The Monthly Dirt
A monthly newsletter on the California Construction General Permit

SAMPLING GUIDANCE

A "How To" For Construction Sites

A sampling season special

'Tis the storm water professional's favorite time of year! The time of year they need to leave the cozy warmth of their office, don rain gear and rubber boots, and head out in the middle of a storm to get drenched as they collect a sample. And while it might not sound very fun or festive, it is a requirement of the Construction General Permit to monitor for pollutants in a construction site's storm water discharge. But sampling doesn't have to be miserable! So queue up your favorite holiday playlist and check out this month's edition of **The Monthly Dirt** for tips and tricks from fellow samplers as you travel over the river and through the woods on your next storm water sampling adventure.

Why do you have to collect samples? According to the CGP, *"the sampling and analysis monitoring requirements in this General Permit will help determine whether BMPs installed and maintained are preventing pollutants in discharges from the construction site that may cause or contribute to an exceedance of water quality objectives or standards."* So, in other words, sampling is really a test to see if what you are endeavoring to do at your construction site for storm water quality is working. You may have a SWPPP in place, obtained a WDID number, and are doing your weekly inspections, but when it comes down to evaluating success – it's your storm water samples that will tell the real story.

When do you collect a sample? As you know, there's a lot that goes into determining whether or not to sample. First and foremost, the QSP needs to determine if the storm is qualifying and if a pre-storm inspection will be required. This process can be pretty tricky under the 2022 CGP because there's a big window for determining if the storm is qualifying – from up to 120 hours in advance all the way down to the very last minute. According to the CGP, *"Qualifying precipitation event is any weather pattern that is forecast to have a 50 percent or greater Probability of Precipitation (PoP) and a Quantitative Precipitation Forecast (QPF) of 0.5 inches or more within a 24-hour period. The event begins with the 24-hour period when 0.5 inches has been forecast and continues on subsequent 24-hour periods when 0.25 inches of precipitation or more is forecast."* So, in order to sample, you will need a QPE with a *forecasted* amount of 0.5" of precipitation. We won't go into all the details of qualifying storm events in this article for sake of space and time, but you can check out these past articles on qualifying storm events for more

information. Just remember, sampling completely depends on the storm event being determined, in advance, by a QSP to be qualifying. If the QSP disqualifies the storm event because of lack of forecasted amounts and/or percentages but when the storm arrives it actually dumps rain on your site, you do not have to sample because the storm was disqualified. The rain gauge readings and sampling are not obligatory for non-qualifying storm events. However, when the storm event is qualifying (i.e., the forecast is locked in and has predicted a PoP equal or greater than 50% and a QPF of 0.5" or more for a 24-hour period), when should you go out to the site to collect a sample? This depends somewhat on where the project is located. If it is within an Area of Special Biological Significance (ASBS), such as Año Nuevo State Park, Attachment I of the CGP states, *"Runoff must be collected during a storm event that is greater than 0.1 inch and generates runoff, and at least 72 hours from the previously measurable storm event."* In order to go collect a sample at an ASBS, there are several things that must be happening simultaneously – the storm event is producing 0.1" of precipitation or greater, the site is generating runoff, and there has been 3 days of dry weather. However, for the majority of projects across the State that are not within an ASBS, the permit just specifies that samples are collected *"during discharge and within site operating hours."* But keep in mind, the CGP has a safety clause for those having to sample – inspections and sampling are not required during dangerous weather conditions or when access to the site is unfeasible or unsafe. And of course, if there is no runoff even if the event is qualifying, there's

nothing to sample.

Where do you collect a sample? The answer to that question will depend upon what type of project it is. Traditional projects are required to sample at every point of discharge during QPEs. But Linear Utility Projects (LUPs) are allowed to sample at representative discharge locations. The QSD will identify the sample locations in both the SWPPP and SWPPP maps. But keep in mind that discharge and sampling locations may change throughout the different phases of the project. As such, a QSD (often with input from a QSP) will need to ensure the SWPPP stays up to date with site hydrology changes. If a QSP or delegated inspector notices that discharge is occurring at other points at your site that are not identified on the SWPPP, the QSD will need to update the SWPPP accordingly and the QSP or delegated inspector will need to sample those locations because the CGP requires that all discharge points for traditional projects be sampled. Sampling points can be anywhere water leaves the site — such as at drain inlets, sheet flow, an overflow point from a detention area, a curb or gutter, etc. Many sites will have more than one sampling location. When the permit refers to a "sample" it includes field analysis of pH and turbidity and the collection of water samples in laboratory-supplied containers for analysis at an analytical laboratory (typically for non-visible pollutants and TMDLs).

