

DROUGHT MANAGEMENT PLAN

**19658 East Road
Lower Lake, Ca
APN 012-049-19**

PREPARED FOR:

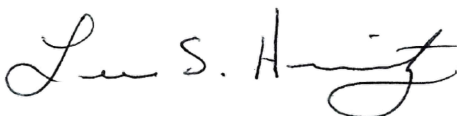
Green Lake Exotics
19658 East Road
Lower Lake, CA

January 15, 2024

PREPARED BY:

HURVITZ ENVIRONMENTAL SERVICES INC.

105 Morris Street, Suite 188
Sebastopol, California 95472



Lee S. Hurvitz, PG #7573 CHG #1015
Certified Hydrogeologist



PROJECT No. 5076.01

January 15, 2024

Green Lake Exotics
19658 East Road
Lower Lake, CA 95457

RE: Drought Management Plan
19658 East Road
Lower Lake, CA
APN 012-049-190
Hurvitz Environmental Project No. 5076.01

Green Lake Exotics:

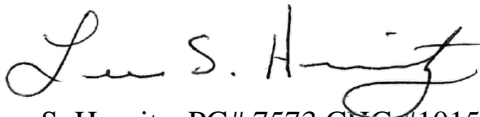
Hurvitz Environmental Services, Inc. (HES) is pleased to submit this Drought Management Plan (DMP) for the above referenced property. HES prepared this DMP in accordance with the Lake County Planning Departments Cannabis Ordinance. The purpose of this DMP is to outline steps that the project operator will take to minimize water use during a Lake County declared Drought Emergency.

The water conservation methods described herein include reduction in cultivation canopy, application of mulch and wind breaks to minimize evaporation, and the installation of rainwater tanks to supplement groundwater use. If the proposed water conservation measures are implemented, we conclude that the operator should be able to reduce their overall water use by approximately 20% during a declared Drought Emergency.

We appreciate the opportunity to provide you with these services. Please do not hesitate to contact us at your convenience, should you have any questions or comments regarding this report or our recommendations.

Sincerely,

HURVITZ ENVIRONMENTAL SERVICES, INC



Lee S. Hurvitz, PG# 7573 CHG #1015
Certified Hydrogeologist

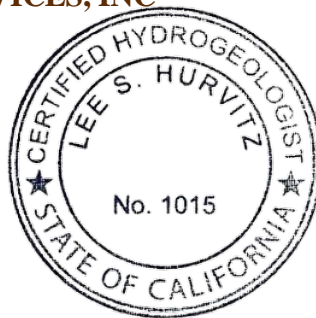


TABLE OF CONTENTS

1.0	INTRODUCTION AND SCOPE OF SERVICES	1
2.0	SITE DEVELOPMENT AND WATER USE	2
2.1	OUTDOOR CULTIVATION	2
2.2	PROPAGATION CULTIVATION	2
2.3	RESIDENTIAL WATER USE.....	2
2.4	EMPLOYEE WATER USE	3
2.5	TOTAL SITE WATER USAGE	3
3.0	WATER CONSERVATION METHODS	4
3.1	REDUCTION IN CANOPY	4
3.2	APPLICATION OF MULCH	4
3.3	INSTALLATION OF WIND BREAKS & SHADE CLOTH	4
3.4	RAINWATER CAPTURE	5
3.5	TOTAL WATER CONSERVATION	5
4.0	CONCLUSIONS	6
5.0	LIMITATIONS	7

FIGURES

PLATE 1 SITE LOCATION MAP

PLATE 2 ENGINEERED SITE PLAN

TABLES

TABLE 1 TOTAL SITE WATER USAGE

1.0 INTRODUCTION AND SCOPE OF SERVICES

We understand that Green Lake Exotics (the applicant) has applied to Lake County for approval to develop an approximately 1-acre outdoor cannabis cultivation facility (the project) at the property identified as 19658 East Road, Lower Lake, California (the site). The site is located as shown on **PLATE 1 – Site Location Map**. The Urgency Ordinance approved by the Lake County Board of Supervisors on July 27th, 2021 (Ordinance No. 3106) requires cannabis cultivation applicants to provide a plan depicting how the applicants plan to reduce groundwater use during a declared Drought Emergency. Therefore, on behalf of the applicant Hurvitz Environmental Services (HES) has prepared this Drought Management Plan in accordance with the Lake County Permit Requirements.

