

APPENDIX B

Preliminary Rain Harvesting Report

Project:
Labcon North America

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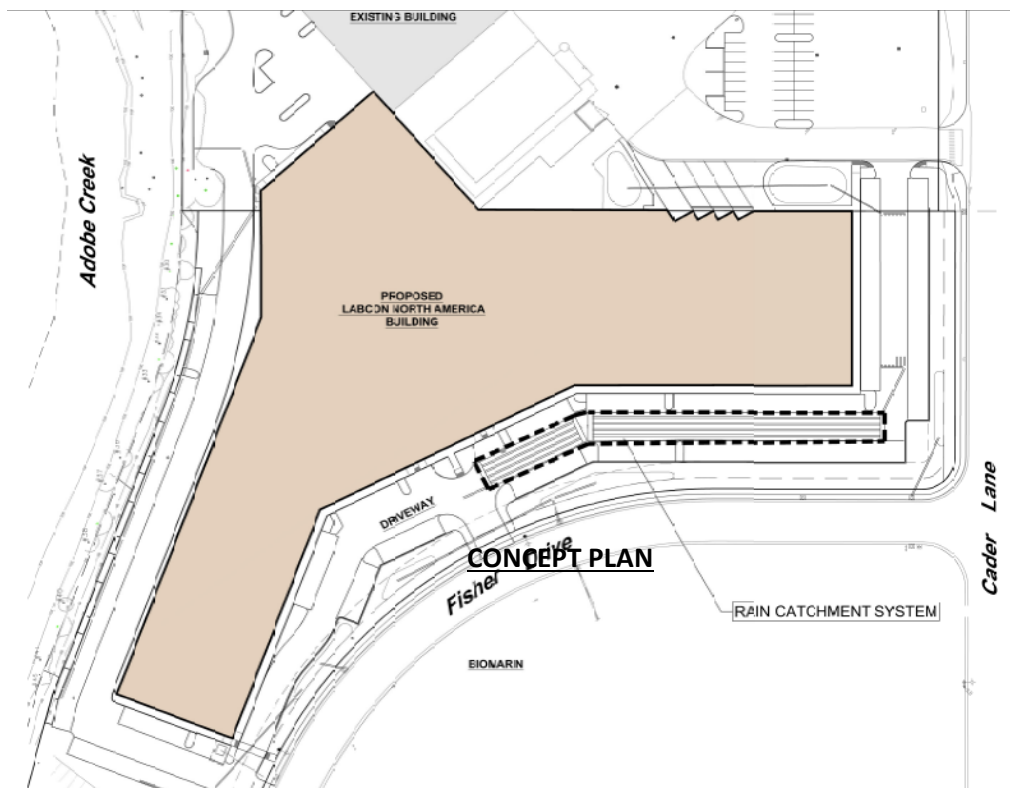
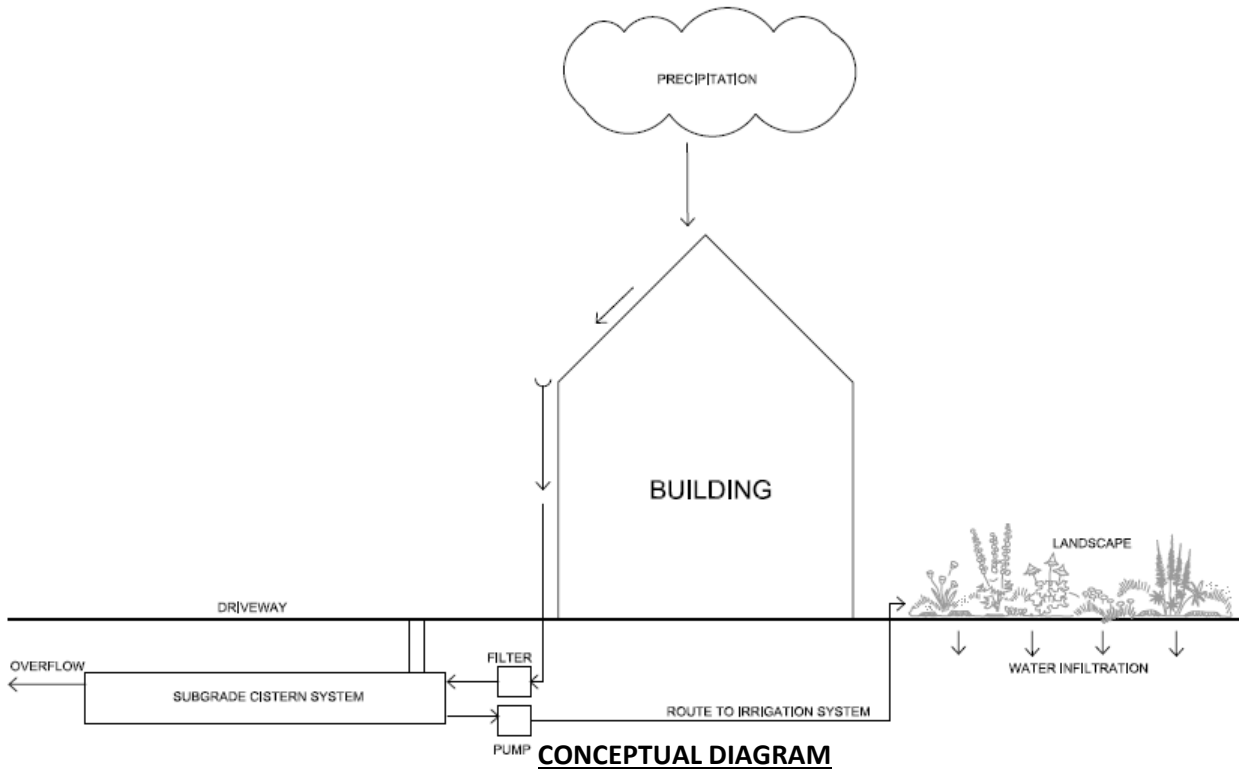
July 13, 2022

