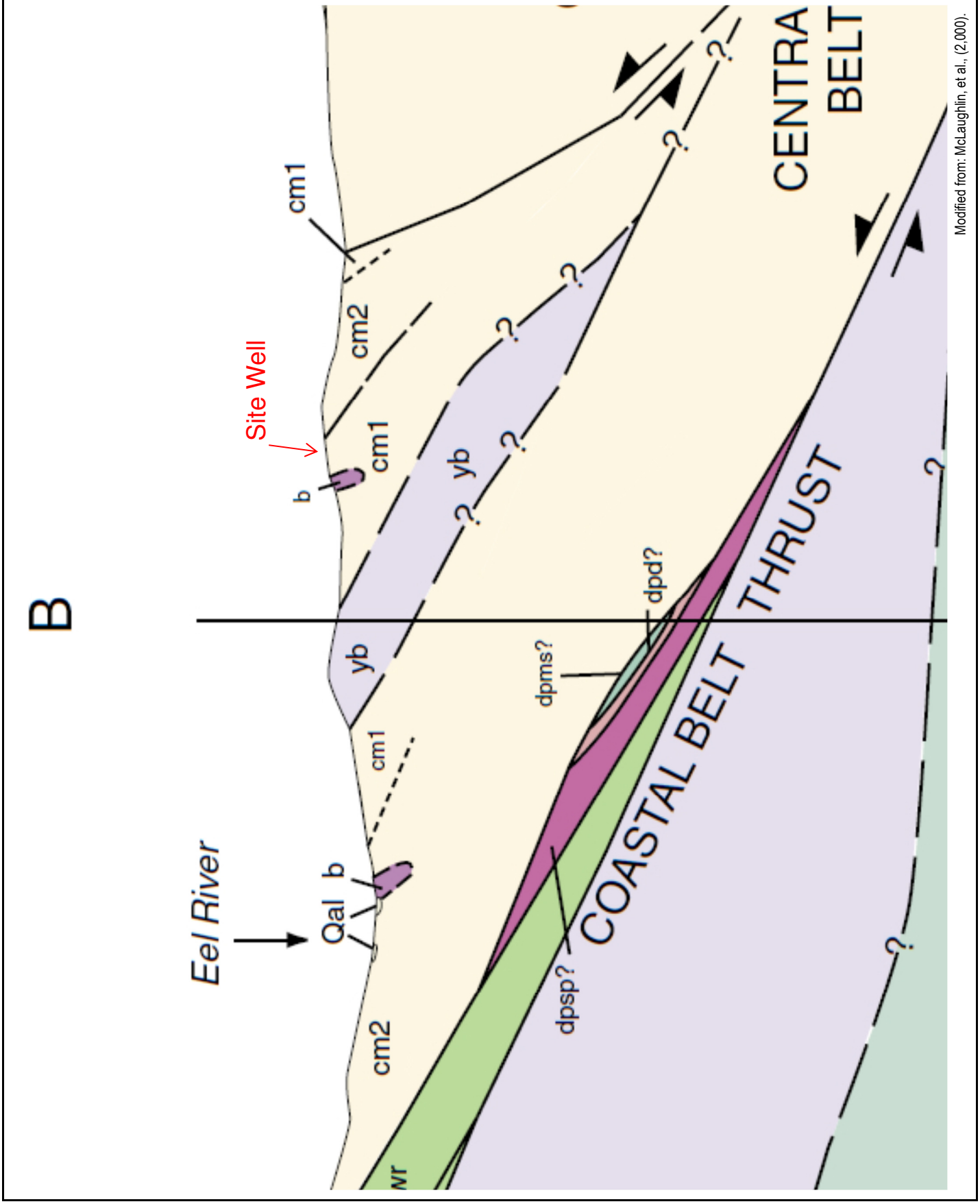
Modified from: Google Earth Imagery of April 21, 2019. N ≈

Lindberg Geologic Consulting	Engineering-Geologic Well Connectivity Assessment Report	Figure 4
Post Office Box 306	30855 Alderpoint Road, Blocksburg, APN: 217-052-001	August 10, 2023
Cutten, CA 95534	Well WCR2017-001709, Hum Sun Ranch LLC, Mr. Alex Schmitt, Client	Project 0439.01
(707) 442-6000	Geologic Map (all locations approximate)	1" ≈ 3,550'



Modified from: McLaughlin and Others, 2000. N ≈

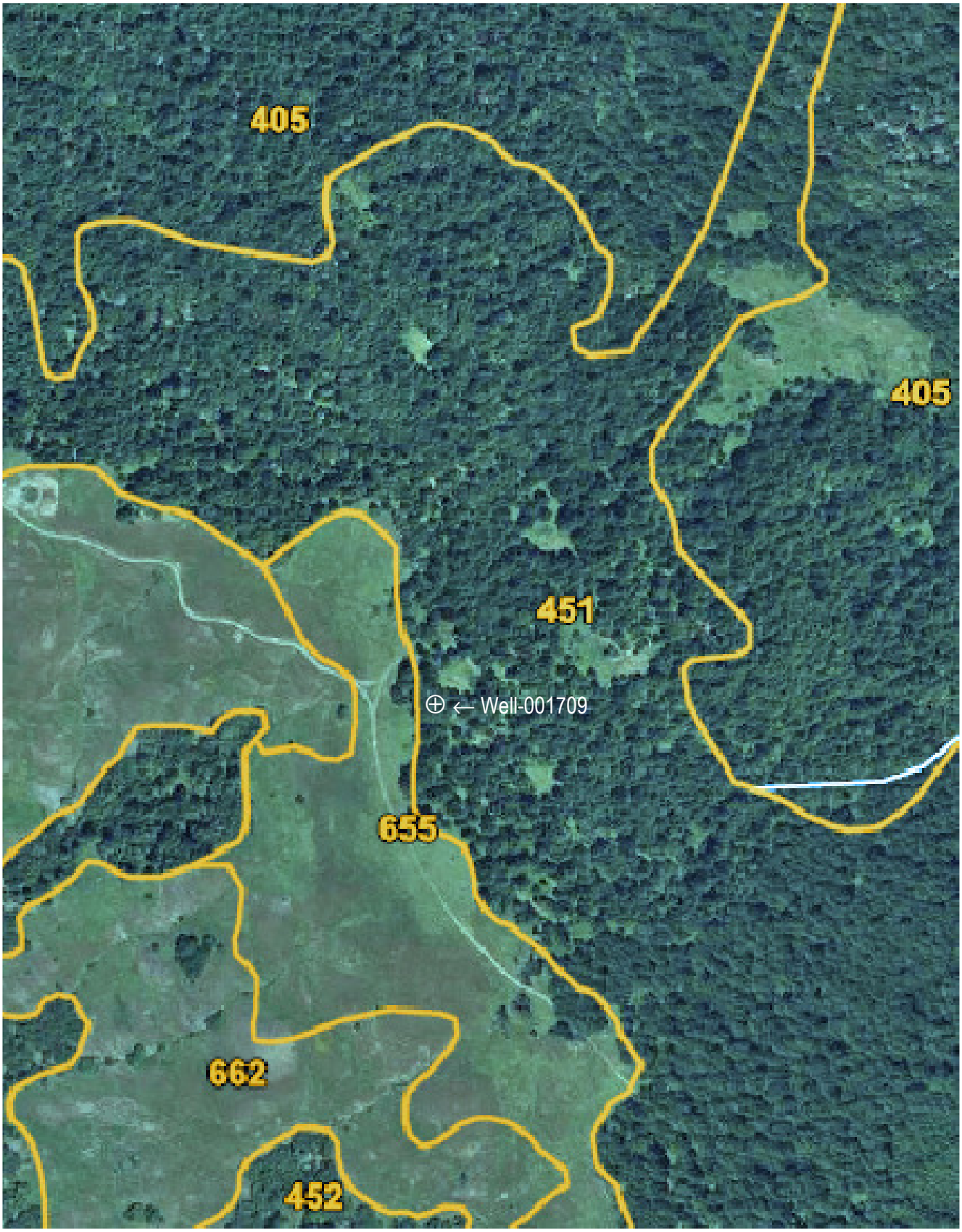
Lindberg Geologic Consulting	Engineering-Geologic Well Connectivity Assessment Report	Figure 5
Post Office Box 306	30855 Alderpoint Road, Blocksburg, APN: 217-052-001	August 10, 2023
Cutten, CA 95534	Well WCR2017-001709, Hum Sun Ranch LLC, Mr. Alex Schmitt, Client	Project 0439.01
(707) 442-6000	Geologic Cross Section (locations approximate)	Not to Scale



