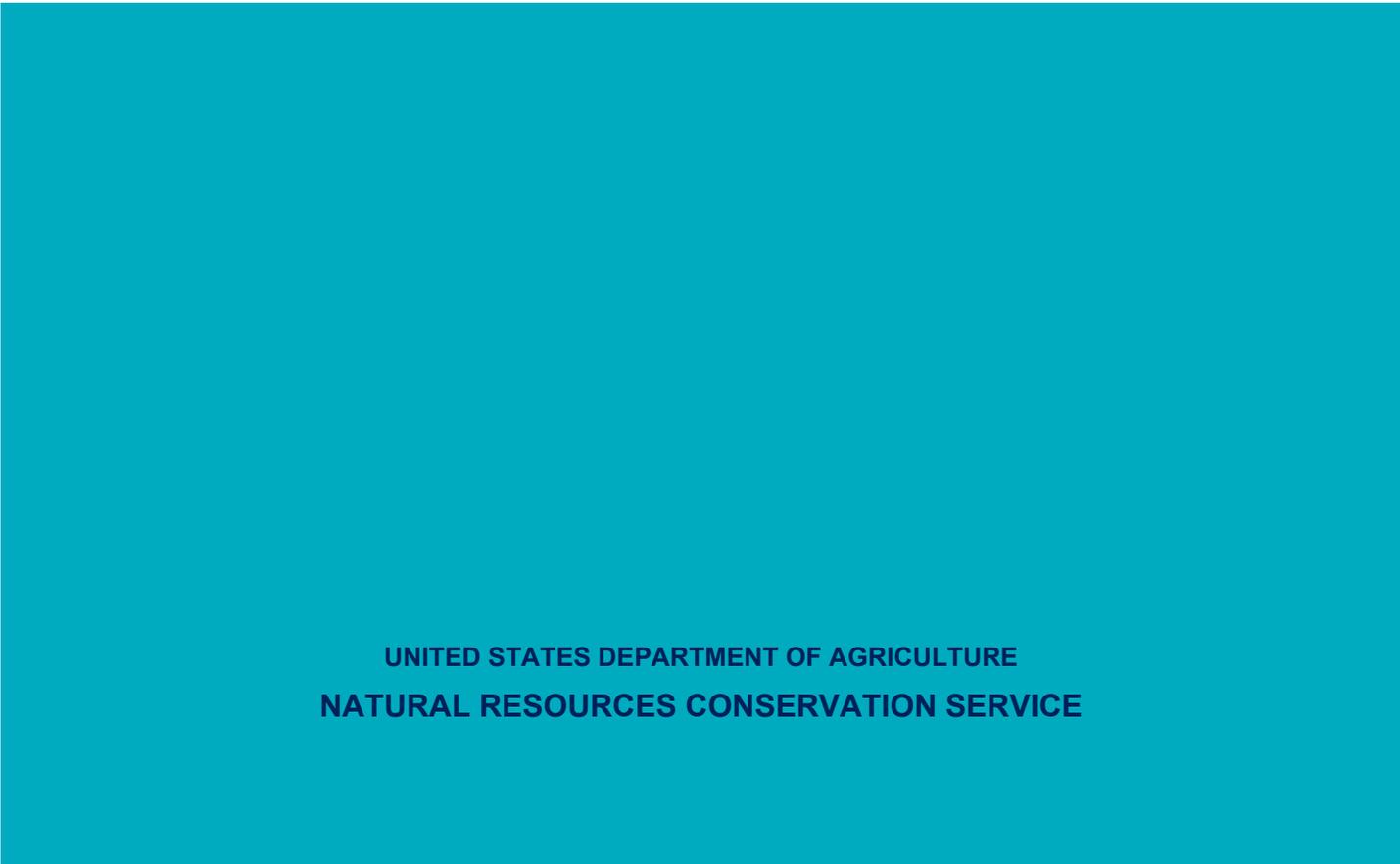




# STATE OFF-SITE METHODS FOR FOOD SECURITY ACT WETLAND IDENTIFICATION

PENNSYLVANIA

FINAL DRAFT - JANUARY 2024



UNITED STATES DEPARTMENT OF AGRICULTURE  
NATURAL RESOURCES CONSERVATION SERVICE

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## INTRODUCTION

### PURPOSE

The Natural Resources Conservation Service (NRCS) is responsible for providing certified wetland determinations to United States Department of Agriculture (USDA) program participants so they may make informed land management decisions and remain compliant with the wetland conservation (WC) provisions of the Food Security Act of 1985, as amended. This document provides guidance to NRCS [agency experts](#) to efficiently conduct wetland determinations using off-site resources, while maximizing accuracy and consistency. Specifically, this document includes information on the use of off-site data sources utilized by NRCS in applying the following sections of the 1987 United States Army Corps of Engineers (USACE) Wetland Delineation Manual, Technical Report Y-87-1 (Corps Manual); Part IV—Methods, as supplemented by the applicable USACE Regional Supplement to the Corps Manual (Regional Supplement) and the National Food Security Act Manual (NFSAM) Part 514.8(A), “Food Security Act Wetland Identification Procedures” (FSA Procedures):

- Section B—Preliminary Data Gathering and Synthesis
- Section D—Routine Determinations; Subsection 1: On-site Inspection Unnecessary
- Section D—Routine Determinations; Subsection 3: Combinations of Levels 1 and 2
- Section F—Atypical Situations
- Section G—Problem Areas

Additionally, this document provides methods for assessing certain conditions of land related to the assignment of wetland conservation labels and sizing. Refer to the NFSAM for full guidance on wetland conservation labels.

For the purpose of making off-site wetland determinations, this State Off-Site Methods (SOSM) document adheres to and incorporates the current versions of the following:

- The NFSAM, including the FSA Procedures,
- The Corps Manual,
- The following Regional Supplement(s):
  - Eastern Mountains and Piedmont Region
  - Northcentral and Northeast Region
- [Title 210 Engineering, National Engineering Handbook, Part 650, Engineering Field Handbook, Chapter 19 - Hydrology Tools for Wetland Identification and Analysis \(EFH Hydrology Tools\)](#), with the specific state considerations as described herein.
- [Hydrology Indicators for the Identification of Farmed Wetlands as Defined in 7 CFR 12.2: Pennsylvania](#)

