The Roundup

Livestock and Range Newsletter
Kern, Tulare, and Kings

University of California
Agriculture and Natural Resources

March 2018

Welcome to the Roundup! I hope this newsletter finds you on a rainy day! I want to inform all of you that this will be the last printed newsletter I distribute. Due to post office requirements, my newsletters must be folded and tabbed a specific way. The folding and tabbing machines that we have been using to process the newsletter, which are circa the 1970's at least, are no longer functional. Unfortunately, replacing them is cost prohibitive so I am forced to convert to electronic delivery of my newsletter. I know that some of you do not have email or even a computer, so I will be printing a limited number of newsletters under special circumstances. Please contact me directly if you would like to have your name and address added to the list of printed newsletters.

For those who have computer access, reliable internet, and an email address that gets checked fairly regularly, I would appreciate the opportunity to continue to send you this newsletter. In order to do that, your email address needs to added to our mailing list. Not sure if we already have your email? This newsletter was sent to all the email addresses we currently have on our list. Not in your inbox? Check your junk folder. Be sure to declare the cekern@ucdavis.edu safe so your junk filter will no longer sort it out. Still don't have an email from us? There are two ways to get your email address added:

1) Call our office! The front office staff will be happy to put your email on the address list. 661-868-6200
2) Visit http://cekern.ucanr.edu/Livestock/Newsletters_21/ , type your email in the box at the top of the webpage and hit the "Subscribe" button.

I want to apologize to everyone that I am no longer able to distribute the Roundup in print. I know a print version is preferred by many of you and I have worked hard to accommodate your preference for as long as I could. If you have any concerns or questions about this change, please contact me at: 661-868-6219.

Thank you for your understanding. Best wishes to all!

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Ask the UCCE Advisor

By: Julie Finzel, Theresa Becchetti and Scott Oneto

I got a letter from the State Water Board about reporting the amount of water I divert for my stockpond. How do I comply?

Background

A number of water rights holders have received a letter recently from the California State Water Board stating that you must report the amount of water diverted for your stockpond in 2017, and threatening a $500 a day fine if you do not respond by April 1, 2018. The reporting of water diversion amounts for stockponds is a relatively new requirement that was passed as emergency legislation in 2015 during what is being called our 500-year drought. The legislation is known as Senate Bill 88 or SB 88.

If you received a letter from the water board it means that at some point you registered a stockpond with them and you are now required to report the amount of water diverted for each registered stockpond. If you are not sure which stockpond you registered, you can call the water board directly at: (916) 341-5300 for more information. Ask for technical staff. All water diversions and storage must be reported as water rights, according to the law; reporting requirements vary based on how much water is diverted and/or stored. The reasons for this reporting, as stated by the water board on their website, are:

- Understand and plan ahead for limited water supplies;
- Identify water losses in a diversion system and take corrective actions to conserve water and stretch limited water supplies;
- Assure compliance with the quantity and season limitations of existing water rights;
- Protect the senior rights of diverters in accordance with their relative priorities;
- Provide for efficient management and use of water during times of shortage; and
- Improve water planning and near-term forecasting of water demand

The regulations that enforce SB 88 state that the amount of water diverted must be monitored and recorded. The monitoring frequency ranges from hourly to monthly depending on the diversion amount and the total storage amount of the stockpond. Table 1 outlines the different diversion amounts and pond sizes. Most stockponds are likely to be in the last two categories: Storage greater than (>) 10 acre-feet (af) but less than (<) 50 af or storage < 10 af. In this case the required monitoring frequency is monthly, and the data is reported to the state on an annual basis.

The reporting requirements began in 2017 and will be due each year on April 1. Water diversions and storage less than or equal to 10 af are not required to use a measuring device to determine the amount of water diverted; water volume may be estimated. Water diversions and storage greater than 10 af must either use a measuring device or a measurement method approved by the water board and both devices and methods must be accurate within 15% of actual diversion rates. A measurement method means that you are measuring the amount of water diverted without installing a measuring device. Typically, this involves the combination of a few tools and some math. If measurement is

required, regulations state that an individual experienced in measurement and monitoring perform the monitoring. Who qualifies under that definition? The board considers ranchers and farmers to be qualified individuals. Ranch and farm employees may also be considered qualified individuals. All reporting is required to be completed online. If you received a letter from the water board, there should be instructions on how to complete your reporting requirement. In the letter you should find a water right ID number as well as an associated password for each individual water right. The website where you initiate your reporting is: https://rms.waterboards.ca.gov.