Lindberg Geologic Consulting	Engineering-Geologic Well Connectivity Assessment Report	Figure 6
Post Office Box 306	30855 Alderpoint Road, Blocksburg, APN: 217-052-001	August 10, 2023
Cutten, CA 95534	Well WCR2017-001709, Hum Sun Ranch LLC, Mr. Alex Schmitt, Client	Project 0439.01
(707) 442-6000	Hydrogeologic Cross Section (all locations approximate)	2 x V.E.

In this vertically exaggerated (~2x) cross section, the view is looking northwest along strike. Groundwater is presumed to flow from recharge areas on the ridge toward the axis of the Eel River to the southwest, and Larabee Creek to the northeast. In the northeastern part of the cross section, groundwater flows northeast toward the Larabee Creek in the White Rock sandstone (cwr). Bedrock subgrade in the area is, as mapped by McLaughlin et al. (2000), composed of Mélange (cm1) of the Central Belt of the Franciscan Complex, and White Rock sandstone (cwr). Mélange and sandstone are two of several lithologies identified within the Franciscan Complex. The bedrock units (cm1 & cwr) are overlain by thin gravelly surface soils below where the Site Well is located. Groundwater is envisioned as flowing through fractured zones in the cm1 and cwr. Fractures are interpreted to be the primary permeability, providing preferential flow paths for groundwater in this area. Note that this Site Well is sealed in the uppermost 20-foot section, and screened from 40 to 160 feet, and thus draws water from fractured sandstones and shales within the cm1 mélange unit and not from an unconfined near-surface aquifer(s).

Lindberg Geologic Consulting	Engineering-Geologic Well Connectivity Assessment Report	Figure 7
Post Office Box 306	30855 Alderpoint Road, Blocksburg, APN: 217-052-001	August 10, 2023
Cutten, CA 95534	Well WCR2017-001709, Hum Sun Ranch LLC, Mr. Alex Schmitt, Client	Project 0439.01
(707) 442-6000	USDA – NRCS Soil Map (all locations approximate)	Scale not Determined



Modified from: USDA-NRCS Web Soil Survey, August 8, 2023. N ≈

State of California

Well Completion Report

WCR Form - DWR 188 Complete 06/23/2017

WCR2017-001709

Owner's Well Number 1 | Date Work Began 03/06/2017 | Date Work Ended 06/16/2017

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

Secondary Permit Agency | Permit Number 16/17-0863 | Permit Date 03/24/2017

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

Name XXXXXXXXXXXXXXXXXXX

Mailing Address XXXXXXXXXXXXXXXXXXX

XXXXXXXXXXXXXXXXXXX

City XXXXXXXXXXXXXXXXXXX State XX Zip XXXXX

Planned Use and Activity

Activity New Well

Planned Use Water Supply Domestic

Well Location

Address 30740 Alderpoint RD

City Blocksburg Zip 95514 County Humboldt

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

Dec. Lat. 40.3192200 Dec. Long. -123.6854400

Vertical Datum Horizontal Datum WGS84

Location Accuracy Location Determination Method

APN 217-052-001

Township 02 S

Range 04 E

Section 01

Baseline Meridian Humboldt

Ground Surface Elevation

Elevation Accuracy

Elevation Determination Method

Borehole Information

Orientation Vertical Specify

Drilling Method Direct Rotary Drilling Fluid Air

Total Depth of Boring 160 Feet

Total Depth of Completed Well 160 Feet

Water Level and Yield of Completed Wall

Depth to first water 42 (Feet below surface)

Depth to Static Water Level 40 (Feet) Date Measured 06/16/2017

Estimated Yield* 30 (GPM) Test Type Air Lift

Test Length 4 (Hours) Total Drawdown 120 (Feet)

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

Geologic Log - Free Form

Depth from Surface Feet	to Feet	Description
0	3	top soil
3	42	basalt
42	74	blue fractured sandstone
74	93	Blue clay
93	104	fractured shale
104	113	blue clay
113	121	fractured shale
121	136	blue clay
136	156	fractured shale
156	160	mulosh (blue clay)

Casings

Casing #	Depth from Surface Feet	to Feet	Casing Type	Material	Casings Specifications	Wall Thickness (inches)	Outside Diameter (inches)	Screen Type	Slot Size if any (inches)	Description
1	0	40	Blank	PVC	OD: 5.563 in. | SDR: 21 | Thickness: 0.265 in.	0.265	5.563			
1	40	160	Screen	PVC	OD: 5.563 in. | SDR: 21 | Thickness: 0.265 in.	0.265	5.563	Milled Slots	0.032	

Annular Material

Depth from Surface Feet to	Feet	Fill	Fill Type Details	Filter Pack Size	Description
0	20	Bentonite	Other Bentonite		Sanitary Seal
20	160	Filter Pack	Other Gravel Pack	3/8 Inch	Pea Gravel

Other Observations:

Borehole Specifications

Depth from Surface Feet to	Feet	Borehole Diameter (inches)
0	160	10

Certification Statement

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

Name: FISCH DRILLING
Person, Firm or Corporation

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

Signed: *electronic signature received* (C-57 Licensed Water Well Contractor) | 06/19/2017 (Date Signed) | 683865 (C-57 License Number)

Attachments

Scan.pdf - Location Map

WellReport_05222017_1_20170623_152117.pdf - WCR Final

DWR Use Only

Site Number / State Well Number

Latitude Deg/Min/Sec N

Longitude Deg/Min/Sec W

TRS:

APN:

Humboldt County, South Part, California

451—Burgsblock-Coolyork-Tannin complex, 15 to 30 percent slopes

Map Unit Setting

National map unit symbol: hs7j
Elevation: 200 to 4,000 feet
Mean annual precipitation: 49 to 90 inches
Mean annual air temperature: 52 to 59 degrees F
Frost-free period: 240 to 280 days
Farmland classification: Not prime farmland