This Drought Management Plan includes the following elements:

- ☐ Estimates of existing and proposed water uses for the property.
- ☐ Discussion on proposed methods for water conservation during a drought emergency.
- ☐ Estimated reduction in water use from the proposed water conservation practices.

2.0 SITE DEVELOPMENT AND WATER USE

The applicant proposes to cultivate one (1) acres of outdoor cannabis at the site from April through October (214 days) each year. The onsite domestic well (Well Completion Report # e0332222) is located approximately 50 feet from the cultivation area and will provide water for the entire cultivation project. Water from the domestic well will be plumbed directly to 2-2,500-gallon poly storage tanks located proximate to the cultivation area as shown on **Plate 2-Engineered Site Plan**. The project plans do not involve any water diversions, or imported water. The approximate locations of the proposed outdoor cultivation areas, domestic well and onsite residences are shown on (**Plate 2 – Engineered Site Plan**).

The estimated annual water usage for the entire 1-acre cultivation project (irrigation and employee water usages) is 690,077 gallons or 2.12 acre-ft. Details on the cultivation projects water usage, including breakdowns of average and peak monthly usage, are presented in **Table 1**.

2.1 OUTDOOR CULTIVATION

It is our understanding that a cannabis water usage rate of 2-acre feet/acre/year for outdoor cultivation is not out of the ordinary for typical 6-month cycle large cannabis plants. Using these outdoor cultivating water irrigation rates, we can estimate the annual water required for cannabis irrigation.

$$43,560 \text{ ft}^2 \text{ (outdoor cultivation)} / 43,560 \text{ ft}^2/\text{acre} \times 2 \text{ acre-feet/year (irrigation rate)} =$$

2.0 acre-feet/year or 651,702 gallons/year for Outdoor Cultivation

2.2 PROPAGATION CULTIVATION

The applicant also plans to develop 1,000 sq/ft for cannabis propagation space as part of the Project development. The propagation greenhouse will only hold immature plants and clones that are in the process of rooting or growing. Water use is anticipated to be approximately 1,100 gallons per month for the propagation greenhouse or **13,000 gallons/year**. Breakdowns on the propagation greenhouse water use are presented on **TABLE 1**.

2.3 RESIDENTIAL WATER USE

There is currently no domestic water use at the site and there are no plans to have permanent residents onsite. Therefore, domestic water use was not factored into the water use assessment for this property.

2.4 EMPLOYEE WATER USE

We understand that the Project will require two full-time farm managers, as well as, several part-time seasonal employees. Therefore, for the purpose of this Assessment we estimate that the project will require an average of five full-time employees throughout the year. Potable water for farm workers will come from the Project Well (#e0332222). Using the Napa County Water Availability Guidance Document² estimate of 15 gallons of water utilized per day per cultivation worker on site, we calculated the following groundwater usage for the Project:

$$\begin{aligned} \text{Annual Onsite Worker Water Use} &= 5 \text{ (average number of daily employees)} \times \\ &15 \text{ gallons/day (daily employee water usage)} \times 365 \text{ days/year} = \\ &\underline{\underline{27,375 \text{ gallons /year} = 0.08 \text{ acre-feet/year} = \text{Worker Groundwater Use}}} \end{aligned}$$

2.5 TOTAL SITE WATER USAGE

In summary, as shown on **Table 1** below, the total annual project water use estimate is

$$\begin{aligned} &651,702 \text{ gallons (Outdoor cultivation)} + 27,375 \text{ gallons (Employee Water Usage)} + \\ &13,000 \text{ gallons (propagation)} = \\ &\underline{\underline{692,077 \text{ gallons or 2.12 acre-ft.} = \text{Total Site Water Usage}}} \end{aligned}$$

TABLE 1 – TOTAL PROJECT AND SITE WATER USAGE

Source	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
	-----Gallons-----												
Outdoor Cultivation	0	0	0	75,000	85,000	95,000	100,000	100,000	85,000	80,000	31,702	0	651,702
Employees	1,000	1,000	2,500	2,500	2,500	2,500	2,500	2,500	3,000	3,500	3,000	875	27,375
Propagation	1,100	1,100	1,500	1,500	1,100	1,200	1,100	1,100	1,100	1,100	0	1,100	13,000
TOTAL USAGE	2,200	2,200	4,000	79,000	88,600	98,700	103,600	103,600	89,100	84,600	34,702	1,975	692,077

Based on these estimates for onsite water use it appears that the peak water demand at the site will occur annually between in July and September with peak daily water demand being approximately 3,397 gallons/day.

