

The Monthly Dirt

A Monthly Newsletter on the California Construction General Permit
By WGR Southwest, Inc.

Erosion ON A Grand Scale

I hope you can take some time this summer to take a break and get away for a while. If you do have an opportunity for a vacation, I would like to suggest visiting one or more of the many beautiful National Parks. Unfortunately, I did not visit any of these national treasures until relatively recently. In the last year, our family has visited five National Parks. I never knew what I was missing. From the bison and geothermal wonders of Yellowstone, to the majestic glacier carved granite monoliths of Yosemite, to the massive erosional features of Bryce, Zion, and the Grand Canyon – I have been amazed beyond words. Many times I found myself standing at the edge of an eroded precipice, thousands of feet high, unable to say or do anything other than to let my senses of sight, smell, and sound record every detail of the wonder. These National Parks have especially intrigued me as a certified professional in the area of erosion and sediment control. I find myself asking 1) What laid down such tremendous layers of sediment? and 2) What forces eroded away much of that sediment leaving spectacular features including hoodoos, arches, windows, and canyons?

Natural Erosion – In the CPESC and QSP/QSD training classes, I have taught about “*natural erosion*”; and that it is, for the most part, not harmful to the environment. On the contrary, natural erosion can be beneficial in that it creates sandy beaches, provides rich soil for farmers, and provides great places for vacations and reflection. The Construction General Permit’s factsheet (p. 43-44), states that in a natural balance, erosion can actually keep streams healthy. Without enough sediment, streams can become “*sediment starved*” and cause greater downstream erosion. For more pictures of spectacular natural erosion, see the attached page in this newsletter.

Accelerated Erosion – In these training classes, we next address “*accelerated erosion*”. Unlike natural erosion, accelerated erosion during construction can cause sediment loads to increase up to 40,000 times that of pre-construction conditions (CGP Fact Sheet p.43). What are erosion accelerators? In short, they are human influences on the erodible surfaces. At a construction site, they include, among other things, soil disturbance, the removal of vegetation and top soil, use of heavy equipment, movement of vehicles across the site, compacting and smoothing dirt surfaces, and the stockpiling of soil and other materials. Sometimes even the BMPs intended for helping to prevent erosion can

cause greater amounts of erosion if they are not used or managed correctly.



This is not a tourist destination or a candidate for a National Park. Can you guess the cause of this "accelerated erosion"?

An example of this would be the use on plastic sheeting on large stockpiles or on slopes. In this case, the contractor installing the plastic sheeting is hoping to keep falling raindrops from coming into contact with the soil located beneath the plastic. While that may be the case, many times not enough thought is given to what is down gradient of the plastic. Water running off the plastic sheeting at a high velocity will cause significant soil loss when it comes into contact with down gradient erodible surfaces. **MD**

Accelerators & De-accelerators

Of course the removal of vegetation is an accelerator of soil erosion. However, even removing the top soil can dramatically accelerate and worsen erosion. How can that be? Once dirt is exposed does it matter which layer of soil is exposed? The answer is "yes", if the top layer is less erosive, the bottom layers will be protected. Let's first look at a natural example of this concept from Bryce National Park – the hoodoo.



Hoodoos typically form in areas where a thick layer of a relatively soft rock, such as mudstone, poorly cemented sandstone or tuff (consolidated volcanic ash), is covered by a thin layer of hard rock, such as well-cemented sandstone, limestone or basalt. Over time, cracks in the resistant layer allow the much softer rock beneath to be eroded and washed away. Hoodoos form where a small cap of the resistant layer remains, and protects a cone of the underlying softer layer from erosion. Further erosion of the soft layer causes the cap to be undercut, eventually falling off, and the remaining cone is then quickly eroded:

There is a similar phenomenon at construction sites where a less erosive layer can protect far more erosive bottom layers. This less erosive layer is top soil that has a high content of organic material and has not lost its structure. The effect it has on controlling erosion can be almost as impressive as Bryce Canyon Hoodoos. Don't believe me? Check out this video demonstration from last year's PDU Week program.



Ken Oster, a Soil Scientist with the USDA's Natural Resources Conservation Service, explains the benefits of soil that has high organic content and has not lost its structure from excessive disturbance.

<https://www.youtube.com/watch?v=qMtooKLO2Uk>

Take a lesson from the hoodoo – protect the top soil and you will see significantly less erosion. If the top soil has already been removed, mulching and soil amendments can help restore the new surface soil to a healthy state. Re-establishing vegetation also allows soil to regain structure and to re-build a health bio-community. Healthy soil means good water quality. So this summer, when you think about taking a vacation and that much needed break; think also about giving your construction site a break from erosion accelerators and forming your own "hoodoos" with a healthy soil cover. **MD**