Table 1: Summary of reporting requirements for SB 88. Table courtesy of California Farm Bureau.

Diversion Type		Deadlines		Requirements			
Failing to file can result in a $1,000 fine plus $500 for each day of violation.							
Direct Diversion	**Storage**	**Device Installation**	**Annual Water Use Reporting** (of prior year's use)	**File for One of the Special Provisions** (see below)	**Accuracy** (must recertify every 5 years)	**Measurement Frequency**	**Qualifications of Installer & Certifier**
≥1,000 af/year	≥1,000 af/year	1/1/17	**April 1 for:** - Permits - Licenses - Registrations - Certificates **July 1 for:** - Statements	4/1/17 (Permits & Licenses) 7/1/17	10%*	Hourly	Engineer/ Contractor/ Professional/ UCCE Course* **A diverter can become qualified by completing a UC Cooperative Extension water measurement training class, available in 2018. http://bit.ly/2FklCmq
≥100 af/year	≥200 af/ year	7/1/17		7/1/17		Daily	
	≥100 af/ year				15%	Weekly	
>10 af/year	≥50 af/year	1/1/18		1/1/18		Weekly	Individual experienced with measurement & monitoring
	>10 af/year					Monthly	
≤10 af/year		Not required		-	-	Monthly (estimated)	None

If you have multiple water rights and you'd like to combine them all under one account, there is an option that says: Connect multiple water rights here. Click that link to create an account using your email address that allows you to do all your reporting at once. Otherwise, the system requires that you login separately for each water right and do a separate report for each water right. Ten informational videos have been posted online to help you complete your report(s). They are available at: https://www.waterboards.ca.gov/videos/rms.

Measuring the Volume of your Stockpond

What is the quickest and most economical way to accurately measure the amount of water diverted for a stockpond? The solution is most likely going to involve some sort of measurement of the amount of water as it enters the pond or simply the amount of water in the pond. There are several measurement devices that have been identified in SB88 that can be used. These include in-channel flow meters, staff gages, and data loggers. These range in cost from a few hundred to several thousand dollars. For stockponds greater than 10 af you must be able to measure and report the rate of diversion, the rate of collection of water for storage, the rate of withdrawal or release from storage, and the total volume of water diverted or collected for storage with 15% accuracy. For stockponds that are 10 af or less the same measurements must be reported, however, no device is required; water volume can be estimated. The instructions below can be used for both categories of stockponds.

One of the major considerations is how to measure depth. In some instances, a measuring rod, also known as a staff gage, could be placed in the deepest part of the pond for quick, visual, monthly assessment of depth. Alternatively, depth could be measured using a boat or flotation device of some sort and dropping a measuring device. Once the depth is known, a storage capacity curve can be used to calculate the amount of water in the pond. When your stockpond was registered with the water board, it may have been registered with a stage-storage table and curve (storage capacity curve). If you don't have the storage capacity curve associated with your stock pond in your files, you can call the water board and they will send it to you. If there isn't a storage capacity curve established for your stockpond and your pond is larger than 10 acre-feet, you will need to develop one. Once you have the storage capacity curve and you have depth measurements you should be able to determine pond volume. Now, there may be some instances where a vertical staff gage is not practical. In that instance, measurements along the bank of the pond can be substituted, but those bank measurements must be included in the storage capacity curve calculations.

A spreadsheet has been developed to automatically calculate pond volume and create a storage capacity curve. **Note:** These measurements and calculations assume that the pond being measured is a true circle, square, or rectangle. Since most ponds do not meet these criteria, there is some built-in error in the calculations, however, these instructions will provide a good estimate of water volume. If you need help or do not have internet access contact your local UCCE livestock Advisor. The spreadsheet is available at http://cekern.ucanr.edu/Livestock/stockponds/

The following steps will determine the amount of water in your stockpond:

Step #1: Calculate the surface area of the pond. This can be done by ***either*** measuring the circumference of the pond (total distance around the pond), or by measuring the length and width. For circular ponds it is recommended to measure the circumference, but the

diameter can also be used. To determine circumference from diameter multiply diameter times pi (3.14). For square or rectangular ponds measure the length and width. All pond measurements should be in feet.