² Water Availability Analysis (WAA) Guidance Document, Napa County, Adopted May 12, 2015.

3.0 WATER CONSERVATION METHODS

In order to reduce groundwater use during a Lake County or State declared Drought Emergency, the applicant plans to implement the following water conservation methods.

3.1 REDUCTION IN CANOPY

If the State of California or the County of Lake declares a Drought Emergency by June 1st of each year the project applicant will reduce their outdoor canopy size by 10%. A 10% reduction in canopy size is approximately equal to 4,360 ft² and will equate to an irrigation water use reduction of 65,170 gallons of groundwater/year. This proposed reduction in canopy size will also equate to slight reduction in employee water use and propagation water use. The employee groundwater use is expected to be reduced by 2,000 gallons/year and propagation water use will be reduced by 1,000-gallons/year which brings the total groundwater savings from 10% reduction in canopy size to **68,170 gallons/year**.

3.2 APPLICATION OF MULCH

If the State of California or the County of Lake declares a Drought Emergency by June 1st of each year the project applicant will spread several inches of mulch over the entire outdoor cultivation area. The application of mulch will help to minimize evaporation from the soil especially during the late summer months. Evaporation from irrigated soils during the summer months can be as high as 0.1-inches/day. Therefore, it is estimated that 10% of the daily irrigation water is lost to evaporation. Since we know that the irrigation demand for 1-acre of cannabis between June and October 31 is 545,000/gallons (**See Table 1**) we can assume that 54,500 gallons are lost to soil evaporation each year. A 2014 study by the University of Florida estimated that the application of 3-inches of mulch material can reduce soil evaporation rates by as much as 33%. Therefore, the application of mulch to the canopy area could potentially reduce the sites groundwater demand by 17,985 gallons/year. However, since the project applicant would have already reduced their canopy size by 10% during a Drought Emergency the estimated water saving would be **16,187 gallons/year** (17,985 gallons x 0.9 (reduced canopy size)).

3.3 INSTALLATION OF WIND BREAKS & SHADE CLOTH

If the State of California or the County of Lake declares a Drought Emergency by June 1st of each year the project applicant will install wind breaks and shade cloth to help minimize soil evaporation. The wind breaks will be installed using tarps or fabric material placed on the cultivation areas perimeter fencing and shade cloth will be temporally installed within the canopy area. These methods for water conservation are difficult to quantify but are expected to have slightly less significant effect as the soil mulching discussed above. Therefore, for the purpose of this assessment we will assume that the proposed wind breaks and shade cloth will reduce soil evaporation rates by an additional 17%. Over the entire cultivation season (June-October) this groundwater savings is anticipated to be approximately **8,093 gallons/year**.

3.4 RAINWATER CAPTURE

Once the project is fully developed, the applicant plans to install rainwater catchment onto the proposed cannabis processing structure. The captured water would be stored in a poly tank and used onsite for cannabis irrigation, onsite landscaping and dust control. We estimate that the average rainfall at the site is 38-inches a year and that the roof capture space is 3,000 sq/ft. Based on these assumptions the rain water capture potential at the site is approximately 42,408 gallons/year. This is calculated using the Permit Sonoma Model for rainwater catchment which provides a coefficient for drought conditions and system efficiency. The rainwater capture calculation is presented below.

$$0.6 \text{ (drought and efficiency factor)} \times 0.62 \text{ (unit conversion)} \times 3,000 \text{ sq/ft (catchment area)} \\ \times 38\text{-inches (average annual precipitation)} = \\ \textbf{42,408 gallons or 0.13 acre-feet/year = Total Rainwater Catchment Potential}$$

3.5 TOTAL WATER CONSERVATION

In summary, the total annual groundwater use reduction proposed by the applicant during a declared Drought Emergency is 68,170 gallons/year (Canopy Reduction/employees) + 16,187 gallons/year (Mulch Application) + 8,093 gallons/year (Wind Break and Shade Cloth) + 42,408 gallons/year (Rainwater Catchment) = **134,858 gallons/year (0.41 acre-feet/year)**. This equates to a ~19.5% reduction in groundwater use for cannabis related activities onsite.

