

# Drought – Anticipating Water Shortages – Yours!

We know the drought is here. What we do not know is how long it will last. What we also know is that the better prepared each of us is, the better each of us, and our community, will be in surviving it with the least amount of loss.

The takeaway I hope you will find in this is that if we modify and monitor our water use, and those of us with irrigation systems manage our use more wisely, we may well be able to avoid the trigger of mandated use restrictions.

## Water Needs vs. Wants

**What we need** – is water for our personal wellbeing. **What we want** – is water for our other multitude of discretionary uses: landscaping, swimming pools, spas, and all of the other uses we find for it. Currently, there is no limit on the amount of water any of us can use. Our local, and limited, water supply presently can provide for our needs, and to an extent, our wants. However, every user of water in Stinson has a personal responsibility to evaluate their personal needs and discretionary wants, and accordingly, attempt to conserve water.

## “Conservation”

“To conserve,” what does that *really* mean? The statement “I am already conserving” is not quantifiable. A more accurate statement would be “My water budget is 100 gallons of use per day and I’ve reduced that to 80 gallons. I’m conserving by 20% from my property’s water budget.”

At Stinson, and probably other areas in West Marin, we have permitted waste water systems that have Recommended and Maximum discharge rates. Unless otherwise determined, it may be assumed that metered water is discharged only into the site’s wastewater system.

## Property (Wastewater) Permit Uses vs. Discretionary Uses

According to the district’s May Newsletter: *Stinson’s 707 residential water accounts used an average of 156 gallons per month in 2020. Taken as an average each household includes 2.8 people; that 56 gallons per day per person.*

Just to put what might be considered needs vs. discretionary use in perspective:

According to the district’s May Newsletter: *“Stinson’s 707 residential water accounts used an average of 156 gallons per month (sic) day in 2020. Taken as an average each household includes 2.8 people; that’s 56 gallons per day per person.”*

Just as an example of what might be considered needs vs. discretionary use:

2020 Daily Use												
	<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Oct</u>	<u>Nov</u>	<u>Dec</u>
<b>Average Use</b>	75	87	134	150	158	197	225	192	206	163	169	109
<b>Number of People</b>	<u>2.8</u>											
<b>Need (2.8 people)</b>	157	157	157	157	157	157	157	157	157	157	157	157
<b>Discretionary</b>	53	31	78	94	102	141	169	136	150	107	113	53
<b>Total</b>	<b>210</b>	<b>188</b>	<b>235</b>	<b>251</b>	<b>259</b>	<b>298</b>	<b>326</b>	<b>293</b>	<b>307</b>	<b>264</b>	<b>270</b>	<b>210</b>

2020 Monthly Use												
<b>Total Use</b>	6,300	5,634	7,044	7,524	7,764	8,934	9,774	8,784	9,204	7,914	8,094	6,294
<b>Need (2.8 people)</b>	4,704	4,704	4,704	4,704	4,704	4,704	4,704	4,704	4,704	4,704	4,704	4,704
<b>Discretionary</b>	1,596	930	2,340	2,820	3,060	4,230	5,070	4,080	4,500	3,210	3,390	1,590
<b>% of Use</b>	<b>34%</b>	<b>20%</b>	<b>50%</b>	<b>60%</b>	<b>65%</b>	<b>90%</b>	<b>108%</b>	<b>87%</b>	<b>96%</b>	<b>68%</b>	<b>72%</b>	<b>34%</b>

As they say, your mileage may vary...

Our water district has the ability to produce a finite amount of water every month for whatever purposes property owners choose. This year, however, we are facing the possibility of having a diminishing water supply for fire safety and personal use. The question is:

*How to implement a fair and equitable distribution of that diminishing water source?*

The answer to this: *every property owner should consider doing his/her part in conserving our community water supply by developing a simple water budget and monitoring actual use compared to that budget.* (See last page for a simple budget format.)

The water district has no practical means of differentiating on-site discharge usage vs. other uses. For properties that are exceeding their on-site wastewater discharge permits, it could be that the system is being overloaded and/or other discretionary uses such as landscape irrigation or other uses are the cause.

The purpose here is threefold:

1. To provide every owner with a method of evaluating past water use
2. To objectively determine their water requirements for the rest of the year
3. To provide a basis for critical decision-making in anticipation of diminishing water supplies this year – and possibly into to next.

## Preparing For Mandatory Water Restrictions

First, let us acknowledge that:

- Each of us has a responsibility to conserve our community water supply.
- Each of us has a personal responsibility not to exceed our property's water budget.
- Our water budgets have already been predetermined for us by our on-site wastewater permits.

- We are all entitled to our permit usage (our allocation), but also acknowledge even this may have to be reduced if our water resources diminish.
- Water use beyond our permitted use is discretionary.

The district knows its total water use requirements for its 707-plus permit systems – and its ability to provide for that use. For all of us, a use beyond our permitted use is discretionary – and probably not essential. Should the water supply decline, this discretionary use should be the first to be reduced or eliminated.