Surface area for circular pond

- Square the circumference. Divide answer by 547,391 to get surface area in acres.

Surface area for square/rectangular pond

- Multiply length times width. Divide answer by 43,560 to get surface area in acres.

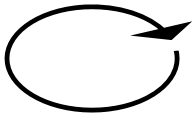
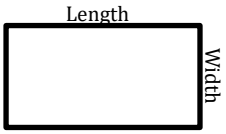
Step #2: Calculate average water depth

- Measure deepest water depth
- Multiple deepest water depth by 0.7 to get average depth of pond

Step #3: Calculate pond volume

- Multiple surface area (Step 1) by average depth (Step 2)

Table 2: How to calculate the volume of a stockpond, step by step

Round Pond	**Square / Rectangular Pond**
Step #1 Calculate Surface Area	
Measure circumference  1000 feet	Measure Length and Width  Length 350 feet Width 200 feet
Multiply circumference by itself 1000 feet X 1000 feet = 1,000,000 1,000,000 / 547,391* = 1.827 acres	Multiply Length X Width 350 feet X 200 feet = 70,000 70,000 / 43,560* = 1.607 acres
Step #2 Calculate Average Water Depth	
Measure deepest water depth: 10 feet Calculate average water depth: 10 feet X 0.7* = 7 feet	
Step #3 Calculate Pond Volume	
Multiply Step #1 by Step #2 1.827 acres X 7 feet = 12.789 acre feet **conversion factors*	Multiply Step #1 by Step #2 1.607 acres X 7 feet = 11.249 acre feet

The tools you will need include some combination of the following:

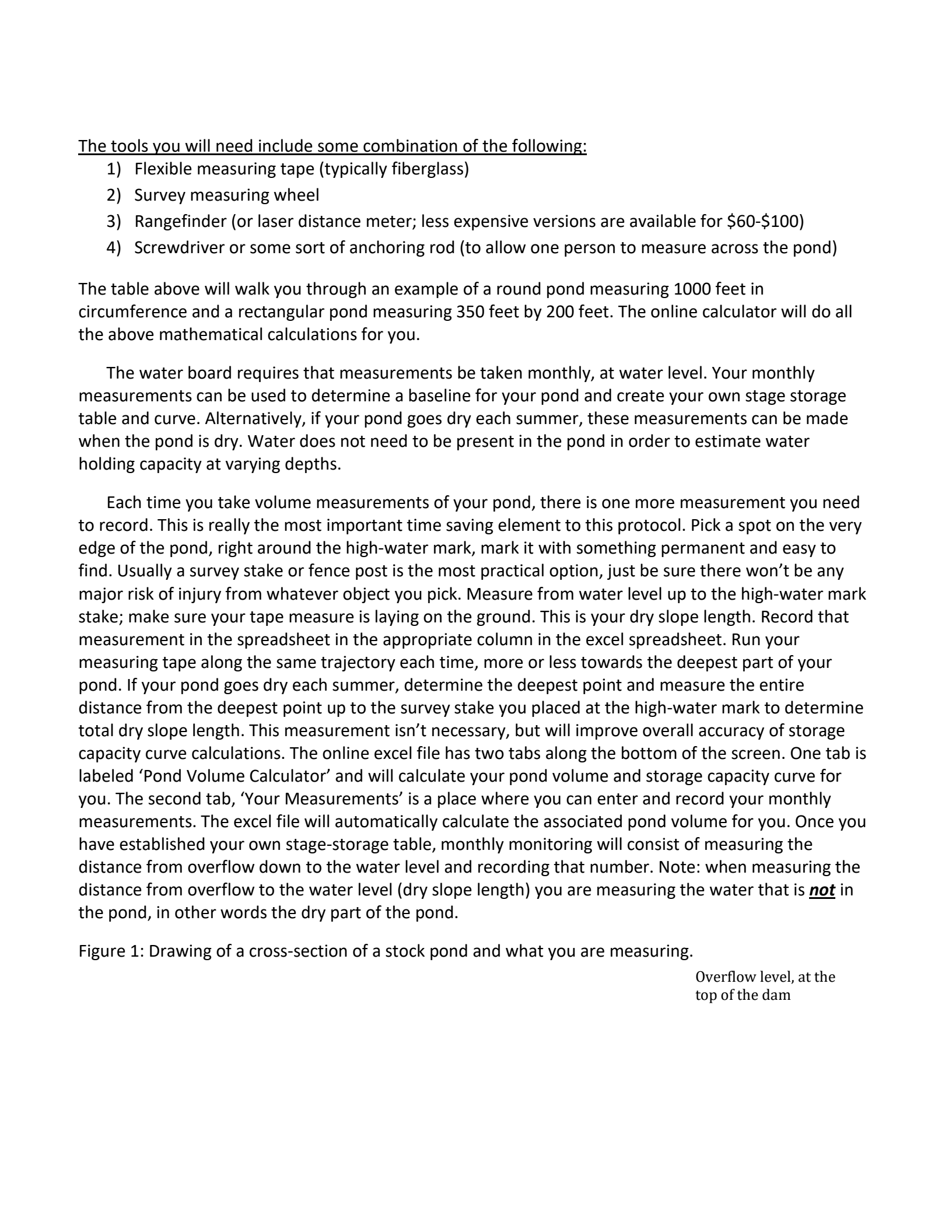
1) Flexible measuring tape (typically fiberglass)
2) Survey measuring wheel
3) Rangefinder (or laser distance meter; less expensive versions are available for $60-$100)
4) Screwdriver or some sort of anchoring rod (to allow one person to measure across the pond)