Upcoming Training

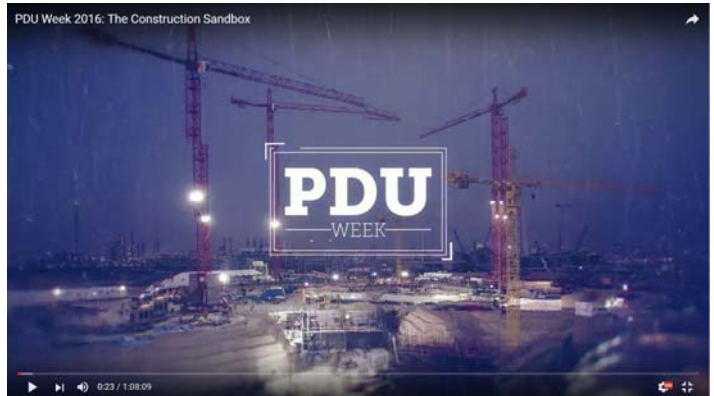
Got SWPPP? Classes coming to Lodi:

✓ QSP/QSD Training, **July 12 - 14, 2016**

(For more information about these classes, go to www.gotswppp.com.)

Quick QSP Quote

The 2015/2016 Storm Water Year ends on June 30, 2016. Now is the time to gather all of your analytical results and inspection records. If you have not prepared Ad Hoc Reports yet for the analytical testing, we suggest doing it now. The annual report due date for 2015/2016 is September 1, 2016. But, you do not have to wait until August. We suggest starting on it soon because sometimes SMARTS can slow down near reporting due dates.



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Please contact us if you have any questions ...

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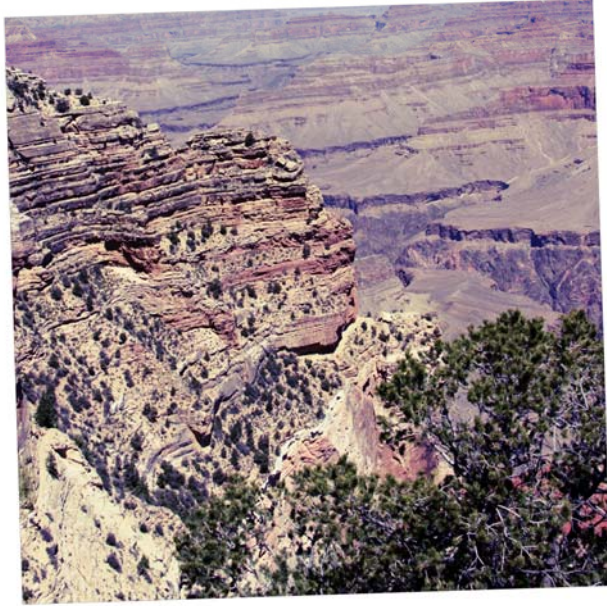
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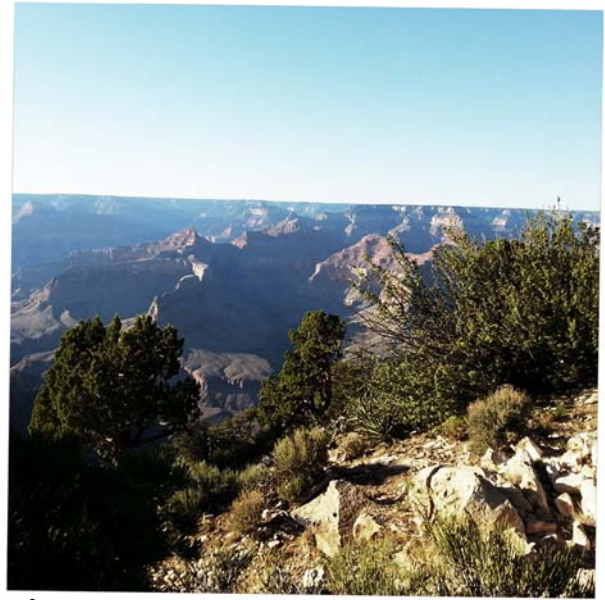
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2016 Erosion Field Trip



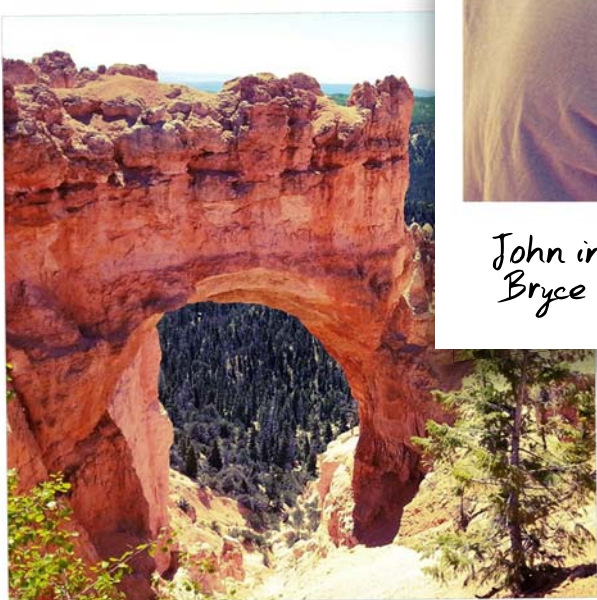
Hiking in the Grand Canyon shortly after sunrise



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John inspecting erosion at Bryce Canyon



Natural arch at Bryce Canyon



Brachiopod fossil at Grand Canyon

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