Map Unit Composition

Burgsblock and similar soils: 35 percent
Coolyork and similar soils: 30 percent
Tannin and similar soils: 20 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Burgsblock

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Center third of mountainflank
Down-slope shape: Concave, convex, linear
Across-slope shape: Linear, concave, convex
Parent material: Colluvium derived from sedimentary rock and/or residuum weathered from sedimentary rock

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A1 - 2 to 11 inches: gravelly loam
A2 - 11 to 16 inches: gravelly loam
Bt1 - 16 to 41 inches: very gravelly loam
Bt2 - 41 to 51 inches: very gravelly loam
Bt3 - 51 to 71 inches: very gravelly loam

Properties and qualities

Slope: 15 to 30 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 6.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: F005XZ022CA - Mesic Mountains >60"ppt
Hydric soil rating: No

Description of Coolyork

Setting

Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Center third of mountainflank
Down-slope shape: Concave, convex, linear
Across-slope shape: Linear, concave, convex
Parent material: Colluvium derived from mudstone and/or colluvium derived from sandstone and/or residuum weathered from schist

Typical profile

A - 0 to 4 inches: loam
BAt - 4 to 14 inches: clay loam
Bt1 - 14 to 23 inches: clay loam
Bt2 - 23 to 43 inches: clay loam
C1 - 43 to 55 inches: gravelly loam
C2 - 55 to 71 inches: gravelly silt loam

Properties and qualities

Slope: 15 to 30 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)
Depth to water table: About 20 to 39 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 1 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 8.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: F005XZ020CA - Very Deep Mesic Mountains 40-60"ppt

Hydric soil rating: No

Description of Tannin

Setting

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

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 3 inches: loam
Bt1 - 3 to 14 inches: loam
Bt2 - 14 to 26 inches: loam
Bt3 - 26 to 49 inches: loam
Bt4 - 49 to 62 inches: sandy clay loam
BCt - 62 to 79 inches: sandy clay loam

Properties and qualities

Slope: 15 to 30 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: F005XZ022CA - Mesic Mountains >60"ppt
Hydric soil rating: No

Minor Components

Rockyglen

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

Wohly

Percent of map unit: 4 percent
Landform: Ridges, mountain slopes
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Mountaintop
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Chalkmountain

Percent of map unit: 3 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Concave, convex, linear
Across-slope shape: Linear, concave, convex
Hydric soil rating: No

Yorknorth

Percent of map unit: 2 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Mountainflank
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Hydric soil rating: No

Rock outcrop

Percent of map unit: 1 percent
Landform: Mountain slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Center third of mountainflank
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Data Source Information

Soil Survey Area: Humboldt County, South Part, California
Survey Area Data: Version 12, Sep 2, 2022

Appendix 2Y

Noise Source Study for HumSun 3 LLC

NORTHPOINT
CONSULTING GROUP, INC.

HumSun 3, LLC

Noise Study

Primary APN: 217-253-001

Humboldt County, CA

September 2024

Contents

Objective 1

Proposed Project Overview 1

Site Description 1

Existing Ambient Noise Levels 1

Noise Sources Associated with Proposed Project 2

Conclusion 3

Attachments:

A: Site Map

B: Circulation Fan Specification Sheet

Objective

The purpose of this Noise Study is to estimate and evaluate the potential impacts from the Proposed Project. Evaluation of potential noise impacts included the determination of onsite ambient and maximum noise levels, identification of proposed project noise sources, and the analysis of proposed project noise sources in relation to current (ambient) onsite noise.

Proposed Project Overview

HumSun 3, LLC is applying for a Conditional Use Permit on Assessor Parcel Number (APN): 217-253-001 in Blocksburg, CA through the County of Humboldt's (County) Commercial Medical Marijuana Land Use Ordinance (CCMLUO, 2016).

The applicant seeks to permit approximately 3.1 acres of mixed light cultivation area in greenhouses. Cultivation is proposed in approximately thirty-eight (38) greenhouses, ranging in length from 72 ft to 150 feet with widths of 30 ft. The project proposal includes the development of ancillary structures for cultivation activities, including a 60 ft x 100 ft building for dual use of ancillary nursery, drying, storage, and curing, and a 32 ft x 40 ft processing building for onsite trimming.

Site Description

The project is located off Alderpoint Rd. in Blocksburg, CA on key APN 217-253-001. The legal parcel boundary (Attachment A – Site Maps, Sheet C0) is 1,887 acres, and the Primary Assessor Parcel is approximately 264 acres. In the area proposed for cultivation, elevations range from approximately 1,260-1,900 feet above mean sea level.

The subject property is located outside of the Coastal Zone, partially located within a the 100-year flood zone, and inside the State Fire Responsibility Area, with a Humboldt County General Plan designation of Agricultural Grazing (AG). Land uses surrounding the parcel are comprised of agriculture lands, primarily zoned Agricultural Grazing (AG).

Existing Ambient Noise Levels

This section summarizes the data collection procedures that were taken to estimate the existing ambient noise levels within the project site. The *existing ambient noise level* is defined as the average baseline of sound pressure levels (SPL) experienced in an area prior to the proposed cannabis cultivation activities. Existing ambient noise levels include natural and human-induced noise.

Two (2) Monitoring Locations were selected to establish existing noise levels at potential sensitive receptors; property lines and habitat areas. Table 1 describes the Monitoring Locations in more detail and the locations are mapped in Attachment A.

Table 1: Monitoring Location Details

Monitoring Location	Lat/Long	Description & Notes	Impact Potential
#1	40.3096°, -123.6569°	Located on the east side of the parcel, southeast of the proposed area to be cultivated, near the property entrance. Adjacent to neighboring parcel and wooded/riparian habitat.	Adjacent parcel and habitat.
#2	40.3112°, -123.6606°	Located near the northeast corner of the parcel, north of the proposed area to be cultivated, near Larabee creek. Adjacent to wooded/riparian habitat.	Habitat.

The sound pressure level (SPL) was measured in decibels using a type 2 digital sound meter which utilizes an A-weighted filter network (dB(A)), manufactured by *Reed Instruments*. The digital sound meter was mounted to a tripod, allowing it to be positioned approximately one foot above the ground to minimize ground noise and maximize unobstructed sound readings. Noise study data was monitored Friday morning, April 19th through Saturday morning, April 20th, 2024 (Table 2). The weather was a temperate day, sunny, and with little detectable breeze. Decibel measurement readings were taken at 5-second intervals for a duration of 24 hours at Monitoring Locations 1 and 2.

After the measurements were taken, the data was analyzed to determine the existing ambient noise levels in decibels (dB). Data was analyzed using Reed Instruments R8080 software.

Table 2 displays the monitoring results and includes the monitoring locations, the monitoring duration, the average decibel reading throughout the monitoring duration, and the maximum measured decibel reading recorded.