Below are examples of a simple site water budget and a format for:

1. Evaluating your past use
2. Using June as the basis for projecting your current water requirements for the rest of the year
3. Anticipating the consequence to you of a diminishing water supply

## **Owner Monitoring Responsibility**

We know our water usage every month from our water bills – or can easily check it at any time using the district’s EyeOnWater program. (If you have not yet signed up for this program you are missing a great resource.)

- Each of us is responsible for monitoring our own water use. Compare this use to your allocation (your property’s permit use) and/or your water budget.
- If your use is within your permit, you may have no need to change your habits.
- If your use exceeds your permit, begin to determine the cause(s).
- If you have decided to use additional discretionary water, are you budgeting and monitoring that additional use?
- Are you preparing for the possibility of mandated water restriction?
- There are an infinite number of possibilities for reducing our water use. Some easily done, but some others could be absolutely gut wrenching.

## **A Word on Landscape Water Use (a discretionary use)**

Many of us have irrigated landscapes that we value greatly. Every person in Stinson, who has an irrigation controller, needs to help preserve our community’s water supply by properly programming that controller.

We all know that weather affects landscape water requirements, but “weather” is subjective. The California Department of Water Resources, through its CIMIS program, provides landscape professionals with daily weather data (evapotranspiration rates, ET) for updating irrigation management programs. Newer SMART irrigation controllers have algorithms that automatically adjust controller programs.

Below is a water use projection (in gallons) for a 1,000 sq. ft. example landscape at Stinson, which is based on the California’s CIMIS program spatial data for the zip code 94970.

**ET / Solar Data January - December 2020**

Month	Totals	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ET (Inches)	38.55	1.05	2.10	2.59	3.47	4.39	5.32	4.94	5.02	3.99	3.06	1.55	1.07
Solar Radiation	157,003	7,174	9,607	12,319	15,359	17,286	19,789	18,059	16,951	14,097	11,175	8,206	6,981
Percentage		20%	39%	49%	65%	83%	100%	93%	94%	75%	58%	29%	20%
Area (Sq. Ft.) =	1,000			Gallons Required =		3,317	3,080	3,130	2,487	1,908	966		
				Drought Tolerant (WUCOLS, Low) =		1,658	1,540	1,565	1,244	954	483		
				Drought Tolerant (WUCOLS, Very Low) =		663	616	626	497	382	193		

This example uses the irrigated landscape as 1,000 sq. ft. As a guideline, you could use the Gallons Required for practically any property in West Marin. If your use is higher, determine why. **These are maximums (100% of ETo). Drought tolerant plant species (see WUCOLS V categories, Low and Very Low) will be 20 to 50% of that.**

The water district projects that as much as 50% of Stinson’s summertime water use is for irrigation. *Please especially note the declining water requirements starting in July.* If every person simply programmed their irrigation controller’s Budgets settings to these monthly percentages, the district **could possibly avoid imposing mandated restrictions!**

Steps that every homeowner with an irrigation controller should consider:

1. Determine irrigated landscaped area (which is different from the total landscaped area).
2. Establish your irrigated landscape water requirements by determining your irrigated area (sq. ft.) compared to the 1,000 example.
3. Set you controller’s Water Days to irrigate only on Sunday and/or Wednesday.
4. Set your controller’s first program Start Time at 12:01 a.m. Try to have all your irrigation runtimes fall between 12:01 a.m. and 7:00 a.m. These are the best hours to irrigate, but most importantly, will help **identify your actual irrigation water use.**
5. June’s budget setting is 100%. However, starting in July, adjust controller Budget feature to 93%, and monthly adjust the percentage downward, as above. A SMART controller will do this automatically.
6. Assign someone as your “EyeOnWater Watchdog.” This might be you, a gardener, or a property manager, just **have someone routinely visits the site to monitor use compared to your site’s water budget.**

We are all in this together. Let us make our water supply last!

**About the Author**

Richard Reasoner has a B.S. degree (appropriate, yes?) in horticulture with a minor in business administration. He was a landscape management contractor for 20 years and a landscape and irrigation management consultant for 40 years, with large-landscape clients throughout the Bay Area. He has since retired and fully employed managing his own landscape.