4.0 CONCLUSIONS

The project applicant plans to cultivate one acre of outdoor cannabis at the site and will utilize groundwater for irrigation, propagation, and employees. The total estimated water use for this project is 2.12 acre-feet/year. While previous studies for this property have demonstrated that adequate groundwater supplies are available for this proposed project onsite, the applicant has developed this plan to reduce groundwater use onsite if a Drought Emergency is declared by the County of Lake or the State of California. Based on the groundwater conservation methods discussed here we estimate the applicant could save approximately 134,858 gallons/year or approximately 19.5% of the projects annual water use.

In summary:

Estimated Cultivation Usage (1 acre canopy) = 651,702 gallons/year

Estimated Worker Usage = 27,375 gallons/year

Estimated Propagation Usage = 13,000 gallons/year

Total Estimated Project Water Use = 692,077 gallons/year

Estimated Irrigation Water Reduction during Drought = 67,170 gallons/year

Estimated Employee Water Reduction during Drought = 1,000 gallons/year

Estimated Water Use Reduction from Mulch = 16,187 gallons/year

Estimated Water Use Reduction from Wind Break/Shade Cloth = 8,093 gallons/year

Rainwater Catchment = 42,408 gallons/year

Total Groundwater Reduction during Drought = 134,858 gallons/year

By implementing the proposed groundwater conservation methods during a declared Drought Emergency, the applicant will reduce their water use by almost 20% which is consistent with State and County recommendations.

5.0 LIMITATIONS

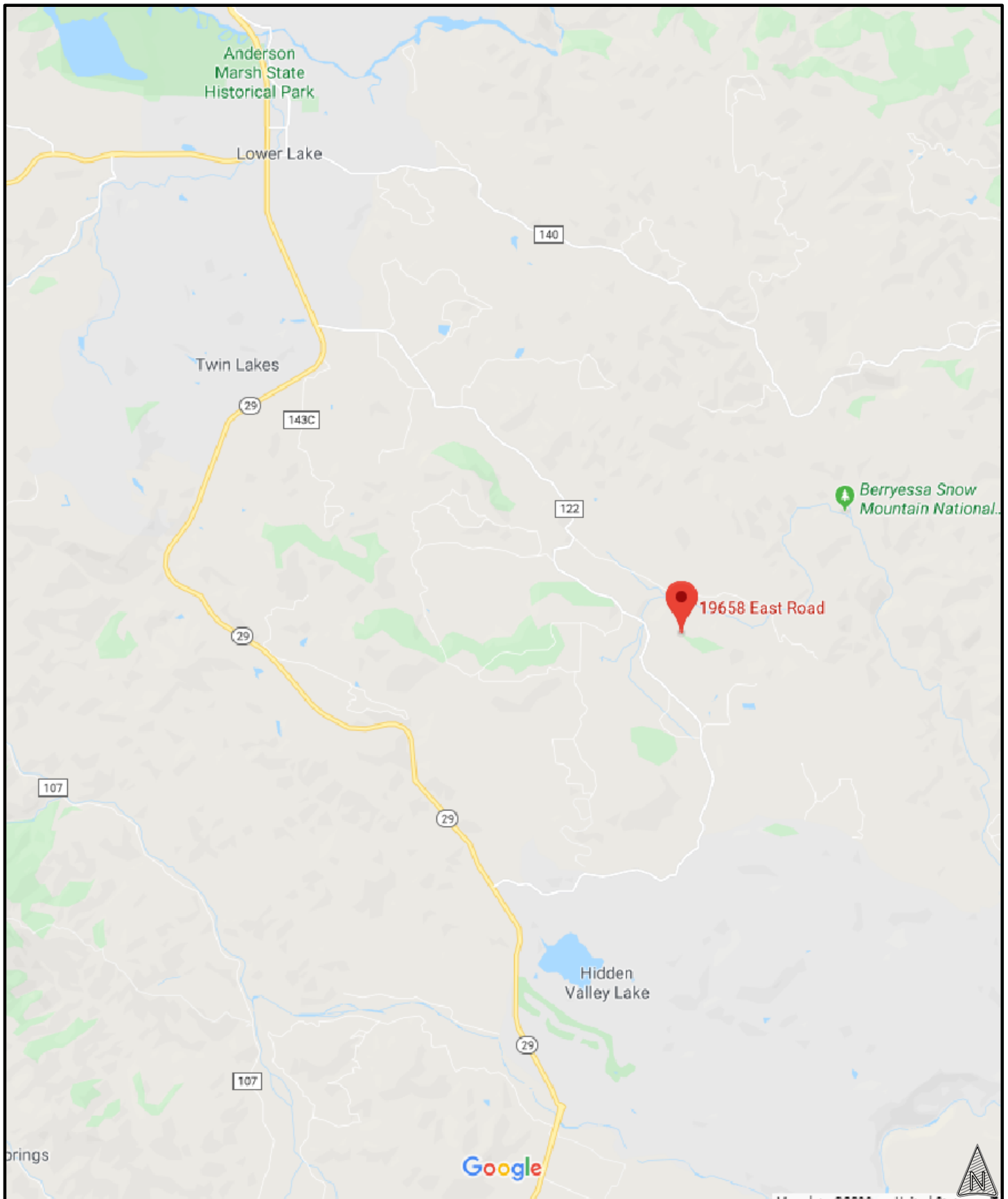
HES is not responsible for the independent conclusions, opinions or recommendations made by others based on the records review, site inspection, field exploration, laboratory test data and interpretations presented in this report.