Who collects samples? To answer this question, we might first consider a project's risk level. Only Risk Level 2 and 3 and LUP Type 2 and 3 segments are required to sample and test discharges for pH and turbidity. As a result, we often hear it said that Risk Level 1 projects don't have to sample, which is not entirely true. All projects (traditional and LUPs) and all risk levels have to sample for non-visible pollutants for which a sampling requirement has been triggered. This includes TMDL pollutants and other spilled pollutant containing materials, which in some cases, could include the field analysis of pH and/or turbidity. Therefore, it is possible for Risk Level 1 projects to be required by the CGP to analyze discharges for pH and turbidity.

Regarding which person performs the sampling, for a construction site, storm water samples can be collected by a trained QSP delegate inspector, the QSP, or the QSD. If samples are being collected by delegated samplers, it is essential that the QSP (or QSD) communicate with them about the sampling protocol for each location. Communication should also occur between the QSP and the delegated inspector regarding the status of the QPE, changes in the monitoring locations, the need to collect non-visible pollutant samples, observed BMP failures or water quality issues, and any safety concerns / possible sampling exemptions.

What do you use to sample? Now you may be wondering, what do I use to collect a sample? The CGP states that samplers should *"use only the sample containers provided/specified by the laboratory to collect and store samples"* and that the *"use of any other type of containers could cause sample contamination."* For some sampling points, such as a discharge from a pipe, it is quite possible to collect samples directly into laboratory-supplied containers. However, if you're trying to collect sheet flow, the laboratory sample bottle probably won't work. In talking with experienced samplers, the tools they utilize to collect samples range from dust pans to bottles, Ziploc bags, sample boom poles, and even flexible cups. If it is clean, holds water, and is capable of collecting a sample, it is a usable option. For many analyses, especially field analysis of pH and turbidity, these intermediary devices will not have a significant impact on the representativeness of the sample results. However for the collection of samples to be tested for oil & grease or volatile organic compounds (VOCs), water should be collected directly into the laboratory-supplied sample bottle and avoid contact with intermediary devices to which the pollutants can adhere and become less concentrated in the water with each point of transfer.

How do you sample? As far as what the Permit specifies for how to sample, here are the requirements for sampling:

- *Risk Level 2 and 3 dischargers shall collect storm water grab samples, from all discharge locations incorporating runoff from project construction sites, during discharge and within site operating hours. The grab samples shall be representative of the discharge flow and characteristics.*
- *Risk Level 2 and 3 dischargers shall obtain one sample from each discharge location per 24-hour period of each QPE, during active discharge.*
- *Risk Level 2 and 3 dischargers shall collect samples of stored or contained storm water during discharge from the impoundment, in accordance with Attachment J.*
- *Risk Level 2 and 3 dischargers shall analyze all samples for:*
- *pH and turbidity; and*
- *Any additional parameter required by the Regional Water Board. (CGP III.D.1.a-d.ii)*

In addition to those permit references, when it comes to sampling, you need to ensure you are sampling from the correct location – is the water you are sampling runoff from your site? Is it representative of your site? You shouldn't be sampling runoff that's not coming from your site, or runoff that isn't actually leaving your site – is the water you're sampling just flowing around the site, but never off of it? You also need to be sampling on the correct side of the BMPs. If you sample before the water is treated by your BMPs, that defeats the purpose of sampling – *to see if your BMPs are being effective in keeping pollutants from discharging from your site.* But that being said, you also want to be careful not to disturb your BMPs and release all the trapped pollutants back into the runoff and the sample container when you collect the sample. Another thing you want to avoid when sampling is muddying the water you are planning on sampling. This will stir up the sediment in the water and give an unrepresentative turbidity reading and possibly disturb other pollutants as well. Avoid walking through the sampling location runoff as much as possible – if you need to walk through the water, try approaching from downstream. When using a dustpan or bottle, avoid scooping up a water sample and, with it, a whole lot of debris that was settled out on the ground. Also, by wearing clean nitrile gloves, avoid cross contaminating samples with potential pH altering substances, turbidity, or oil and grease from contaminants on your hands (lotion, mud, grease from your snacks or lunch, acid from the orange you just peeled and ate, etc.).

