RAINWATER CONSERVATION SYSTEMS BY
COLE CONSTRUCTION CA LIC #501504

Monty Cole
Cole Design Montecito
CA Lic #501504

815 Alston Road
Montecito CA 93108
Cell 805-637-4702

4455 Lucerne, Tahoe Swiss Village
Homewood CA 96141
Land line 530-525-1071

mcole31@cox.net
ColeDesignMontecito.com

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County Ed Office,
440 Cathedral Oaks Road

Santa Barbara, CA 93106

Dwight D. Staggs and Superintendent Bill Cirone

Tom Fayram PE CFM SB CountyPublic Works Director

WATER SAVINGS FOR COUNTY ED BUILDING COMPLEX

I am Monty Cole a general contractor in Montecito with a science and design background. As some of you know I have also done some work for the County in the past.

I have 35 years experience in designing and building water drainage systems and am now also an EPA qualified Water Wise Landscape Professional.

My company designs and installs rainwater catchment systems for estates, schools, businesses and homeowners in Santa Barbara County.

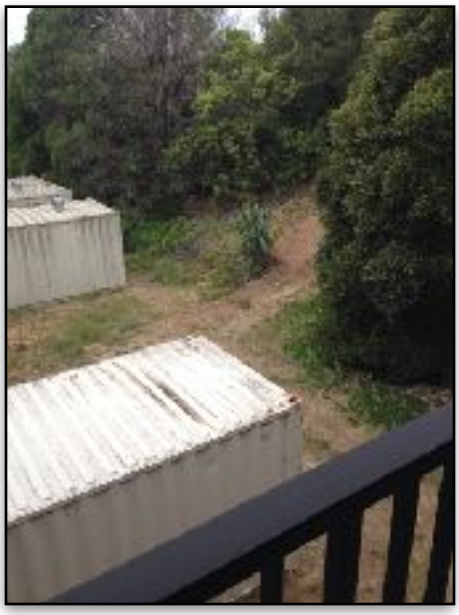
We recently designed a water catchment system for *Lotusland, which gathers and stores* in tanks over 700,000 gallons per year for them at roughly 2 cents a gallon. We are using Lotusland parking lots and driveways to collect water each rain and store it in underground tanks, set into corners of the property.

I made a survey of the County Education Building complex with an eye toward collecting and storing rainwater. In todays drought conditions water prices are going to skyrocket and saving rainwater really starts to *make dollars and sense*.

These are my findings and recommendations.

SITE RAINWATER AMOUNTS AND CALCULATIONS

The upper lots are more easily useable for rainwater collection. The collection totals when including downspouts on the main building S/E & West sides come to nearly 759,996 gallons a year. The lot A gathering areas are 30,900 square feet. Adding the auditorium building roof runoff, the number goes up to 68,100 sq/ft.



With 68,100 square feet of collection area, that produces 42,222 gallons per one inch of rain. With an average 18" rain year, that is 759,996 gallons of nearly pure rainwater. The equation is: 68,100 /1000 X 620 gallons/per inch of rain = 42,222 gallons per inch ... X 18" average rain year = 759,996 gallons of captured rainwater per year. Normally this water gushes uselessly into runoff ditches.

Since our 'rainy' season is normally about 200 days long, the calculation is this:

Yearly average from parking lot and buildings = 759,996 gallons/200 days = 3,799 gallons per day average November - April. This water can be stored in tanks for use increasing available moisture in grounds, flushing toilets, *emergency storage or pipe water to other county agencies down the hill.* This will lower lake water usage and save on water bills.

METHOD AND COST

My design here involves collecting water at the upper lot in front of the Child care center, (A) from the back lot area labeled (B), from gutters on the lower main building and from the collected rainwater from the Auditorium building.

Note 1 - Recommend installing new gutters on E and W sides of main building for collection and to preserve eves and beams, and increase collection capacity. Not included.

(1) *3/4 HP 13 Amp Sump pump (9700 GPH)* is installed in a 275 *gallon sump housing* at the lower outlet for the upper lot shown on map, by the loading dock area. Two other sumps are installed at the upper lot by the N/W corner as shown in map. Water is pumped out of the sumps, into a *new 3" PVC pipe* which carries rainwater to the new tanks. Sump and pump at south end of Loading dock area to collect inner courtyard roof and loading dock water.

TANKS AND ELECTRICAL

Two 35,000 fiberglass underground water tanks are used, one below next to the loading dock, the other is installed at the upper lot area as shown. Electrical is run in steel conduit from the main building near loading dock to the pumps in the lower area. At the upper lot power is sent from the corner of the child care center buildings, down the edge of the lot to the pumps. The pumps automatically begin working when water levels in the sumps activate a float... also can be switched on or off manually. The pumped rainwater fills the new storage tanks, which will automatically shut off pumps when full. When the pumps are off, water leaves the parking lot as always and gushers into existing drains. A clean design feature.

With 70,000 gallons in storage and yearly water inflows of 759,996 gallons, the tanks can be filled and emptied each year approximately 10 times.

COSTS

My price for this job as shown to deliver nearly 759,996 gallons a year, (depending on rainfall) and create 70,000 gallons in storage is $191,250.

After the initial capital outlay, costs are only electricity to deliver water each year.

Plans, permits and fees are extra and can be expected to be around 20% of costs.

