

Rainwater Irrigation and Storage Calculations  
PLN: 13295, 13351, &13359

Over view:

Water for cannabis irrigation on APN:218-091-006 PLN:13295 and APN: 218-101-002 PLN: 13351 will be supplied by approved SIUR water right REGISTRATION H508126 CERTIFICATE H100583. This water right with a maximum allowable storage of 1.59 acre feet of water or 518,103 gallons ( $1.59 \times 325,851 \text{ gallon} = 518,103.09$ ). This water right only allows use of 1.19 acre feet of water per year ( $1.19 \times 325,851 = 387,763$  gallons). Water on these properties will be supplemented with rainwater catch available from the pond located on 218-091-004.

Water use on APN 218-091-004 PLN# 13359 will be 100% rainwater catch coming from the onsite rainwater catch pond with an approximate storage capacity of 2,155,507gallons.

The combination of water stored from SIUR water right and the rainwater pond will provide over 1,511,116 gallons of water, plenty to meet the 937,000 gallon projected irrigation need, including consideration for evaporation from the pond. The breakdown of water catchment, water use, and water storage numbers are provided below.

Note: although the 50 year average for annual rainfall is 66.68", the rainfall volumes below are calculated using the average precipitation value in the ten lowest rain years (40.105"). \*See rainfall data Page 4

## Calculations

Volumes by source:

Pond APN 218-091-004 potential volume of water availability calculated low average rainfall. :  
 $4,931.5\text{sf} \times 40.105" \times 0.6234 = 1,123,353\text{gallons}$

\*Note: although the 50 average for annual rainfall is 66.68", the rainfall volume above is calculated using the average precipitation value for the ten lowest rain years in the available data set (40.105")

SIUR maximum storage allowed 218-091-006 & 218-101-002: 518,103 gallons

SIUR maximum use allowed 218-091-006 & 218-101-002: 387,763 gallons

Currently established storage capacity for SIUR: 212,500

\*See water right for more information, \*See attached rainwater distribution system map for hard tank locations

Total water volume available when SIUR storage complete:

$1,123,353\text{ Rainwater} + 387,763\text{ SIUR} = 1,511,116\text{ gallons}$

Total water storage volume currently available:

$1,123,353\text{ Rainwater} + 212,500\text{ SIUR storage} = 1,335,853\text{ gallons}$

Estimated water use:

PLN#: 13359=291,900

PLN#: 13295=100,100

PLN#: 13351=545,000

=937,000

Evaporation Loss:

Willow creek 1 NW  
Monthly Pan evaporation (inches)

| Period of record              | Jan  | Feb  | Mar  | Apr  | May  | Jun  | Jul  | Aug  | Sep  | Oct  | Nov  | Dec  | Total |
|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|-------|
| WILLOW CREEK 1 NW   1968-2005 | 0.58 | 1.35 | 1.81 | 2.74 | 4.73 | 6.50 | 7.53 | 6.05 | 3.79 | 1.94 | 0.75 | 0.92 | 38.69 |

\*multiply by .7 correction factor for offset heat exchange

Pond surface area (Median): 13,541

Class A Pan seasonal evaporation rate-37 year average: 38.69'