Please contact us if you have any questions ...

The Monthly Dirt

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merry christmas
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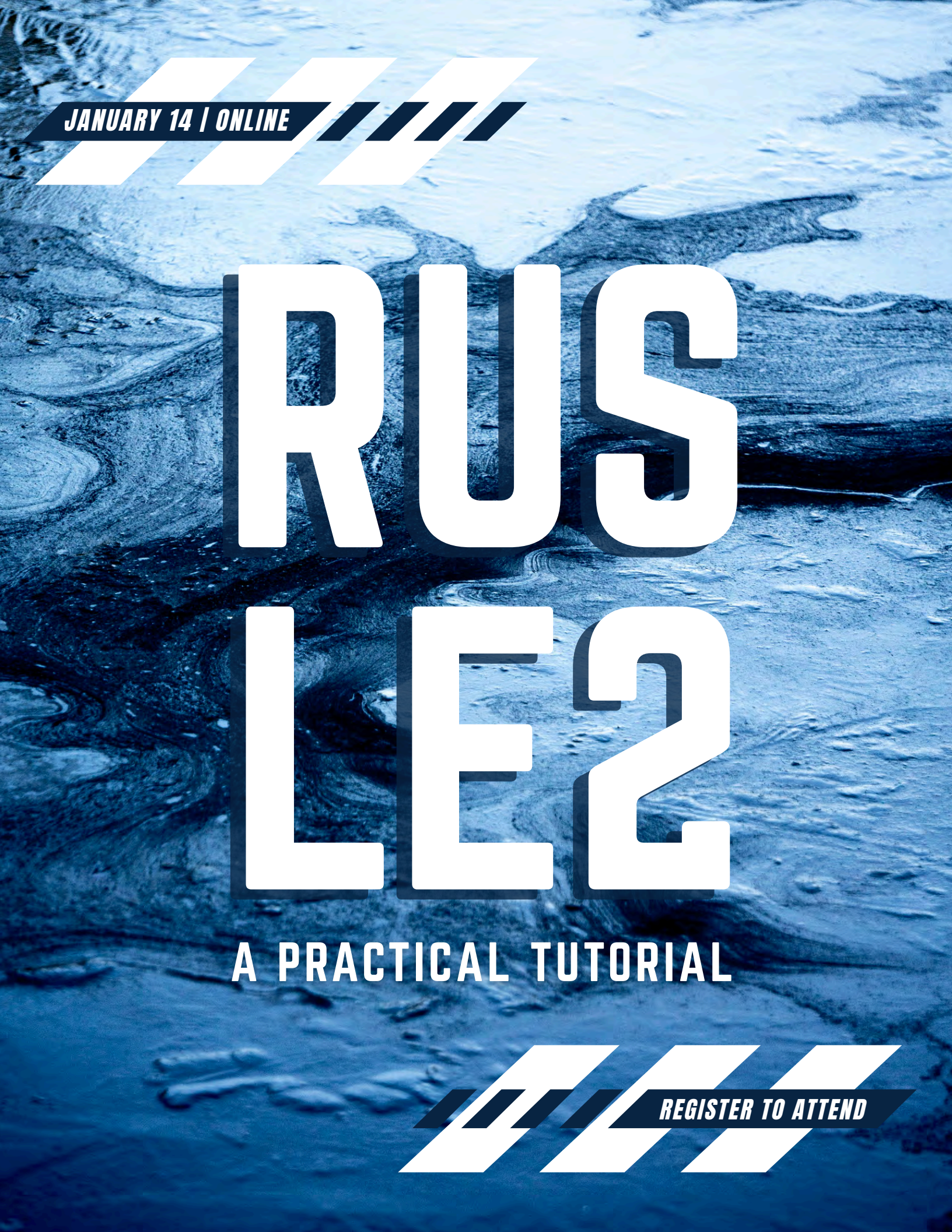
"fear not, for behold, I bring you good news of great joy that will be for all the people. for unto you is born this day in the city of David a Savior, who is Christ the Lord." Luke 2:10-11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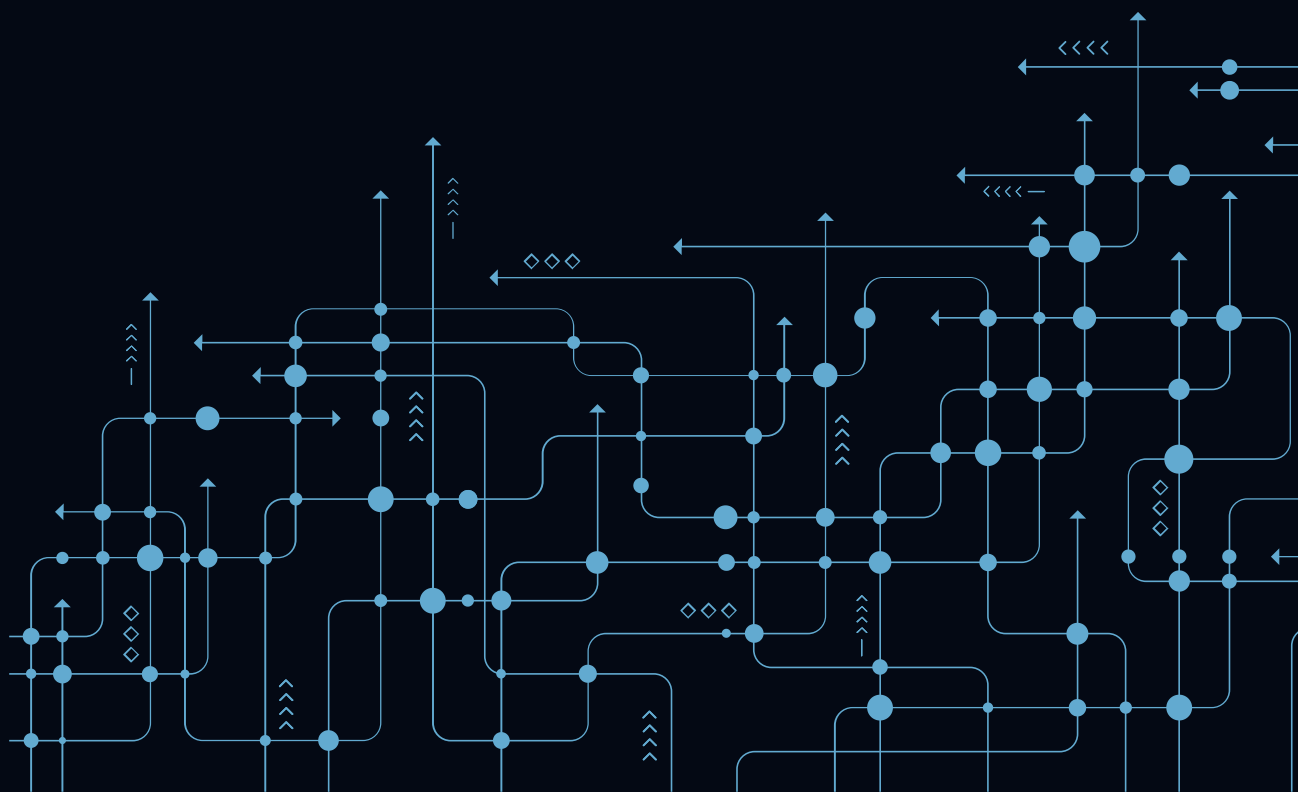