Table 2: Onsite Noise Analysis Results

Monitoring Location	Monitoring Duration (hours)	Monitoring Start Date-Time	Monitoring Stop Date-Time	Average Decibel Reading/Ambient Noise Level' (dB)	Max Noise Level Measured (dB)
#1	24	4/19/24 - 8:38 AM	4/20/24 - 8:50 AM	41.2	77.6
#2	24	4/19/24 - 8:08 AM	4/20/24 - 8:20 AM	40.9	67.9

Noise Sources Associated with Proposed Project

Noise sources that have the potential to increase ambient noise levels, associated with the proposed project, are primarily from air circulation fans. The thirty-eight (38) proposed cultivation greenhouses will each utilize up to four (4) 28" variable speed SnapFan circulation fans, or similar product. Equipment specifications for SnapFan circulation fans are provided in Attachment B. It is anticipated that noise at the

two monitoring locations would be impacted by these greenhouses. Table 3 contains the specifications of the proposed noise sources.

Other noise sources associated with project expansion include employee activity, light traffic, and onsite processing in the proposed, enclosed commercial building. However, these activities are not anticipated to produce any additional noise relative to the existing ambient noise levels. Noise from drying and processing (e.g., dehumidifiers, fans) would occur within enclosed structures and are not anticipated to increase outside noise levels. No generators are proposed as a primary power source; generators would be utilized for backup purposes during an emergency only.

Table 3: Noise-Producing Cultivation Equipment Specifications

Type of Equipment*	**Brand***	**Sound Pressure (dB)**
28" Circulation Fan	SnapFan	39.0 dB at 19.7 ft. distance

**Specific equipment brands could be subject to change based on availability and costs*

The total sound pressure levels (SPL) associated with the thirty-eight (38) cultivation greenhouses was determined by adding a total of one hundred and fifty-two (152) 28" SnapFans, as well as including the largest average ambient noise level (41.2 dB at Location #1). Using the known sound pressure from a single SnapFan, it was determined, using the logarithmic addition of sound levels, 152 SnapFans plus ambient noise would produce a sound pressure level of approximately 60.8 dB at, a distance of 19.7 feet from the fans. The Site Map in Attachment A shows this 60.8 dB contour around the proposed greenhouses.

Table 4: Summary of Sound Pressure Levels at 19.7 ft from Source

Type of Equipment	**Sound Pressure (dB) from 1 Fan**	**Sound Pressure (dB) from 152 Fans Plus Ambient (41.2 dB)**
28" SnapFan Circulation Fan	39.0 dB at 19.7 ft. distance	60.8 at 19.7 ft. distance

Conclusion

The largest existing ambient noise level recorded was 41.2 dB at Location #1, closest to Alderpoint Road, which is likely the loudest noise-producing activity in the vicinity of the proposed project. Using the known sound pressure from a single SnapFan, it was determined, using the logarithmic addition of sound levels, 152 SnapFans plus ambient noise would produce a sound pressure level of approximately 60.8 dB at, a distance of 19.7 feet from the fans. Proposed sound contours, at specific distances from the noise sources, were estimated using the inverse square law and mapped on Attachment A. The sound level at the nearest property line, which is at Alderpoint Road, is 44.2 dB.

Attachment A: Site Map

HUMSUN 3, LLC

NOISE STUDY SITE MAP

APN: 217-253-001



LEGEND

<E> - EXISTING
<P> - PROPOSED

- NOISE CONTOURS ASSOCIATED WITH PROPOSED NOISE SOURCE

PLOT PLAN

22x34 SHEET: 1"=100'
11x17 SHEET: 1"=200'

0 50 100 200

SHEET INDEX:

C0 – NOISE STUDY SITE MAP

DRAWN BY:
REVISIONS
DATE

NORTHPOINT
CONSULTING GROUP, INC.
1117 Samoa Blvd., Arcata, CA 95521

HUMSUN 3, LLC
APN:217-253-001
NOISE STUDY SITE MAP

PROJ. MGR.: ____
DRAWN BY: LJM
DATE: 9/24/24
SCALE: AS SHOWN

SHEET
C0
24-001

September 24, 2024 - 09:50 Dwg Name: P:\HumSun Ranch, LLC - HumSun Ranch - 24-001\CAD\Production Drawings\HumSun - Noise Monitoring Site Plan.dwg Updated By: DanaRoelle

Attachment B: Circulation Fan Specification Sheet

28" AC Snap-Fan			
% DutyCycle	RPM	Distance	dB(A) Sound Pressure
50%	470	3m	32
50%	470	6m	26
100%	940	3m	45
100%	940	6m	39

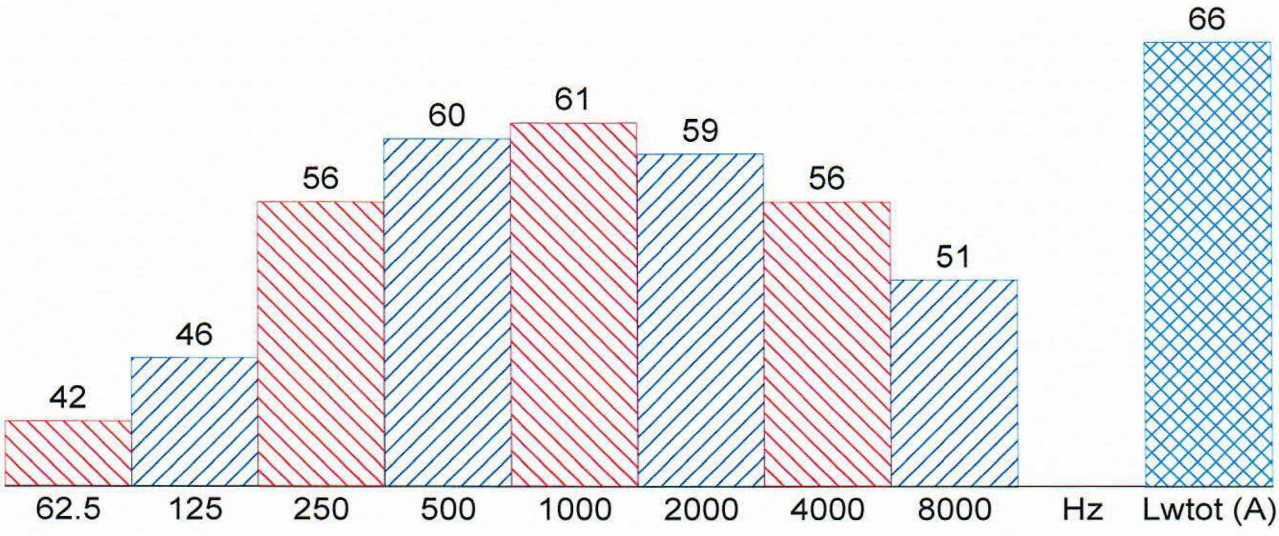
(Data obtained from Solar National Air Propulsion)

HASCON ENGINEERING S.p.A.
20025 LEGNANO (MI) - ITALY
VIA S. BERNARDINO, 131
Uff. comm. : 0331/527438-439
Telefax : 0331/527484
Internet : www.hascon.it e-mail : commerciale@hascon.it