Corrected Pan evaporation:  $38.69 \times .7 = 27.083" / 12 = 2.257\text{ft}$

median surface area x corrected pan evaporation rate

$13,541\text{sf} \times 2.257 = 30,563.165\text{cf}$

$\times 7.48052\text{gallon conversion}$

=228,628gallons

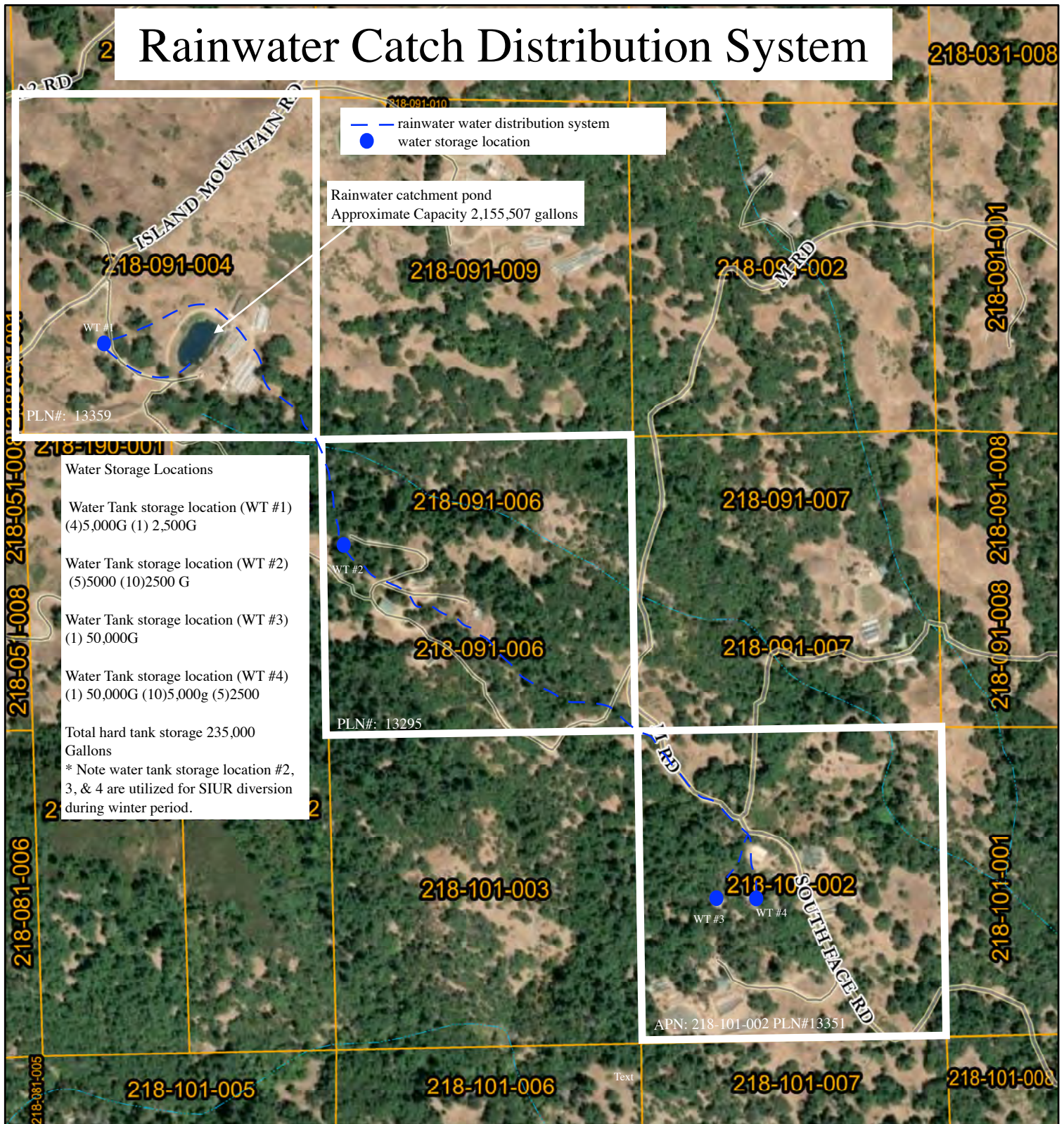
Annual water need:  $(=937,000\text{ use}) + (228,628\text{evap-loss}) = 1,165,628\text{ gallon}$

Sources:

Rainfall records: <https://prism.oregonstate.edu/explorer/>

Evaporation Loss: [https://wrcc.dri.edu/Climate/comp\\_table\\_show.php?stype=pan\\_evap\\_avg](https://wrcc.dri.edu/Climate/comp_table_show.php?stype=pan_evap_avg)

# Rainwater Catch Distribution System



## Humboldt County WebGIS

Humboldt County Planning and Building Department

7/31/2024, 11:26:32 AM

Web AppBuilder 2.0 for ArcGIS

### Map Disclaimer:

While every effort has been made to assure the accuracy of this information, it should be understood that it does not have the force & effect of law, rule, or regulation. Should any difference or error occur, the law will take precedence.

