

5.3. Wetlands that periodically lack indicators of wetland hydrology

Why is this important to me? The Supplements discuss circumstances where climatic conditions may be problematic, and offers other means by which information can be added to the record when the issue is either climate-related or disturbance-related.

5.3.1. Difficult situations caused by dry site conditions

5.3.1.1. Description of the problem

Go to your Supplement's section on *Wetlands that periodically lack indicators of wetland hydrology*. Read the two paragraphs 'Description of the problem'

Question	Answer
Does this section address situations when the site lacks Normal Circumstances or when it lacks Normal Environmental Conditions?	Normal Environmental Conditions
Discussion	
This section deals mainly with climatic or meteorologic situations that cause a wetland to have less stored moisture above the ground, below the ground, or both.	
The rest of this section will discuss tools to evaluate dry weather conditions.	

5.3.1.2. Procedure

Read Procedure, Steps 1, 2 , and 3

Discussion
After you have determined that the site has Hydrophytic Vegetation and Hydric Soils, evaluate the landscape to see why water might accumulate enough to support them. If you find appropriate landform features, you may use one of the approaches listed in Step 3. A short discussion of each is given there.

Skim the paragraphs of sub-steps on:
 Site visits during the dry season
 Periods with below-normal rainfall
 Drought years
 Years with unusually low winter snow-pack (if in your Supplement).

Discussion
Note that each of these sub-steps includes some variation on the following sentence: <p style="margin-left: 40px;">If the site visit occurred during [<i>one of the stated dry situations</i>], and wetland hydrology indicators appear to be absent on a site that has hydrophytic vegetation and hydric soils, and there is no evidence of hydrologic manipulation (e.g., no drainage ditches, dams, levees, water diversions, etc.), then the area should be identified as a wetland.</p>

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Question	Answer
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Do you always need to have 1 primary or 2 secondary indicators of Wetland Hydrology to determine that an area is a wetland?	No
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Discussion

This is a significant development in wetland determination protocols. The option to determine existence of a wetland without Wetland Hydrology Indicators has always been implicit in both Corps and NRCS procedures by allowing use of best professional judgment. The Regional Supplements still require professional judgment but they supply explicit guidelines to assist in documenting those judgment calls.

To facilitate discussion, this option to dispense with the field indicators of hydrology will be referred to as the 'dry-period hydrology exemption' in the rest of this section.

Question	Answer
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Do you have to verify that the “site is in a landscape position that is likely to collect or concentrate water” in order to make a 2-factor wetland determination?	Yes. One should also be certain that the site has not been effectively drained by a drainage system.
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5.3.1.2.1. Site visits during the dry season

Re-read the sub-step “Site visits during the dry season.” (sub-step a. in most Supplements)

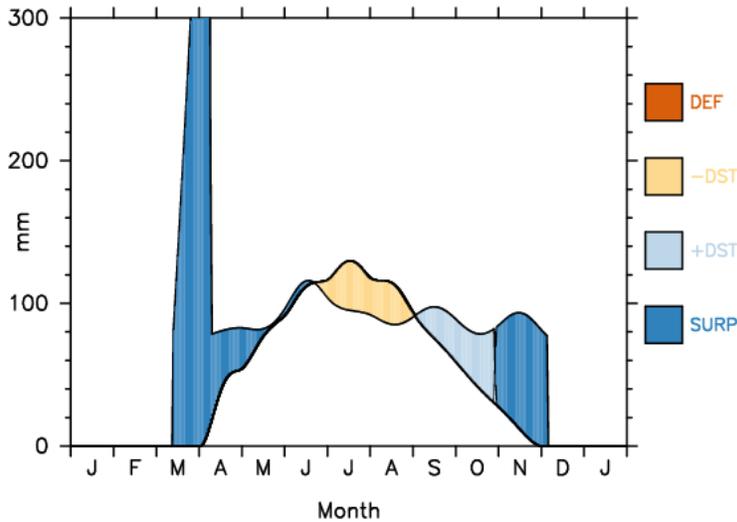
Discussion

This sub-step requires documentation that the site visit occurred during the normal dry-season. Some of the supplements list when those normal dry seasons are for the region. For example, in the Alaska region, the Aleutian Islands have no normal dry season.

State climatology offices may provide information on whether a time period was wet, normal, or dry compared to 30-year normals at a given location.

The supplements identify the water budget model WebWIMP as a tool for examining generalized monthly moisture deficits and soil moisture changes as a function of normal ET and precipitation. The resultant graphs [shown in Figures 42 and 43](#) are generalized for average soils in the region.

Water Balance at 78.5W, 42.5N
Project Title: Cattaraugus Co, NY



Location: 78.5W 42.5N Elevation: 489 m
 Soil water-holding capacity: 150 mm
 Declining availability function: G
 Prescribed average-monthly air-temperature changes: 0.0°C
 Prescribed average-monthly precipitation changes: 0.0 %

Figure 421, WebWIMP graph.