Groundwater systems of Lake County are typically complex, and available data rarely allows for more than general assessment of groundwater conditions and delineation of aquifers. Hydrogeologic interpretations are based on the drillers' reports made available to us through the California Department of Water Resources, available geologic maps and hydrogeologic studies and professional judgment. This analysis is based on limited available data and relies significantly on interpretation of data from disparate sources of disparate quality.

It should be noted that hydro-geological assessments are inherently limited in the sense that conclusions are drawn and recommendations developed from information obtained from limited research and site evaluation. Additionally, the passage of time may result in a change in the environmental characteristics at this site and surrounding properties. This report does not warrant against future operations or conditions, nor does this warrant operations or conditions present of a type or at a location not investigated.

This study is not intended to assess if any soil contamination, waste emplacement, or groundwater contamination exists by subsurface sampling through the completion of soil borings and the installation of monitoring wells. The scope of work, determined by the client, did not include these activities.

This Assessment Report is for the exclusive use of Green Lake Exotics, his affiliates, designates and assignees and no other party shall have any right to rely on any service provided by Hurvitz Environmental Services without prior written consent.



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SITE LOCATION MAP
 012-040-190
 19658 EAST ROAD
 LOWER LAKE, CALIFORNIA 95457

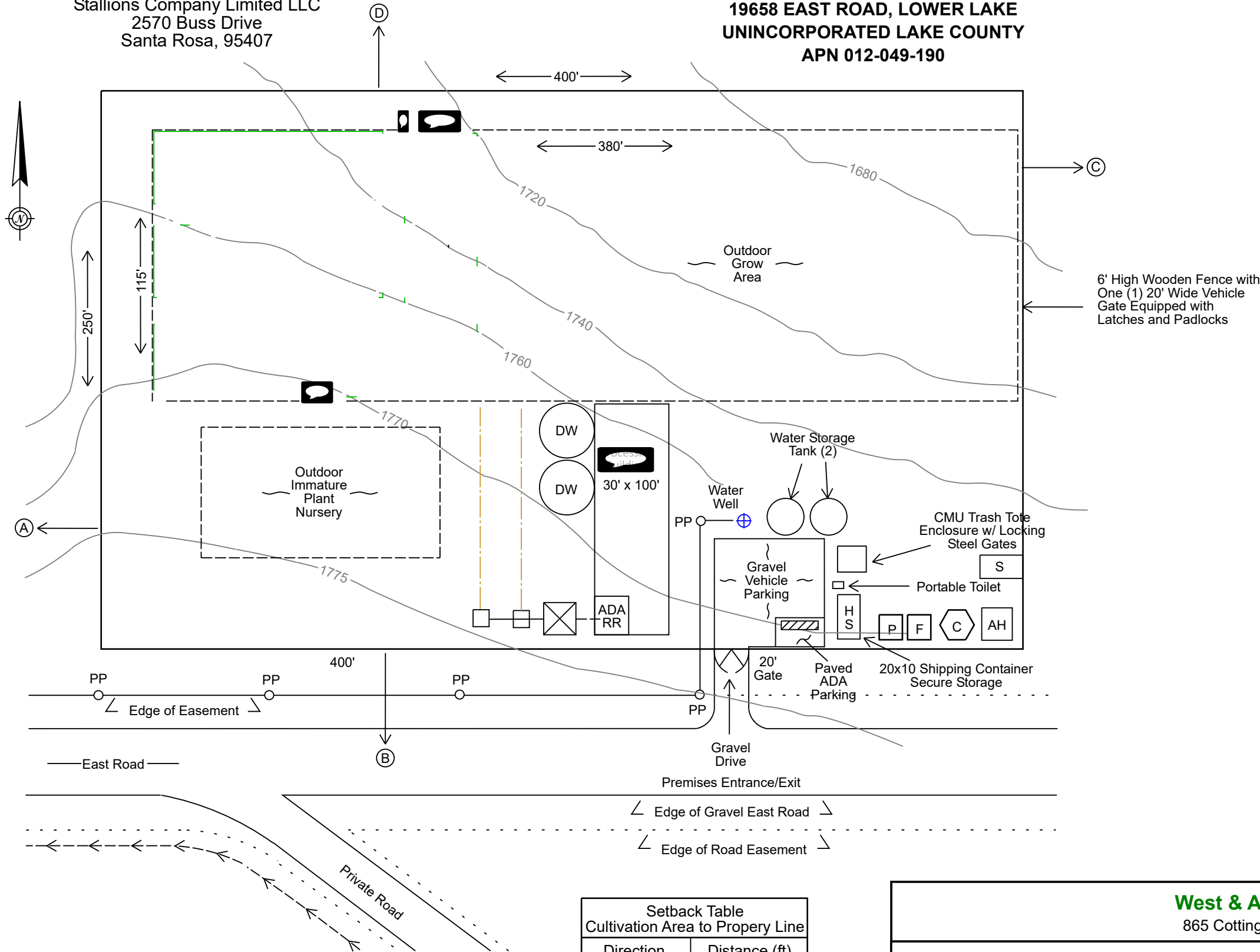
JOB NUMBER: 5076.01
DATE: 2/4/20
PLATE: 1

COMMERCIAL CANNABIS CULTIVATION PERMIT APPLICATION SITE PLAN

Owner
Stallions Company Limited LLC
2570 Buss Drive
Santa Rosa, 95407

GREEN LAKE EXOTICS
19658 EAST ROAD, LOWER LAKE
UNINCORPORATED LAKE COUNTY
APN 012-049-190

Applicant
Green Lake Exotics
19658 East Road
Lower Lake, CA 95457



Taxable Area

Cannabis Canopy

Outdoor Cultivation: 60 sq ft
Outdoor Plant Nursery: 1,000 sq ft
Total Canopy 40,560 sq ft

Other

Utility Building: 3,000 sq ft
Total Taxable Area 43,560 sq ft

- Topographic Contour
- Recorded Easement
- Manmade Drainage Ditch with Direction of Flow
- Wastewater Leach Lines
- Power Pole
- Cultivation Area Perimeter
- Mature Plant Area Boundary
- Immature Plant Area
- Pesticide Storage - 15' x 10'
- Fertilizer Storage - 15' x 10'
- Compost Area - 65 sq ft
- Secure Administrative Hold Facility - 150 sq ft
- Security Office - 20' x 10'
- ADA Compliant Restroom
- Harvest Storage - 15' x 10'
- 5,000 gal Drought Water Storage Tanks (filled from roof gutter)
- 2,000 gal Septic Tank

Setback Table Cultivation Area to Property Line	
Direction	Distance (ft)
A	140
B	630
C	400
D	160

West & Associates Engineers, Inc. 865 Cotting Lane, Ste F, Vacaville, CA 95688		
Project Name: Green Lake Exotics	Date: April 2023	Cultivation Area Detail
Location: 19658 East Road, Unincorporated Lake County	Scale: 1" = 50'	
Project No.: 20-44	Drawn By: DLG	SHEET NUMBER 5 of 7
Approved By: BMW	Rev: 20	