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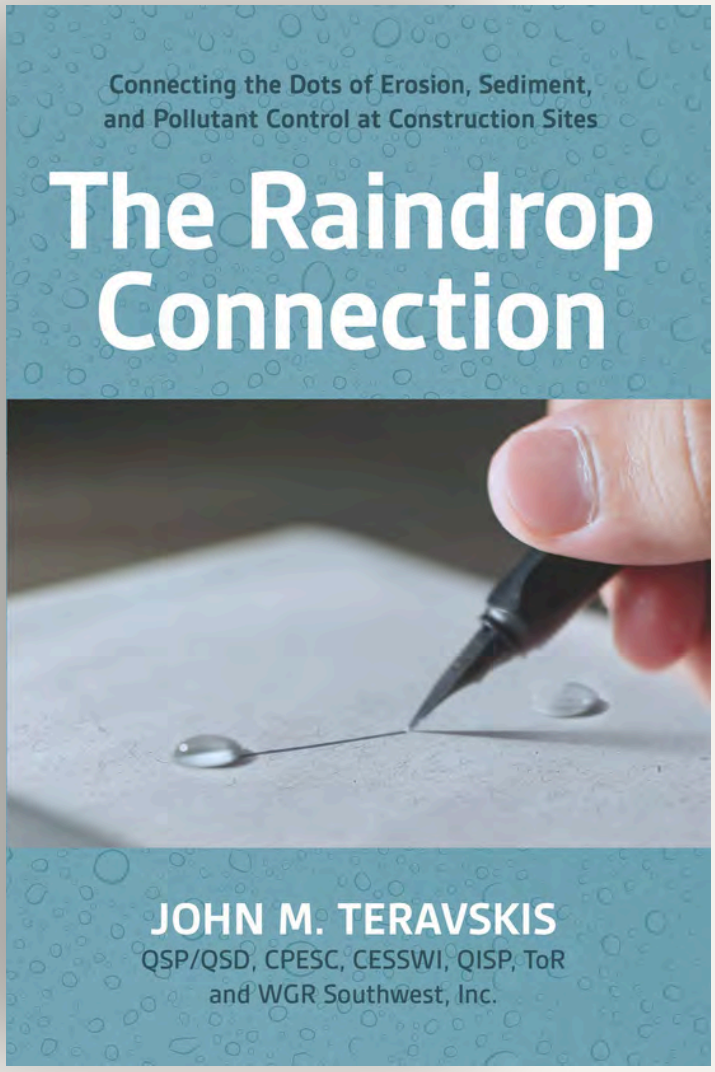