		<b>Example Water Budget</b>											
		<b>Actual</b>					<b>Projected</b>						
<b>Wastewater Permit</b>		<b>Jan</b>	<b>Feb</b>	<b>Mar</b>	<b>Apr</b>	<b>May</b>	<b>Jun</b>	<b>Jul</b>	<b>Aug</b>	<b>Sep</b>	<b>Oct</b>	<b>Nov</b>	<b>Dec</b>
Gallons - Daily (Recommended)	<b>167</b> x 30 Days												
Gallons - )Monthly		<b>5,000</b>	<b>5,000</b>	<b>5,000</b>	<b>5,000</b>	<b>5,000</b>	<b>5,000</b>	<b>5,000</b>	<b>5,000</b>	<b>5,000</b>	<b>3,750</b>	<b>3,750</b>	<b>3,750</b>
<b>Budgeted Uses</b>											<b>125/day x 30 days</b>		
<b>Inside Use</b>													
Number of People							2.8	2.8	2.8	2.8	2.8	2.8	2.8
Estimated Daily Use		56	56	56	56	56	56	56	56	56	56	56	56
Total Inside Use		4,704	4,704	4,704	4,704	4,704	4,704	4,704	4,704	4,704	4,704	4,704	4,704
<b>Landscape Irrigation</b>													
ET Percentage =		36%	49%	62%	78%	87%	100%	91%	86%	71%	56%		
Weather (ET) Requirement/1,000 sq.ft. =		655	1,309	1,615	2,163	2,737	3,317	3,080	3,130	2,487	1,908		
Irrigated Landscape (sq.ft.) =	<b>500</b>												
Area Factor =	<b>0.5</b>	= Irrigated Area / 1,000) <b>add/reduce areas</b>											
Landscape Use =		327	655	807	1,082	1,368	1,658	1,540	1,565	1,244	954		
Other Uses =													
<b>Total Monthly Water Budget =</b>		<b>327</b>	<b>655</b>	<b>807</b>	<b>1,082</b>	<b>1,368</b>	<b>6,362</b>	<b>6,244</b>	<b>6,269</b>	<b>5,948</b>	<b>5,658</b>	<b>4,704</b>	<b>4,704</b>
<b>Budgeted Percentage of Permitted =</b>		<b>7%</b>	<b>13%</b>	<b>16%</b>	<b>22%</b>	<b>27%</b>	<b>127%</b>	<b>125%</b>	<b>125%</b>	<b>119%</b>	<b>151%</b>	<b>125%</b>	<b>125%</b>
<b>Actual Uses (from See EyeOnWater)</b>													
Wastewater (and other) Uses		<b>6,300</b>	<b>5,634</b>	<b>7,044</b>	<b>7,524</b>	<b>7,764</b>	<b>4,704</b>	<b>4,704</b>	<b>4,704</b>	<b>4,704</b>	<b>4,704</b>	<b>4,704</b>	<b>4,704</b>
Landscape Use							<b>1,658</b>	<b>1,540</b>	<b>1,565</b>	<b>1,244</b>	<b>954</b>	<b>0</b>	<b>0</b>
Other Uses							<b>500</b>	<b>500</b>	<b>500</b>	<b>500</b>	<b>500</b>	<b>500</b>	<b>500</b>
Totals		6,300	5,634	7,044	7,524	7,764	6,862	6,744	6,769	6,448	6,158	5,204	5,204
<b>Actual Percentage of Permit Use =</b>		<b>126%</b>	<b>113%</b>	<b>141%</b>	<b>150%</b>	<b>155%</b>	<b>137%</b>	<b>135%</b>	<b>135%</b>	<b>129%</b>	<b>164%</b>	<b>139%</b>	<b>139%</b>

		<b>My Water Budget</b>											
		Actual					Projected						
<b>Wastewater Permit</b>		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Gallons - Daily (Recommended)		x 30 Days											
Gallons - )Monthly		0	0	0	0	0	0	0	0	0	3,750	3,750	3,750
<b>Budgeted Uses</b>											125/day x 30 days		
Inside Use													
Number of People							2.8	2.8	2.8	2.8	2.8	2.8	2.8
Estimated Daily Use		56	56	56	56	56	56	56	56	56	56	56	56
Total Inside Use		4,704	4,704	4,704	4,704	4,704	4,704	4,704	4,704	4,704	4,704	4,704	4,704
Landscape Irrigation													
ET Percentage =		36%	49%	62%	78%	87%	100%	91%	86%	71%	56%		
Weather (ET) Requirement/1,000 sq.ft. =		655	1,309	1,615	2,163	2,737	3,317	3,080	3,130	2,487	1,908		
Irrigated Landscape (sq.ft.) =													
Area Factor =	0.0	= Irrigated Area / 1,000) <span style="color:red">add/reduce areas</span>											
Landscape Use =		0	0	0	0	0	0	0	0	0	0		
Other Uses =													
<b>Total Monthly Water Budget =</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>4,704</b>	<b>4,704</b>	<b>4,704</b>	<b>4,704</b>	<b>4,704</b>	<b>4,704</b>	<b>4,704</b>
<b>Budgeted Percentage of Permitted =</b>		<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>125%</b>	<b>125%</b>	<b>125%</b>
<b>Actual Uses (from See EyeOnWater)</b>													
Wastewater (and other) Uses							4,704	4,704	4,704	4,704	4,704	4,704	4,704
Landscape Use							0	0	0	0	0	0	0
Other Uses													
Totals		0	0	0	0	0	4,704	4,704	4,704	4,704	4,704	4,704	4,704
<b>Actual Percentage of Permit Use =</b>		<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	<b>125%</b>	<b>125%</b>	<b>125%</b>

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