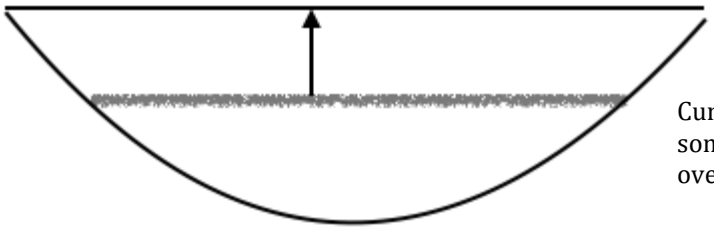
The table above will walk you through an example of a round pond measuring 1000 feet in circumference and a rectangular pond measuring 350 feet by 200 feet. The online calculator will do all the above mathematical calculations for you.

The water board requires that measurements be taken monthly, at water level. Your monthly measurements can be used to determine a baseline for your pond and create your own stage storage table and curve. Alternatively, if your pond goes dry each summer, these measurements can be made when the pond is dry. Water does not need to be present in the pond in order to estimate water holding capacity at varying depths.

Each time you take volume measurements of your pond, there is one more measurement you need to record. This is really the most important time saving element to this protocol. Pick a spot on the very edge of the pond, right around the high-water mark, mark it with something permanent and easy to find. Usually a survey stake or fence post is the most practical option, just be sure there won't be any major risk of injury from whatever object you pick. Measure from water level up to the high-water mark stake; make sure your tape measure is laying on the ground. This is your dry slope length. Record that measurement in the spreadsheet in the appropriate column in the excel spreadsheet. Run your measuring tape along the same trajectory each time, more or less towards the deepest part of your pond. If your pond goes dry each summer, determine the deepest point and measure the entire distance from the deepest point up to the survey stake you placed at the high-water mark to determine total dry slope length. This measurement isn't necessary, but will improve overall accuracy of storage capacity curve calculations. The online excel file has two tabs along the bottom of the screen. One tab is labeled 'Pond Volume Calculator' and will calculate your pond volume and storage capacity curve for you. The second tab, 'Your Measurements' is a place where you can enter and record your monthly measurements. The excel file will automatically calculate the associated pond volume for you. Once you have established your own stage-storage table, monthly monitoring will consist of measuring the distance from overflow down to the water level and recording that number. Note: when measuring the distance from overflow to the water level (dry slope length) you are measuring the water that is ***not*** in the pond, in other words the dry part of the pond.

Figure 1: Drawing of a cross-section of a stock pond and what you are measuring.





Current water level, typically somewhere below the overflow level

The water board requires that you report water diversions during the licensed collection season, November to April, and that you report consumptive use from May to October. The calculations provided here allow for easy monitoring year round once the initial measurements are made. Consumptive use can be calculated by estimating the amount of water being consumed by livestock. This is as simple as determining number of gallons consumed per cow per day and then multiplying by the number of head that have access to the pond. If there is more than one pond in the pasture then assume the cattle are using each pond equally and divide by the number of ponds. Alternatively, dry slope length measurements can be used to measure consumptive use. If a pond is overflowing, diversions should be reported as zero because no additional water is being collected.

