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Altered Wetlands: When is a Hydrology Study Needed?

Back in October, TOPICs covered how some sites require routine wetland delineations while others call for an advanced analysis that may involve monitoring of groundwater wells. Given that the distribution of wetlands can be critical to a project's design and feasibility, how do you know when a more thorough investigation is worth the time and expense? The advisability of a hydrology study depends on several factors, the most important of which are aspects of the site's history that may have changed its hydrology and the amount of land in question.

Wetland hydrology is important to understand because it is one of three conditions that must be met in order for an area to be considered wetland (the other two being the presence of hydric soils and "water-loving" vegetation). Whether a wetland receives enough water to sustain itself is a complex function of landscape, climate, and past land use. Because hydrology can be the most difficult of the three conditions to assess during a single site visit, the installation and monitoring of groundwater wells is sometimes necessary to establish the boundary of wetland areas – or to determine if a questionable area is even wetland at all.

A site's history, and the subtlety of many hydrologic indicators, can further complicate the question of wetland hydrology. Wetland hydrology can be substantially altered by agricultural drainage systems, sedimentation, and/or drainage area reductions. The following questions need to be evaluated when deciding if a hydrology study is warranted:

- 1) Is there a functioning drainage system in or near the site that has lowered the water table?
- 2) Has the elevation of the wetland increased due to sedimentation and/or fill?
- 3) Has water been diverted (e.g., by storm sewers) and prevented from entering the wetland?

Where the answer to any of these questions is yes, further study may be in order to assess whether wetland hydrology has been altered. If certain hydrologic conditions are not met for a given area, it cannot be regulated as wetland.

While hydrology studies can be expensive and time-consuming, the benefits can be substantial when large areas of land are involved. On one recent project, for example, a well study indicated 10 fewer acres of wetland than identified during a routine delineation. On another project, 23 acres of wetland identified by a previous routine delineation were reduced to less than 3 acres due to a well study that demonstrated an adjoining ditch system was effectively draining the area.



This area may appear to be wetland, but closer inspection reveals trees that would only grow on this soil type under drained conditions. Such vegetation clues suggest the presence of a drainage system and prompt further investigation.

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Where site conditions merit a hydrology study, it must be designed and implemented in a manner that meets regulatory standards. Proper planning, due diligence, and coordination with appropriate agency personnel are necessary to provide accurate and convincing evidence. Although the results of a hydrology study cannot be guaranteed, an objective appraisal of your site prior to finalizing jurisdictional wetland boundaries may be worthwhile. As profiled in the January TOPICs, taking steps like these during the Pre-Design process can help you maximize project success.



If you have a project that may warrant a well study, contact
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