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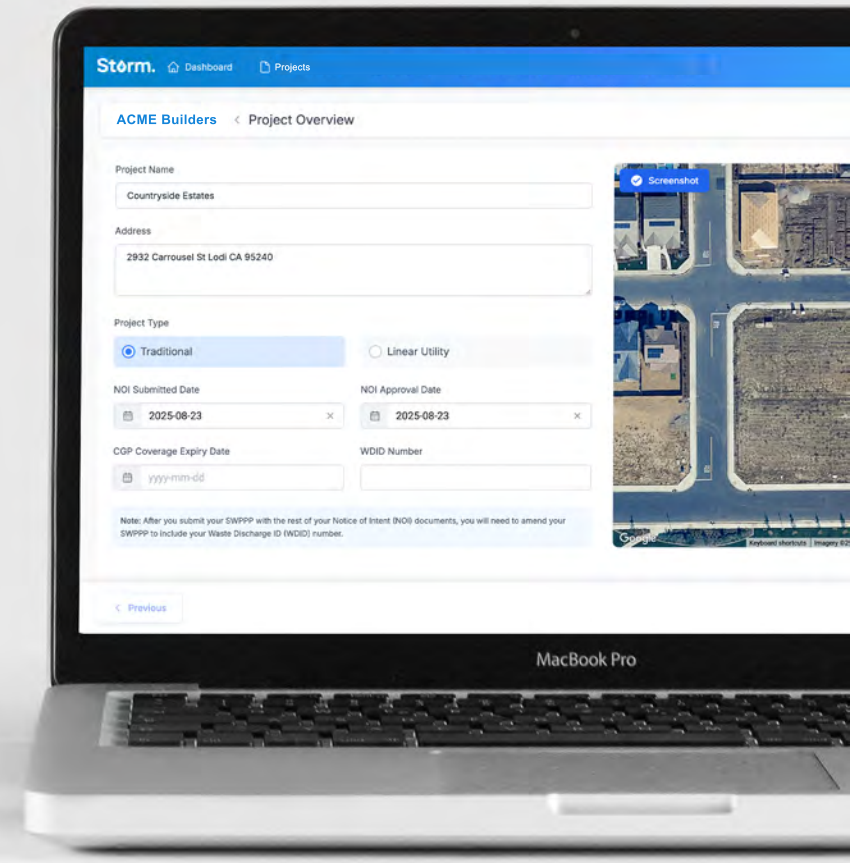