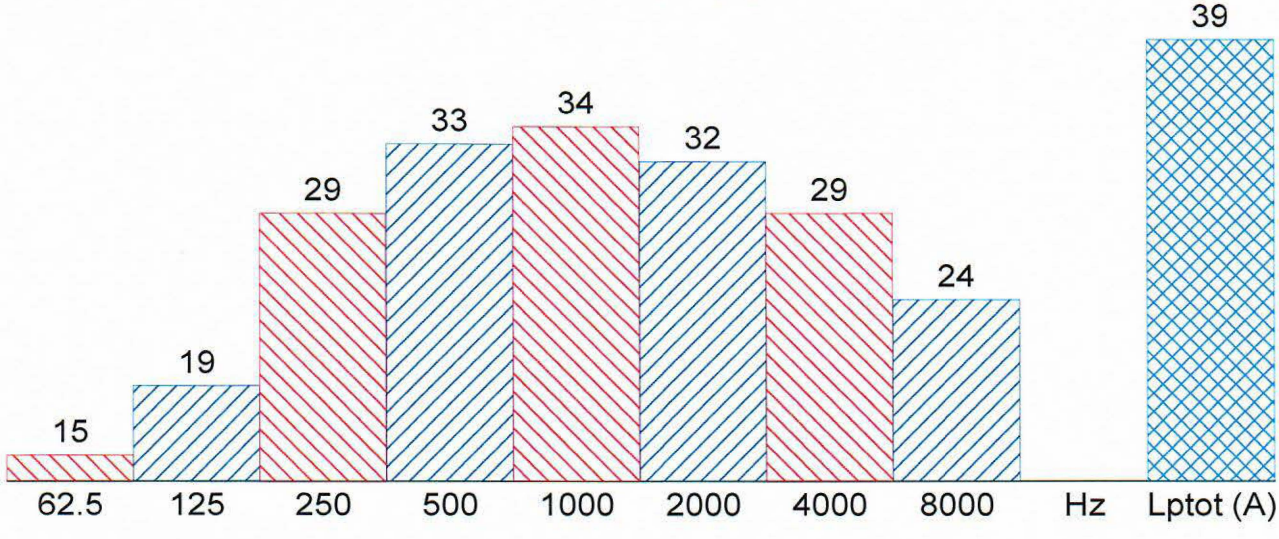
HASCON ENGINEERING®
AIR FILTRATION SYSTEMS & VENTILATION

VENTILATION TECHNOLOGY

Lw - SOUND POWER [dB(A)]



Lp - SOUND PRESSURE [dB(A)]



28 / 10-5 / 35° / L / PPG

Density : 0.075602 [lb/ft³]
Diameter : 28 [in]
Hub-Blades : 10-5
Material : PPG
Work point : Q = 0 [cfm] ; Hs = 0.557761 [inH2O]
Distance : 6 [m]

Temperature : 65 [°F]
Rotation : 940 [RPM]
Angle : 35°

ISO 9001 certified company

Warning: every particular application can modify aeraulic and sound performance.

Appendix 2Z

Septic Suitability Survey for HumSun 3, LLC

NORTHPOINT
CONSULTING GROUP, INC.

DATE: August 26, 2024

TO: Joey Whittlesey
Humboldt County Division of Environmental Health
100 H Street, Suite 100
Eureka, CA 95501

RE: HumSun – Septic Suitability
30855 Alderpoint Road
Blocksburg, CA 95514
APN: 217-253-001

Dear Mr. Whittlesey,

The following report is being submitted for your review, demonstrating the suitability of an individual sewage disposal system for the above referenced property near Blocksburg, CA. Soil and percolation testing were performed during April 2024.

SITE DESCRIPTION

The site is located on a 264-acre parcel accessible from Alderpoint Road. The parcel predominately slopes west to east towards Larabee Creek. The proposed building site is located on a large open flat, West of Alderpoint Road and East of Larabee Creek, with minor slopes of approximately 2-5%.

SOILS DESCRIPTION

On April 19, 2024, two backhoe test holes (TH#4, TH#5) were excavated near the location of the proposed buildings to depths of 8 feet. Refer to the site plan for the test hole locations. An examination of the subsurface soils in TH#4 revealed 35" of dark brown topsoil then 61" of brown zone 3 clay loam. TH#5 revealed 34" of dark brown topsoil then 62" of brown zone 3 clay loam. See the attached textural analysis sheets prepared by SHN.

Zone 3 soils are expected to provide adequate filtration of effluents, but their ability to accept effluent at a suitable rate is questionable. These soils require appropriate percolation testing to verify their suitability for effluent disposal by conventional leach methods.

Non-wet weather field percolation tests were performed at 37 inches in TH#4 and 40" in TH#5. Stabilized percolation rates were found to be approximately 18 min/inch for TH#4 and 21 min/inch for TH#5. The subsurface profile logs and percolation rate data are included towards the end of this report.

SUITABILITY RESULTS

Based on the standard 35 gallons/person/shift (Appendix C, RTM) and a conservative soil application rate of 0.4 (Table 2, RTM) at the most restrictive soil horizon encountered, an estimated 2,494 sf area is required for each primary and reserve leachfields to accommodate up to 20 employees. An area of approximately 8,861 sf was located that meets the requirements set by DEH. See the attached site plan for the suitable location. Our office is confident that sufficient treatment can be provided for up to 20 employees.

This report contains the project location and a site map with septic suitability locations, subsurface profile logs, soil texture analysis data and the pertinent samples plotted on the soil percolation suitability chart, and percolation test data.

If you have any questions regarding this matter, please call me at (707) 798-6438.

Sincerely,

Praj O. White, P.E. #C65025
Senior Project Manager



8.26.24

HUMSUN
SEPTIC SUITABILITY
APN: 217-253-001



VICINITY MAP
NOT TO SCALE

DIRECTIONS TO SITE:
FROM EUREKA, CA
- HEAD SOUTH ON US-101 S (APPROX. 19.9 MILES)
- TAKE EXIT 685 FOR CA-36 E (APPROX. 0.3 MILES)
- TURN LEFT ONTO CA-36 E (APPROX. 23.9 MILES)
- TURN RIGHT ONTO ALDERPOINT RD. (APPROX. 16.4 MILES)
- DESTINATION ON THE RIGHT

PROJECT DESCRIPTION:

