**Section 12. Water Use**

**Intent: To conserve the County’s water resources by minimizing the use of water.**

**This section shall:**

* **Identify the source of water, including location, capacity, and documentation that it is a legal source.**

The source of water for GSH commercial cannabis operations is a groundwater well located on an adjacent parcel (APN 01105601) also owned by the Project parcel landowner. Location coordinates of groundwater well are 38°55’19.52”N, -122°46’9.84”W. According to the well driller’s log, the well has a capacity of 90 gallons per minute. The following documents are attached to this Property Management Plan: official State of CA-filed well log; Water Demand and Water Availability Analysis prepared for the Stocking Vineyard Project[[1]](#footnote-1), and the well-parcel landowner authorization for commercial cannabis operations.

* **Describe the proposed irrigation system and methodology.**

All irrigation systems for the commercial cannabis operations are designed to efficiently deliver water via drip tubing and micro-sprinkler materials to minimize water loss due to evaporation. Irrigation water for the proposed commercial cannabis operations will be pumped from the groundwater well to four 2,500-gallon water storage tanks positioned above the two proposed canopy areas via an HDPE water supply line. The water storage tanks will be equipped with a float valve to stop the flow of water from the well when the tanks are full. An HDPE water supply line will be run from the water storage tanks to the irrigation system of the proposed cultivation area, to gravity feed irrigation water to the irrigation system. The water supply lines will be equipped with shutoff valves and inline water meters compliant with California Code of Regulations, Title 23, Division 3, Chapter 2.7. The irrigation system of the proposed cultivation area(s) will be composed of PVC piping, black poly tubing, and drip tapes/lines. Supplemental irrigation may be applied by hand using garden hoses.

* **Describe the amount of water projected to be used on a monthly basis for irrigation and separately for all other uses of water and the amount of water to be withdrawn from each source of water on a monthly basi**s.

|  |  |
| --- | --- |
| *Type of Water Use* | *Projected amount of groundwater use* |
| Crop irrigation | 36,000 gallons per month |
| Domestic | 18,000 gallons per month |
| Firebreak maintenance | 18,000 gallons per month |
| Ranch operations | 18,000 gallons per month |

* **Provide calculations as to the efficiency of the irrigation system using the methodology of the Model Water Efficient Landscape Ordinance (California Code of Regulations, Title 23, Division2, Chapter 27).**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| *Hydrozone* | *Plant Water Use Type(s)* | *Plant Factor (PF)[[2]](#footnote-2)* | *Hydrozone Area (HA)[[3]](#footnote-3) (ft2)* | *PF x HA (ft2)* |
| Cultivation  Area(s) | Moderate/Medium[[4]](#footnote-4) | 0.4- 0.6 | 87,120 | 34,848 –  52,272 |
| Companion Herbs/Plants2 | Low[[5]](#footnote-5) | 0-0.3 | 10,000 | 0 – 3,000 |

|  |  |  |  |
| --- | --- | --- | --- |
| *Quantification* | *Formula* | *Equation* | *Result* |
| Maximum Applied Water Allowance[[6]](#footnote-6) | MAWA=(ETo) (0.62) [(0.7 x LA) + (0.3 x SLA)][[7]](#footnote-7) | (49.4) (0.62) [(0.7 x 97,120) + (0.3 x 0)] | 2,082,213.952 gallons |
| Estimated Total Water Use per year[[8]](#footnote-8) | ETWU = (ETo) (0.62) [(PF x HA)/IE + SLA)][[9]](#footnote-9) | ETWU = (49.4) (0.62) [(53,272)/0.88 + 0] | 1,854,107.745 gallons |

GSH’s proposed cannabis cultivation operation has a Maximum Applied Water Allowance greater than its Estimated Total Water Use.

GSH anticipates that the actual water usage of their proposed cultivation operation will be less than 432,000 gallons per year (based on water usage data from their existing cultivation operation), which is approximately 21 percent of the MAWA for the proposed cultivation operation and 23 percent of its ETWU.

**Describe the methodology that will be used to measure the amount of water used and the required monitoring:**

Please see the table in Section 11. Water Resources for the methodology of measuring water consumption and monitoring plan.







1. Aspegren, Drew L. P.E., Stocking Erosion Control Plan Water Demand and Water Availability Analysis. Napa Valley Vineyard Engineering, Inc. St. Helena, CA. May 30, 2018. [↑](#footnote-ref-1)
2. PF = Plant Factor from Water Use Classification of Landscape Species [↑](#footnote-ref-2)
3. HA = Hydrozone Area (high, medium, and low water use areas); [↑](#footnote-ref-3)
4. Hops (*Humulus lupulus*) was used as an analog for Cannabis (Cannabis, Corn, Tomatoes, and Alfalfa are not listed in Water Use Classification of Landscape Species for the Clearlake Region); [↑](#footnote-ref-4)
5. Lavender (*Lavandula spp.*) was used to represent the fragrant flowering, beneficial insect attracting, and naturally insecticidal companion plants to be grown throughout cultivation operation; [↑](#footnote-ref-5)
6. (MAWA), measured in gallons per year; [↑](#footnote-ref-6)
7. ETo = Reference Evapotranspiration (inches per year); 0.62 = Conversion Factor (to gallons); 0.7 = ET Adjustment Factor (ETAF); LA = Landscape Area including SLA (square feet); 0.3 = Additional Water Allowance for SLA; SLA = Special Landscape Area (square feet); [↑](#footnote-ref-7)
8. ETWU = Estimated total water use (measured in gallons); [↑](#footnote-ref-8)
9. PF = Plant Factor from Water Use Classification of Landscape Species; HA = Hydrozone Area [high, medium, and low water use areas] (square feet); SLA = Special Landscape Area (square feet); 0.62 = Conversion Factor to gallons; IE = Irrigation Efficiency (Micro-spray Irrigation System Design Efficiency = 82%, Drip Irrigation System Design Efficiency = 88%) [↑](#footnote-ref-9)