If you have a stockpond or spring that is not registered, the law states that any diversion or storage of water should be registered as a water right. There are fines associated with non-compliance, typically $500 a day. If you wish to register your pond you may do so online; there is also a link to the paper form in the references section at the end of this article. New registrations require paying a fee of $250 with a requirement that you renew every five years for a fee of $100, however, up to five stockponds can be registered on one certificate.

It would have been helpful to have received this information before you were required to monitor and report your water diversions. The water board has acknowledged that some landowners may need more time and they are willing to grant extensions. Visit this website https://public.waterboards.ca.gov/WRInfo, to request an extension on your reporting. Use the log-in credentials provided on the letter you received from the board. The water board has shared that red flags appear when no report is submitted, so it is important to submit a report if you received a letter. You can call the board directly at 916-341-5300 for more information and assistance. If you divert more than 100 acre-feet of water a year and you are interested in the UC measurement training class, two courses are being offered in March 2018. Contact your local UCCE livestock Advisor for more information. If you have questions or concerns about reporting your water diversion and use, contact the state water board or your lawyer. For questions about this article, contact Julie Finzel, 661-868-6219, or your local UCCE livestock Advisor.

Acknowledgement to Kirk Wilbur with California Cattlemen's Association, Dan Raytis with McMurtrey, Hartsock, and Worth, and the technical staff at the state water board for their advice and insight during the preparation of this article.

References and Helpful Links:

Water board website providing overview of SB 88 regulation and helpful links
https://www.waterboards.ca.gov/waterrights/water_issues/programs/measurement_regulation/

California Cattlemen's Association website offering reference material from water workshop in 2017
http://www.calcattlemen.org/cca_events/drought-management-workshop.aspx
Pennsylvania State Website on calculating pond volume
https://extension.psu.edu/pond-measurements-area-volume-and-residence-time
Helpful presentation from the water board on measuring diversions and pond volume
https://www.waterboards.ca.gov/waterrights/water_issues/programs/diversion_use/docs/measure_report_reservoirs_present.pdf
Adopted text of emergency regulation associated with SB 88
https://www.waterboards.ca.gov/waterrights/water_issues/programs/measurement_regulation/docs/measure_reg_oal_approve.pdf
How to develop your own storage capacity curve (depth capacity curve)
https://www.waterboards.ca.gov/waterrights/water_issues/programs/measurement_regulation/docs/water_measurement/res.pdf
Form for registering a stock pond with the water board
https://www.waterboards.ca.gov/waterrights/publications_forms/forms/docs/lsu_registration.pdf

Guest Article: Wild Horse Impacts in Modoc County

by: Laura Snell, Livestock and Natural Resources Advisor and County Director, Modoc County

Wild Horses have been in the news quite a bit lately with talk of changes in funding and management from the Trump Administration to state leadership. In Modoc County, California wild horses have been a significant topic in my job since day one. I work as a livestock and natural resource advisor for the University of California Cooperative Extension.

Modoc County is roughly 70 percent public land mostly managed by the United States Forest Service (USFS) and Bureau of Land Management (BLM). These lands are managed for multi-use including recreation, wildlife, livestock grazing, timber, mining, etc. On the Devil's Garden management area part of the Modoc National Forest, there is a wild horse herd that is shifting the balance of multi-use to single use.

The horses on the Devil's Garden are the largest wild horse herd managed by the USFS and after agreements with the BLM fell through about 10 years ago, the population of horses has increased significantly. There herd management area (HMA) on the Devil's Garden is capable of supporting 206-402 horses total. There are currently nearly 4000 horses that are inside the congressionally designated territory, outside the territory, on private land, and on tribal land in Modoc County.

Although these horses are designated as wild horses through the 1971 Wild Horse and Burro Act, the horses on the Modoc National Forest all began as domestic horses, released after the mechanization of farming in the early 1900s or left from old USFS horse permits. Local ranchers and cowboys kept the population in check until the passing on the 1971 act. Wild Horse herds double every 4-5 years with little natural predation.