Source: Humboldt County GIS, Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community, Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Table 1

| PRISM Time Series Data                                                                                                                             |              |             |
|----------------------------------------------------------------------------------------------------------------------------------------------------|--------------|-------------|
| Location: Lat: 40.0366 Lon: -123.5964 Elev: 1762ft                                                                                                 |              |             |
| Climate variable: ppt                                                                                                                              |              |             |
| Spatial resolution: 4km                                                                                                                            |              |             |
| Period: 1970 - 2020                                                                                                                                |              |             |
| Dataset: AN91m                                                                                                                                     |              |             |
| PRISM day definition: 24 hours ending at 1200 UTC on the day shown                                                                                 |              |             |
| Grid Cell Interpolation: Off                                                                                                                       |              |             |
| Time series generated: 2024-Jul-25                                                                                                                 |              |             |
| Details: <a href="http://www.prism.oregonstate.edu/documents/PRISM_datasets.pdf">http://www.prism.oregonstate.edu/documents/PRISM_datasets.pdf</a> |              |             |
| Date                                                                                                                                               | ppt (inches) | ppt(inches) |
| 1970                                                                                                                                               | 89.23        |             |
| 1971                                                                                                                                               | 61.78        |             |
| 1972                                                                                                                                               | 62.48        |             |
| 1973                                                                                                                                               | 92.57        |             |
| 1974                                                                                                                                               | 71.21        |             |
| 1975                                                                                                                                               | 76.59        |             |
| 1976                                                                                                                                               | 31.43        | 31.43       |
| 1977                                                                                                                                               | 52.04        |             |
| 1978                                                                                                                                               | 60.3         |             |
| 1979                                                                                                                                               | 68.49        |             |
| 1980                                                                                                                                               | 60.23        |             |
| 1981                                                                                                                                               | 83.06        |             |
| 1982                                                                                                                                               | 91.54        |             |
| 1983                                                                                                                                               | 125.52       |             |
| 1984                                                                                                                                               | 61.43        |             |
| 1985                                                                                                                                               | 36.87        | 36.87       |
| 1986                                                                                                                                               | 80.96        |             |
| 1987                                                                                                                                               | 64.79        |             |
| 1988                                                                                                                                               | 50.97        | 50.97       |
| 1989                                                                                                                                               | 44.98        | 44.98       |
| 1990                                                                                                                                               | 46.44        | 46.44       |
| 1991                                                                                                                                               | 38.61        | 38.61       |
| 1992                                                                                                                                               | 64.15        |             |
| 1993                                                                                                                                               | 69.91        |             |
| 1994                                                                                                                                               | 48.13        | 48.13       |
| 1995                                                                                                                                               | 102.74       |             |
| 1996                                                                                                                                               | 98.09        |             |
| 1997                                                                                                                                               | 66.06        |             |
| 1998                                                                                                                                               | 103.01       |             |
| 1999                                                                                                                                               | 66.78        |             |
| 2000                                                                                                                                               | 58.82        |             |
| 2001                                                                                                                                               | 63.49        |             |
| 2002                                                                                                                                               | 71.17        |             |
| 2003                                                                                                                                               | 70.7         |             |
| 2004                                                                                                                                               | 57.68        |             |
| 2005                                                                                                                                               | 86.05        |             |
| 2006                                                                                                                                               | 76.67        |             |
| 2007                                                                                                                                               | 48.56        | 48.56       |
| 2008                                                                                                                                               | 51.11        |             |
| 2009                                                                                                                                               | 53.97        |             |
| 2010                                                                                                                                               | 92.29        |             |
| 2011                                                                                                                                               | 58.58        |             |
| 2012                                                                                                                                               | 90.43        |             |
| 2013                                                                                                                                               | 21.48        | 21.48       |
| 2014                                                                                                                                               | 64.93        |             |
| 2015                                                                                                                                               | 51.01        |             |
| 2016                                                                                                                                               | 98.31        |             |
| 2017                                                                                                                                               | 86.93        |             |
| 2018                                                                                                                                               | 54.97        |             |
| 2019                                                                                                                                               | 77           |             |
| 2020                                                                                                                                               | 34.03        | 34.03       |
| Average                                                                                                                                            | 66.68        |             |
| Low rainfall years                                                                                                                                 |              | 40.105      |