Monthly and annual climatic water balance table

MON	TEMP	UPE	APE	PREC	DIFF	ST	DST	AE	DEF	SURP	SMT	SST
Jan	-5.6	0	0	64	0	150	0	0	0	0	0	125
Feb	-4.9	0	0	60	0	150	0	0	0	0	0	185
Mar	-0.2	0	0	71	155	150	0	0	0	155	109	101
Apr	6.5	30	34	80	147	150	0	34	0	147	101	0
May	12.4	60	76	85	9	150	0	76	0	9	0	0
Jun	17.3	86	109	110	1	148	-2	109	0	3	0	0
Jul	19.4	97	125	96	-29	119	-29	125	0	0	0	0
Aug	18.6	92	110	88	-22	97	-22	110	0	0	0	0
Sep	14.8	73	75	95	20	116	19	75	0	0	0	0
Oct	9.3	44	42	82	40	150	34	42	0	6	0	0
Nov	3.2	14	12	89	77	150	0	12	0	77	0	0
Dec	-3.0	0	0	71	10	150	0	0	0	10	0	61
Total			583	991				583	0	407		

Monthly and annual climatic water balance graph

Figure 432, WebWIMP table.

Figures 4~~2~~4 and 4~~3~~2 are the results of the WebWIMP analysis of the water balance for the county seat of Cattaraugus County, NY. These show that the average soils in this hilly county are in moisture deficit for July and August (DIFF values are negative in Figure 4~~3~~2). This is the time period that the Regional Supplements would recommend use of the “dry season” provisions of Chapter 5. Note again, this is a county-wide average, regardless of landscape position.

NRCS personnel are probably more familiar with Soil Survey tools. Customer Service Toolkit with Soil Data Viewer , eFOTG, Soil Data Mart and Web Soil Survey all list expected monthly water table depths in the Water Features tables (Figure 443). These data are specific to the soils and map units that occur on appropriate landscape positions. If monthly water table data have not been usefully populated for the soils of your site, use data for similar soils on similar landscape positions in your area.

Figure 43 shows two hydric soils in Cattaraugus County, NY. From the table it is apparent that the Wayland soil exhibits a water table in all months except July through September and the Wallington soil exhibits a water table in all months except June through October., The Upper Limit shows the depth of the water-table (groundwater surface) in the months it occurs. The Lower Limit shows how deep the groundwater extends in the months it occurs. The water table in Wallington is perched on top of a restrictive layer, in this case on a fragipan, which is evident from the shallow lower limit.

In summary, the dry-period hydrology exemption requires documentation that the site visit occurred during a season when water tables are usually significantly deeper than required for wetland hydrology.

Water Features							
Cattaraugus County, New York							
Map symbol and soil name	Hydrologic group	Surface runoff	Month	Water table		Ponding	
				Upper limit	Lower limit	Surface depth	Duration
				<i>Ft</i>	<i>Ft</i>	<i>Ft</i>	
5:							
Wayland	C/D	Very high	January	0.0-0.5	>6.0	---	---
			February	0.0-0.5	>6.0	---	---
			March	0.0-0.5	>6.0	---	---
			April	0.0-0.5	>6.0	---	---
			May	0.0-0.5	>6.0	---	---
			June	0.0-0.5	>6.0	---	---
			October	0.0-0.5	>6.0	---	---
			November	0.0-0.5	>6.0	---	---
			December	0.0-0.5	>6.0	---	---
33A:							
Wallington	C	Very high	January	0.5-1.5	1.0-2.0	---	---
			February	0.5-1.5	1.0-2.0	---	---
			March	0.5-1.5	1.0-2.0	---	---
			April	0.5-1.5	1.0-2.0	---	---
			May	0.5-1.5	1.0-2.0	---	---
			November	0.5-1.5	1.0-2.0	---	---
			December	0.5-1.5	1.0-2.0	---	---

Figure 443. Part of Water Features table in Soil Data Mart.

5.3.1.2.2. Periods with below normal rainfall

Read the sub-step "Periods with below-normal rainfall." (sub-step b. in most Supplements)

Discussion

The dry-period hydrology exemption can also be applied if a site visit occurs during a period of drought. The Supplements recommend documentation with the WETS tables and local precipitation records. These were discussed above in Section 3.3. The Supplements recommend additionally that you evaluate precipitation that occurred during the preceding two or three months to ascertain if [#-antecedent precipitation](#) was below normal. The referenced method evaluates whether antecedent precipitation was normal during the current month and the preceding two months and assigns them 'condition values' (dry = 1, normal = 2, wet = 3), and then weights the monthly condition values (1st prior month = 3, 2nd prior month = 2, third prior month = 1) with the most recent month being weighted the most. These weighted condition values are then used to decide whether the entire preceding 3-month period was dry, normal or wet.