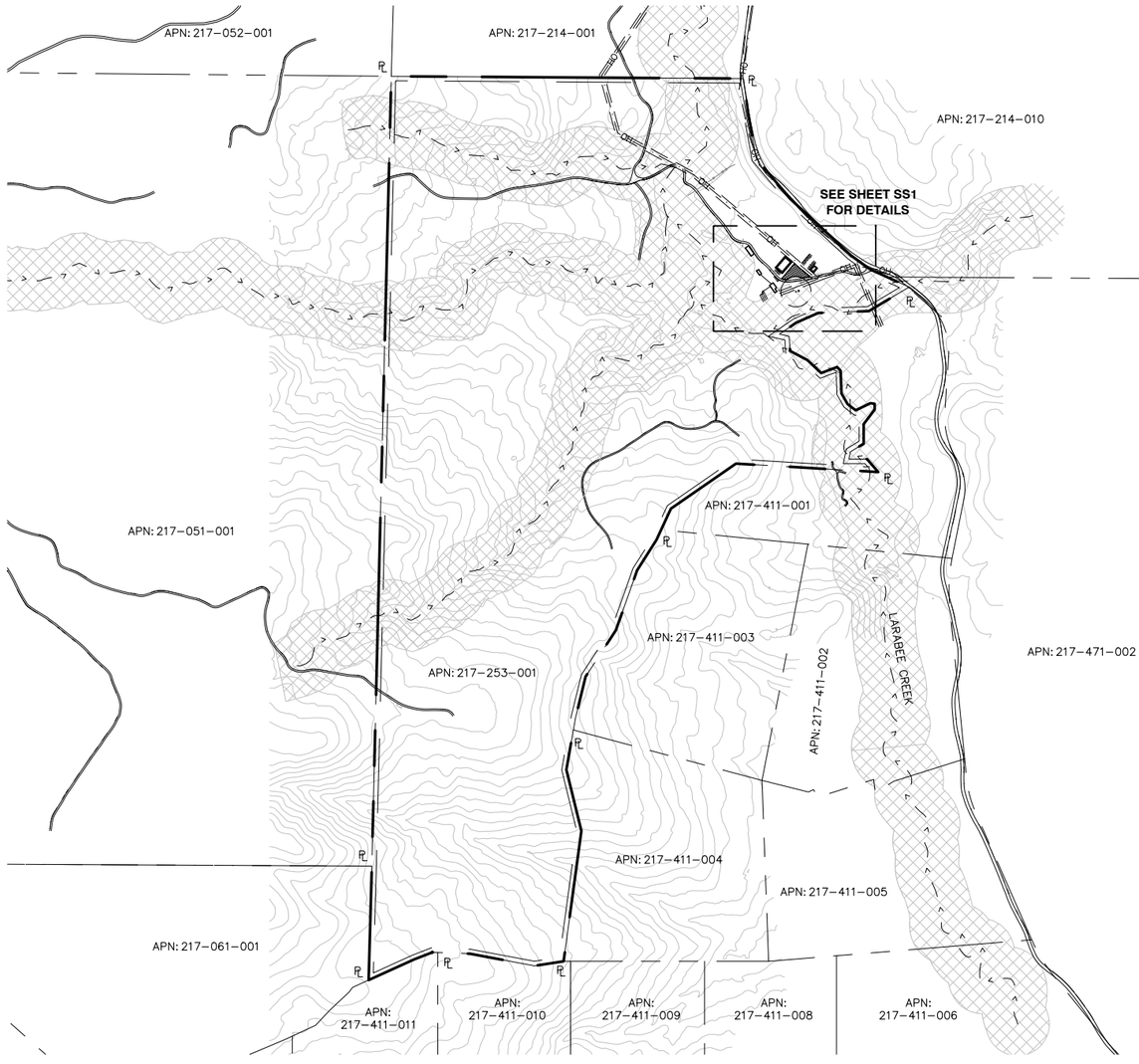
HUMSUN IS PROPOSING THE SUITABILITY OF A SEPTIC SYSTEM IN ACCORDANCE WITH THE STATE WATER RESOURCES CONTROL BOARD AND REGIONAL WATER QUALITY CONTROL BOARDS ONSITE WASTEWATER TREATMENT SYSTEM (OWTS), AND THE HUMBOLDT COUNTY REGULATIONS AND TECHNICAL MANUAL (RTM).

GENERAL NOTES:

1. DRAWING SCALE AS NOTED. WRITTEN DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALED DIMENSIONS.
2. THIS IS NOT A BOUNDARY SURVEY. BOUNDARY INFORMATION DEPICTED HAS BEEN OBTAINED FROM HUMBOLDT COUNTY 2015 GIS DATA. NORTHPOINT CONSULTING GROUP, INC. HAS NOT VERIFIED THIS PROPERTY BOUNDARY.
3. ALL NEW AND REPLACED ONSITE WASTEWATER TREATMENT SYSTEMS (OWTS) SHALL BE INSTALLED BY A STATE OF CALIFORNIA LICENSED CONTRACTOR OR PROPERTY OWNER UNDER APPROVAL OF HUMBOLDT COUNTY DIVISION OF ENVIRONMENTAL HEALTH (DEH).

SITE SEPTIC NOTES:

1. PRIVATE WATER
2. NO TREES TO BE REMOVED.
3. NO STREAMS, SPRINGS, OR WETLANDS WITHIN 100' OF THE SEPTIC SUITABILITY AREA.
4. NO PROPERTY LINES WITHIN 50' OF THE SEPTIC SUITABILITY AREA



PLOT PLAN
22x34 SHEET: 1"=500'
11x17 SHEET: 1"=1000'
0 250 500 1000

PROJECT INFORMATION:

APPLICANT:
HUMSUN 3, LLC
30855 ALDERPOINT RD.
BLOCKSBURG, CA 95514

PROPERTY OWNER:
HUMSUN RANCH, LLC
181 SANCHEZ ST.
SAN FRANCISCO, CA 94114

APPLICANTS AGENT:
NORTHPOINT CONSULTING GROUP, INC
1117 SAMOA BLVD.
ARCATA, CA 95521
(707) 798-6438

SITE ADDRESS:
APN: 217-253-001
30855 ALDERPOINT RD.
BLOCKSBURG, CA 95514

TREES TO BE REMOVED = NONE

WATER = PRIVATE
SEWER = PRIVATE

PARCEL SIZE = ±264 ACRES

LEGAL PARCEL PROPERTY SIZE = ±1,887 ACRES

ZONING = AG

GENERAL PLAN DESIGNATION = AE-B-5(160); TPZ

BUILDING SETBACKS:

	AG	SRA
FRONT	20'	30'
SIDE	6'	30'
REAR	20'	30'

SRA AREA: = YES
IN COASTAL ZONE: = NO
IN 100 YR FLOOD ZONE: = NO

SHEET INDEX:

SS0 – PLOT PLAN, VICINITY MAP, & PROJECT NOTES
SS1 – PROPOSED SITE PLAN

DRAWN BY | REVISIONS | DATE

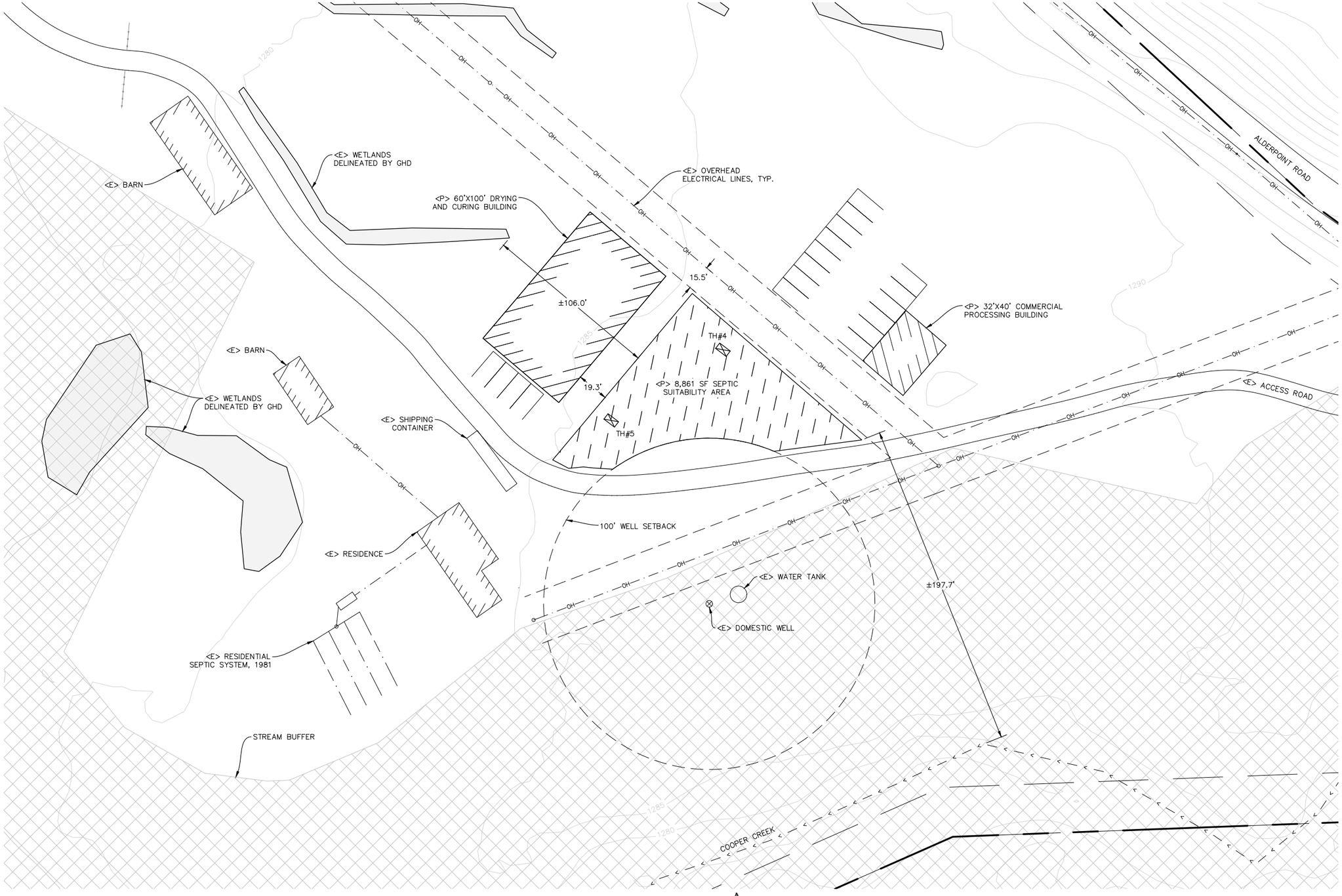
NORTHPOINT CONSULTING GROUP, INC.
1117 Samoa Blvd., Arcata, CA 95521

HUMSUN, LLC - SPTIC SUITABILITY
30855 ALDERPOINT RD, BLOCKSBURG, CA 95514
POLT PLAN, VICINITY MAP, AND PROJECT NOTES

PROJ. MGR.: POW
DRAWN BY: TJS
DATE: 08-26-24
SCALE: AS SHOWN

SHEET
SS0
24-001

August 26, 2024 - 13:16 Dwg Name: P:\HumSun Ranch, LLC - HumSun Ranch - 24-001\CAD\Production Drawings\HumSun - SEPTIC 11x17.dwg Updated By: TaraSwift



PROPOSED SITE PLAN

22x34 SHEET: 1"=30'
11x17 SHEET: 1"=60'

0 15 30 60

N

DRAWN BY
REVISIONS
DATE

NORTHPOINT
CONSULTING GROUP, INC.
1117 Samoa Blvd., Arcata, CA 95521

HUMSUN, LLC - SPTIC SUITABILITY

30855 ALDERPOINT RD, BLOCKSBURG, CA 95514

PROPOSED SITE PLAN

PROJ. MGR.: POW
DRAWN BY: TJS
DATE: 08-26-24
SCALE: AS SHOWN

SHEET
SS1
24-001

August 26, 2024 - 14:41 Dwg Name: P:\HumSun Ranch, LLC - HumSun Ranch - 24-001\CAD\Production Drawings\HumSun - SEPTIC 11x17.dwg Updated By: TaryDeWitt

Percolation Test Data
Project: HUMSUN
Job#: 24-001
APN# 217-253-001
Test Date: 4/19/2024

Test Hole	#4
Water Table	> 8 feet
Soil Type	Zone 3 Clay Loam
Presoak	
Depth	37"

Test #	Time	Fill (in)	Meas. (in)	Min.	Drop (in)	Rate (min/inch)
1	11:40	9				
	11:56		8	0:16	1	16.0
2	11:56	8				
	12:14		7	0:18	1	18.0
3	12:15	9				
	12:32		8	0:17	1	17.0

STABILIZED RATE FOR DESIGN = 18 MIN/INCH

Test Hole	#5
Water Table	> 8 feet
Soil Type	Zone 3 Clay Loam
Presoak	
Depth	40"

Test #	Time	Fill (in)	Meas. (in)	Min.	Drop (in)	Rate (min/inch)
1	11:44	6				
	12:00		5	0:16	1	16.0
2	12:00	5				
	12:20		4	0:20	1	20.0
3	12:21	6				
	12:38		5	0:17	1	17.0
4	12:38	6				
	12:59		5	0:21	1	21.0

STABILIZED RATE FOR DESIGN = 21 MIN/INCH

SUBSURFACE PROFILE LOG

Test Hole #4

Depth		Descriptions and Observations	Sample	Classification
0 - - - 1 - - - 2 - - -		7.5yr 3/2. Dark Brown, topsoil, medium moderate subangular blocky, dry, w/ few fine rock fragments, w/ many fine root content to 6 inches.		
3 - - - 4 - - - 5 - - - 6 - - - 7 - - - 8		7.5yr 3/2. Dark Brown, clay loam, medium moderate angular blocky, moist, w/ few fine rock fragments, w/ no root content. Ground water and mottling at 8 feet.	TH#4	Zone 3
- - - 9 - - - 10		bottom of test hole		

logged by tjs

Profile Logs show subsurface conditions by observations at the dates and locations indicated and it is not warranted that they are representative of subsurface conditions at other locations and times.

SUBSURFACE PROFILE LOG

Test Hole #5

Depth		Descriptions and Observations	Sample	Classification
0 - - - 1 - - - 2 - - -		7.5yr 3/2. Dark Brown, topsoil, medium moderate subangular blocky, dry, w/ few fine rock fragments, w/ many fine root content to 6 inches.		
3 - - - 4 - - - 5 - - - 6 - - - 7 - - - 8		7.5yr 3/2. Dark Brown, clay loam, medium moderate angular blocky, moist, w/ few fine rock fragments, w/ no root content. Mottling at 7 feet. Ground water at 8 feet.	TH#5	Zone 3
- - - 9 - - - 10		bottom of test hole		