Introduction

Alternative waters are sustainable sources of water, not supplied from fresh surface water or groundwater, that offset the demand for freshwater. Rainwater harvesting captures, diverts, and stores rainwater from rooftops for later use. The captured rainwater from the rooftop will be used to supplement irrigation water needs during the dry season of the year.

Our system will be capturing rainwater during the winter months, from the building rooftop via downspouts, routed to a filter, prior to being distributed to an underground system of cisterns. The water will be available for use to irrigate the landscape during the dry season, helping to offset the use of potable water. This in turn helps to keep some rainwater that would normally be routed to storm drain systems to instead filter through the soil onsite, recharging the natural underground water systems.

RAIN WATER CAPTURING DIAGRAM AND PLAN



Preliminary Calculations

Supply:

Rain water collection calculation formula

Roof Area (sq. ft.) x precipitation Amount (in) x .623 = gallons of harvested rain water

Our calculation as follows:

150,000 sq. ft. x 19.19 x .623 = 1,793,305 gallons

The rooftop will supply up to a total of approximately 1,793,305 gallons of rainwater throughout the year. With limited space, we are proposing an underground storage cistern beneath the driveway paving.

Rain water Storage Capacity Calculation

The cisterns include (5) 48" x 269' NDS pipes and (5) 48" x 100' NDS pipes

Volume/ Linear Foot for a 48" diameter pipe = 94 gallons

1. (5) 48" x 269' Cisterns = 94 gallons x 269 feet = 25,286 gal

a. 25,286 gal x 5 = 126,430 gallons rain water

2. (5) 48" x 100' Cisterns = 94 gallons x 500 feet = 47,000 gal

Total Rain Water Storage Capacity = 126,430 + 47,000 = 173,430 gallons

Demand:

The Estimated Water Use calculation was calculated as if in a drought year, comparable to 2021-2022. Using the reference ET for Petaluma during the drought for each month of the dry season, which no precipitation had occurred, using plant material that is very low to low drought tolerant and drip irrigation, the water needs or demand calculated was approximately 238,976 gallons.

The goal of the rain water capturing system is to store enough rain water to irrigate during the dry season months, which are May through September. With the climate weather in flux and somewhat unpredictable we are attempting to do the best we can to meet that goal with the storage capacity we can accommodate on site.

REFERENCES

Sources:

Cimis <https://cimis.water.ca.gov/UserControls/Reports/MonthlyReportViewer.aspx>

<https://cesonoma.ucanr.edu/about/weather/?station=144&weather=station>

<https://water.usgs.gov/edu/activity-percapita.php>