The precipitation values for the demonstration table below were taken for Avon, Livingston Co, NY, for July~~ne~~ 1-28, 2009. The ranges of normal were taken from the appropriate WETS table. Pro-rate precipitation amounts for partial month evaluations.

Long-term rainfall records								
		3 yrs in 10 less	3 yrs in 10 more	Rain fall	Condition dry, wet normal	Condition value	Month weight value	Product of previous two columns
1st prior month*	June	2.38	4.44	4.30	normal	2	3	6
2nd prior month*	May	1.97	3.33	1.6	dry	1	2	2
3rd prior month*	April	2.11	2	2	dry	1	1	1
* Compared to site observation date							Sum	9
Note:	If sum is				Condition value:			
	6 - 9	then prior period has been drier than normal			Dry	=1		
	10 - 14	then prior period has been normal			Wet	=3		
	15 - 18	then prior period has been wetter than normal						

Conclusions: Rainfall prorated from June 1-27 data.
 The "Rainfall Documentation" procedure generates a conclusion that
 the prior period was drier than normal
 long term climate history should be evaluated before accepting this conclusion.

Long-term rainfall records

	3 yrs in 10 less than	3 yrs in 10 more than	Rain fall	Condition dry, wet normal	Condition value	Month weight value	Product of previous two columns
1st prior month*	July	1.78	3.22	4.18	wet	3	3
2nd prior month*	June	2.38	4.44	4.94	wet	3	2
3rd prior month*	May	1.97	3.33	2.54	normal	2	1
* Compared to site observation date						Sum	16

Note: If sum is 6-9 then prior period has been drier than normal
 Condition value: Dry =1, Normal =2, Wet =3
 If sum is 10-14 then prior period has been normal
 Condition value: Wet =3
 If sum is 15-18 then prior period has been wetter than normal

Conclusions: July Rainfall prorated from July 1-27, 2009, data.
 The "Rainfall Documentation" procedure generates a conclusion that
 the prior period was **wetter than normal**
 The long term climate history should be evaluated before accepting this conclusion.

Figure 45

Antecedent Rainfall Evaluation

Figure 45 – Antecedent Rainfall Evaluation

precipitation analyses for time periods ranging from one month to five years before the current month. Whichever method you use also look at the monthly rainfall distribution within the calendar year of low rainfall.

5.3.1.2.4. Years with unusually low winter snowpack (Western Mountains, Alaska, Arid West supplements)

Read the sub-step “Years with unusually low snow-pack”

Discussion

Consult your State Wetlands Leader and Engineering Section for further information about SNOTEL and its applicability in your Region.

As with the preceding sub-steps, the ‘dry-period hydrology exemption’ applies to wetlands that lack hydrology indicators because of unusually low winter snowpack.

This is the last of the difficult wetland situations that uses the dry-period hydrology exemption.

5.3.2. Tools for difficult situations caused by site disturbance

Why is this important to me? When a site has been so heavily disturbed that it is no longer feasible to evaluate wetland hydrology, Corps procedures allow the wetland identification decision to be made using the vegetation and soils factors alone. The NRCS has adopted this 2-parameter test if there is so little information that the following tools cannot be used.

5.3.2.1. Reference sites

Read the sub-step “Reference sites”

Discussion

Reference sites can provide useful information for inspections conducted under difficult conditions. The obvious problem is finding such sites with comparable landscape positions and water budgets. Certainly use them if they are available, perhaps at parks or university research stations. Exercise caution in selecting a reference site. Often what is selected can determine the answer to the question about whether wetland hydrology is present.

If you have a disturbed site where information about a delineation factor cannot be gathered, both the NRCS and the Corps authorize collecting the missing information at a nearby site with soils and other site characteristics similar to those found on the disturbed site before alteration.

5.3.2.2. Hydrology Tools

Read the sub-step "Hydrology tools"

Discussion

Chapter 19 of the EFH was discussed in Section 4.4, above.

5.3.2.3. Evaluating multiple years of aerial photography

Read the sub-step "Evaluating multiple years of aerial photography"

Discussion

This topic is discussed in section 650.1903 in the Engineering Field Handbook Chapter 19. The method is widely used in the upper Midwest region of the United States.

5.3.2.4. Long-term hydrologic monitoring

Read the sub-step "Long-term hydrologic monitoring"

Question

Answer

Do the findings of long-term monitoring overrule evidence from the hydrology indicators?

No

Discussion

The criterion is to be used for scientific and forensic studies, not to challenge wetland determinations performed with the various Routine Methods of the Manual.

Quantitative criteria for interpreting the long-term water-well data are:

- water tables at or above 12 inches
- for 14 consecutive days
- during the growing season
- at a frequency of at least 5 years in 10.

Such research projects should be conducted by appropriately trained hydrologists or engineers.