logged by tjs

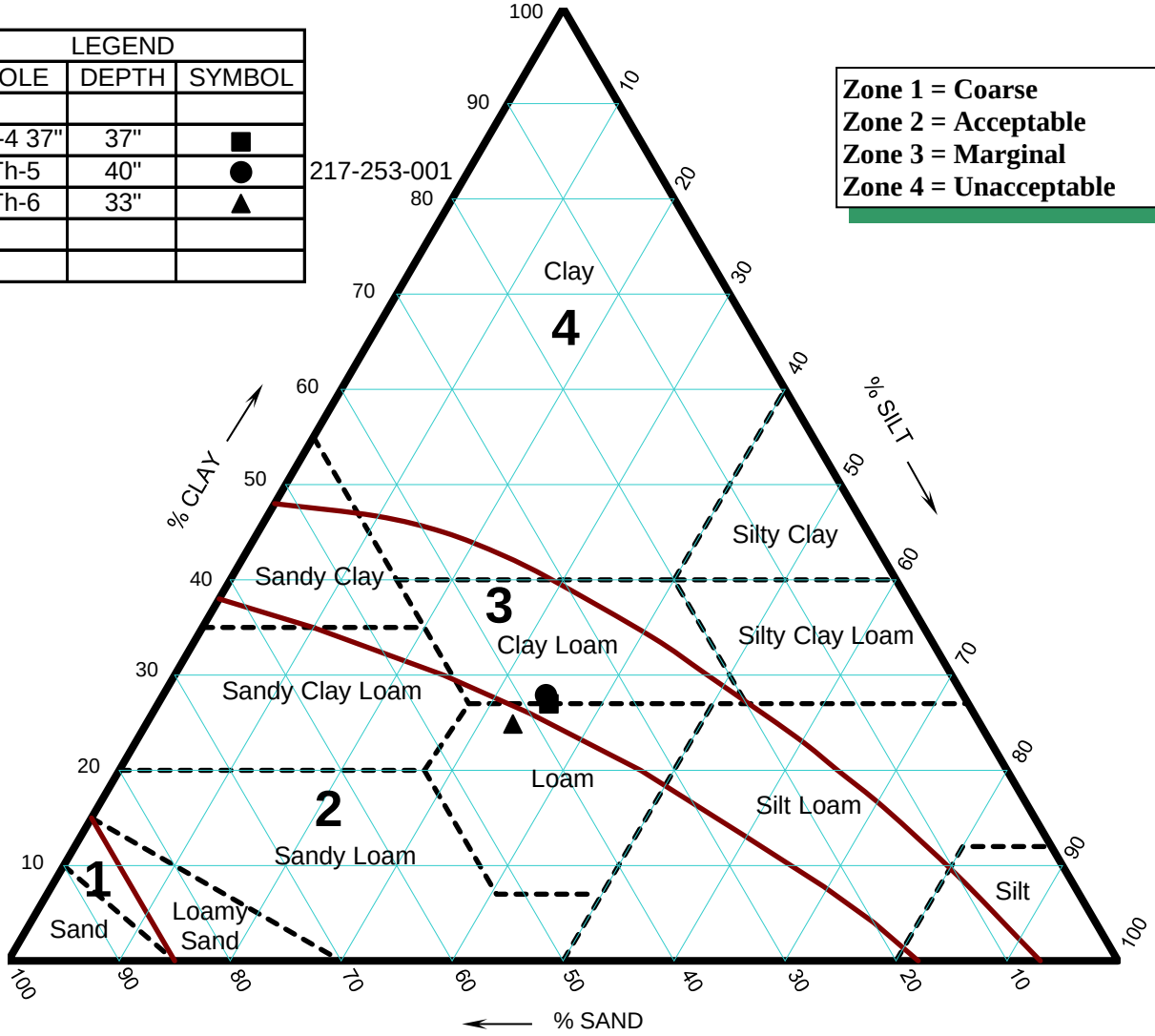
Profile Logs show subsurface conditions by observations at the dates and locations indicated and it is not warranted that they are representative of subsurface conditions at other locations and times.

SOIL PERCOLATION SUITABILITY CHART

LEGEND		
HOLE	DEPTH	SYMBOL
Th-4 37"	37"	■
Th-5	40"	●
Th-6	33"	▲

217-253-001

Zone 1 = Coarse
Zone 2 = Acceptable
Zone 3 = Marginal
Zone 4 = Unacceptable



NOTES

1. Soil texture is plotted on triangle based on percent sand, silt, and clay as determined by hydrometer analysis.
2. Adjustment for coarse fragments has been made by moving the plotted point in the sand direction an additional 2% for each 10% (by volume) of fragments greater than 2mm in diameter.
3. Adjustment for compactness of soil has been made by moving the plotted point in the clay direction an additional 15% for soils having a bulk-density greater than 1.7 gm/cc, when analyzed.
4. For soils falling in sand, loamy sand, or sandy loam, classification adjustment for bulk density will generally not affect suitability and a bulk-density analysis was not necessary.

JOB NUMBER:	**022031**	**DATE:**	**06/03/24**
JOB NAME:	**North Point**	**APN:**	**217-253-001**

Phone: (707) 441-8855 **Email:** info@shn-engr.com **Web:** shn-engr.com
812 W. Wabash Avenue, Eureka, CA 95501-2138

Phone: (707) 441-8855 Email: info@shn-engr.com Web: shn-engr.com
812 W. Wabash Avenue, Eureka, CA 95501-2138

Reference:

217-253-001

SOIL PERCOLATION SUITABILITY / TEXTURAL ANALYSIS RESULTS

Job Name: North Point **Sampled By: Client**
Date Sampled: 05/16/24 **Date Tested: 06/03/24**
Date Received: **AP Number: 217-253-001**

Sample ID	Depth	% Sand	% Clay	% Silt	% Coarse Fragments by Volume	Zone	Bulk Density
Th-4 37"	37"	37.5	27.1	35.4	1.3	3	*
	Material: **Clay Loam**						
Th-5	40"	37.0	28.2	34.8	3.2	3	*
	Material: **Clay Loam**						
Th-6	33"	41.7	25.0	33.3	2.0	2	*
	Material: **Loam**						
	Material:						
	Material:						

* = no peds provided

Regional Water Quality Control Board Zone Descriptions:

Zone 1 - Soils in this zone are very high in sand content. They readily accept effluent, but because of their low silt and clay content they provide minimal filtration. These soils demand greater separation distances from groundwater.

Zone 2 - Soils in this zone provide adequate percolation rates and filtration of effluent. They are suitable for use of a conventional system without further testing.

Zone 3 - Soils in this zone are expected to provide good filtration of effluent, but their ability to accept effluent at a suitable rate is questionable. These soils require wet-weather percolation tests to verify their suitability for effluent disposal by conventional leachfield methods.

Zone 4 - Soils in this zone are unsuitable for a conventional leachfield because of their severe limitations for accepting effluent.

APPENDIX E – OWTS SETBACK REQUIREMENTS

Minimum Setback Distance Requirements

Tanks and dispersal fields must be located to meet the minimum setback distances shown below. See page reverse for required OWTS horizontal setbacks to public water wells and surface water intakes.

Minimum Horizontal Distance (ft.)	Public Water Well	Private Water Well	Surface Intake Public Water	Perennial Stream, Wetland & Other Waters*	Ephemeral Stream or Drainage Swale*
Septic Tank	100	100		50	25
Pump Tank	100	100		50	25
Dispersal System	150	100	200-400 (see table below)	100	50

Minimum Horizontal Distance (ft.)	Property Lines Public Water	Property Lines (Private Water)	Buildings or Structures	Cut Banks Unstable Land Steep Slopes>30%	Large Trees
Septic Tank	5	25	5	25	10
Pump Tank	5	25	5	25	10
Dispersal System	10	50	10	25	10

* Setback distances from surface waters is determined based on the US Army Corps of Engineers' definition of Ordinary High Water Mark, 33 CFR 328.3(e).