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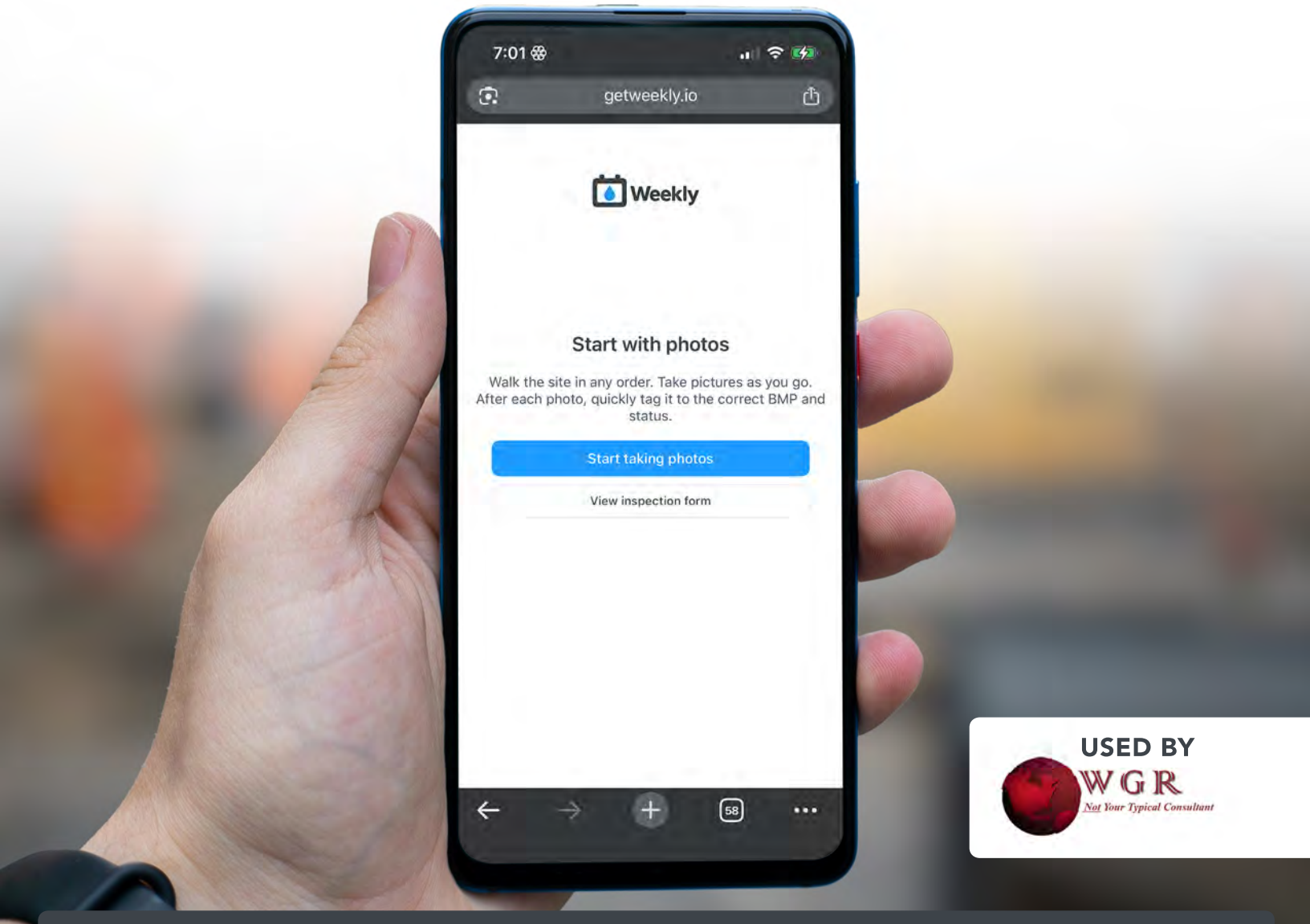

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