COST PER GALLON

At $191,250 for 759,996 gallons of rainwater, the cost per gallon is as follows;

$191,250 / 759,996 gals = 2.5 cents a gallon over ten years / $18.82 per HCF gallon over ten years A very good deal for pure rainwater. At 70,000 gallons of storage, with *the last tank fill in April,* the storage system will provide 3,266 gallons a week for five months with no rain.

Or...70,000 gals storage / 20 weeks = 3,266 gallons /week Over five months of no rain.

CONCLUSIONS

I hope we can have a conversation about this proposal or other ideas at your convenience.

The system here outlined could easily provide 42,222 gallons per inch of rain, depending on the rainfall per hour.

With the five 9,700 GPH pumps I've recommended, the County Ed Buildings could in actuality gather nearly 48,750 gallons per hour at a maximum in a real 1" + per

hour downpour. These numbers are for gauging the project in a general sense, and are solid numbers that can be used by architects and other professionals to evaluate design performance parameters.

Note 2: There is another whole side to County Ed Buildings water gathering capacity, on the west and north sides there is another 700,000+ gallons a year gushing off parking lots into the hillside gullies.

Note 3: All drawings, figures, notes are proprietary property of Cole Design Montecito and are used by permission only for evaluation by County Schools, Santa Barbara County and associates.

I welcome any collaborations to help create a product that the County Ed Buildings can use. At this point,these are probably the most efficient designs.

Thanks for the opportunity to present these findings.

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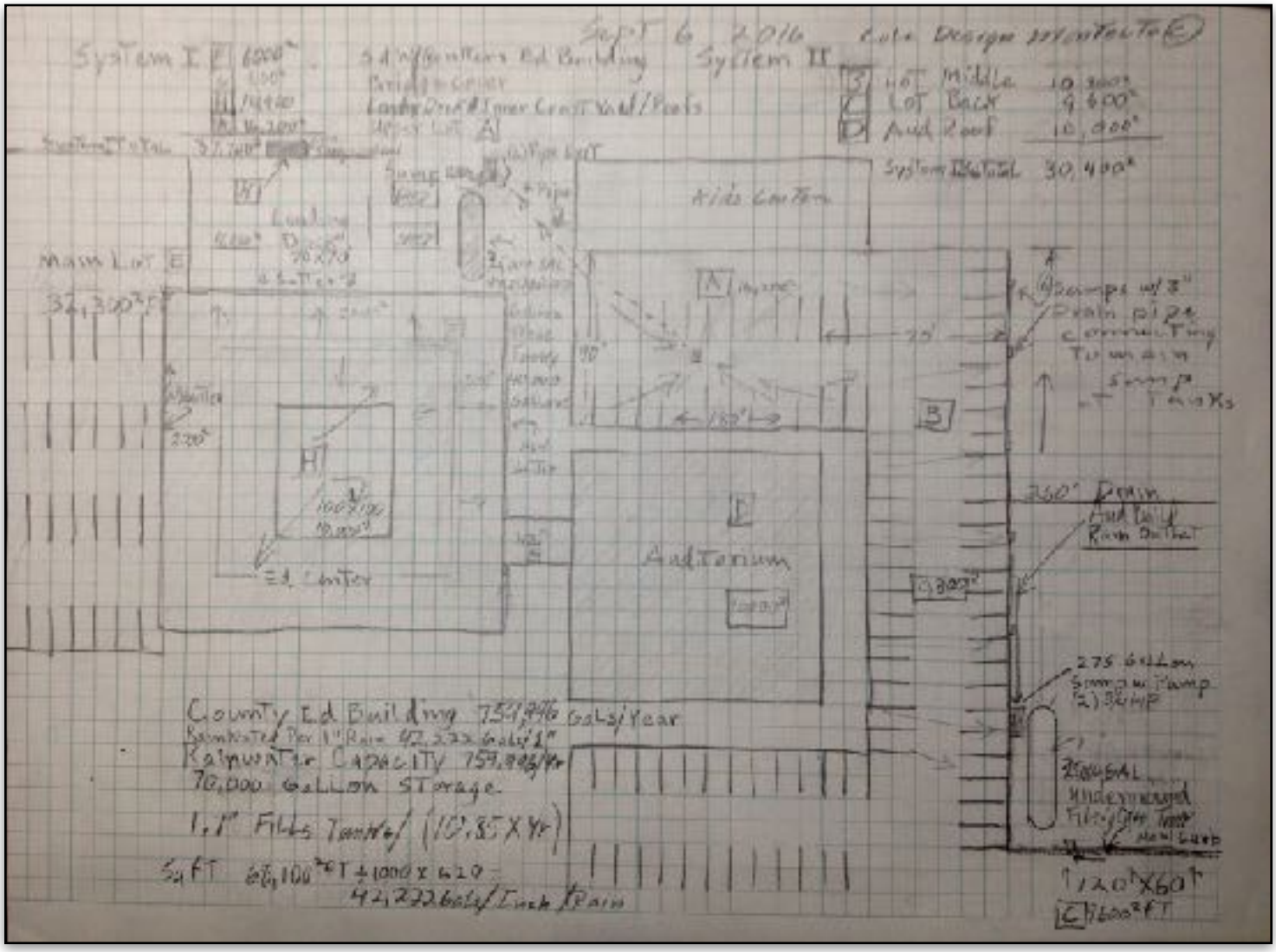

Don't let your rainwater go down the drain.... We can save you Thousand$