The Devil's Garden is a unique volcanic high plateau mostly vegetated by sage brush, perennial grasses, and juniper trees. Spring moisture from snow melt and natural springs, make this area an essential fly way and nesting ground for birds in the spring and an important habitat for deer and elk as they move back and forth across the California/Oregon border.

University of California Cooperative Extension research has focused on use of natural springs by wildlife, livestock and horses for the past three field seasons. Springs with wild horse use only, horse and livestock use, and livestock use only are used in the study to look at differences. Using trail cameras, the timing, duration, and species visiting the springs can be determined and noted for two week periods in the spring, summer, and fall. As well as picture monitoring, vegetation monitoring also occurs during each sampling period.

The preliminary pictures and numbers speak for themselves. Wild Horses have been found to be 70 percent of the visits to some springs, and 20 percent livestock use. The stubble height at the spring edge is often zero or bare ground with bare ground expanding up to 30 feet from the spring banks in the fall. The USFS has grazing management standards of 3-5 inches stubble height on spring and stream banks. When livestock grazers meet this standard, the livestock are moved to a different pasture or sent home. This is not true with wild horses. Wild horse grazing is unmanaged and allowed to persist 365 days a year.

Boles Spring, looking up towards the head of the spring

Wild horses are significantly impacting the habitat and ecosystem of the Devil's Garden especially at fragile spring sites. In the uplands, unmanaged grazing has led to a shift from perennial to annual grasses which have lower forage and habitat quality and quantity. Annual grasses also easily ignite in lightning and promote a higher fire return interval. Several varieties of endemic, endangered or threatened species of fish, birds, and plants live on the Devil's Garden.

Beyond habitat issues, wild horses also have an economic and infrastructure impact to Modoc County. This year, two livestock permittees will not be allowed to turn any cattle out on their grazing allotment and many more will return home early. This totals over 3000 cow calf pairs that do not have summer range for grazing. These ranchers will all be forced to make difficult decisions that will affect their ranches and the rural economy. When ranchers are not allowed to turn out on public allotments, this also means that no one is around to fix fence, maintain stock tanks and wells, or monitor activity on rural expanses of public land.

In September 2016 the Modoc National Forest completed a wild horse gather of 290 animals. This was the first gather conducted in over 10 years. Another gather is being planned for 2018 but without action, wild horses will become the only species on the Devil's Garden and the natural resources will be depleted beyond repair. There are many management options for wild horses written in the original act and part of wild horse management plans across the country. These public lands are for everyone, not just wild horses.

<u>Fast Facts on Wild Horses:</u> According to an article in the Western Livestock Journal from October 30, 2017

- *10 western states have wild horses and burros*
- *177 herd management areas covering 26.9 million acres of public rangelands*
- *26,715 is the determined appropriate management level*
- *72,674 horses on the range as of March 2017; half are in Nevada*

- *48,813 animals in holding corrals or pastures as of September 2017; total cost of 47.6 million in fiscal year 2017*
- *$5.19/horse/day in corrals; $1.97/horse/day in pastures*
- *4,183 adopted or sold in 2017; average cost of $1,891/animal*
- *4,209 removed from the range in 2017; average cost $1,001/animal*

US Drought Monitor Reporting

The scientists that calculate the US Drought Monitor want to hear from you!

The USDA, in partnership with the National Oceanic and Atmospheric Administration and the University of Nebraska in Lincoln, produced the U.S. Drought Monitor to include an online reporting feature that allows producers to report local drought impacts and conditions.

The report allows producers to:

- Provide a written description of drought impacts on livelihood, activities, etc.;
- Select categories to show losses and gains as a result of the drought;
- Report on the duration of drought event;
- Select Affected Places – geographic areas ranging from an entire state to a small area within a state;
- Submit images that document the drought and its impact;
- Provide contact information (includes an option to keep information confidential).

The drought monitor scientists want to hear general observations that reflect on the ground conditions as well as measured impacts, including rainfall data. Information that includes a comparison to previous years is especially helpful. The reporting tool for producers to record the effects of the drought can be accessed at: http://droughtreporter.unl.edu/submitreport/

More information including state specific drought impact maps can be found on the U. S. Drought Monitor homepage: http://droughtmonitor.unl.edu/Home.aspx