### BACKGROUND

The Food Security Act of 1985, as amended, requires USDA program participants to comply with the Wetland Conservation (WC) provisions as detailed in the Code of Federal Regulations (CFR) in 7 CFR Part 12 (regulations). The NFSAM provides internal agency policy related to the WC provisions of the Act. The regulations and NFSAM explain that the Food Security Act (FSA)

wetland determination process requires a technical determination of whether an area is a [wetland](#), then a separate and independent determination of whether any exemptions to the WC provisions apply (assignment of WC labels).

Based on these two decisions, a certified wetland determination map is prepared with an appropriate WC label assigned to each [sampling unit](#). Additionally, the size of each area with a WC label is provided in acres. Thus, the FSA wetland determination decision includes three independent steps:

**[Step 1: Wetland Identification](#)** – Following the application of Corps Manual Section B—Preliminary Data Gathering and Synthesis, as amended by the FSA Procedures paragraph (5-9), the project area is identified and sized on a base map. Then, through the application of Corps Manual Section D-Routine Determinations, as amended by the FSA Procedures, sampling units are delineated, [representative observation points](#) are identified, and the agency expert determines if each sampling unit supports the three diagnostic factors ([hydrophytic vegetation](#), [hydric soils](#), and [wetland hydrology](#)) under normal circumstances (NC). All agency decisions made during Step 1 are made at the sampling unit level.

**[Step 2: WC Label Assignment](#)** - In this step the agency expert begins to develop the wetland determination map that will be provided to the USDA program participant. The base map completed from Step 1 is used to help inform the decision of the most appropriate WC label for each delineated area (polygon) within the project area. Each exemption has specific conditions including whether or not an area is a wetland, and many are tied to the December 23, 1985, and November 28, 1990, statutory dates. The agency expert will refer to the NFSAM for label definitions and conditions.

**[Step 3: Sizing](#)** - In this step the size of each labeled polygon is determined by examining data sources and the information gathered in a site visit if one was made.

To accomplish Step 1 (wetland identification), the Secretary of Agriculture directed NRCS to develop and utilize off-site and on-site wetland identification procedures (7 CFR Part 12). NRCS responded by providing the FSA Procedures, which directs how agency experts are to utilize the Corps Manual Part IV: Methods for on-site and off-site determinations. This SOSM document has been developed to supplement the procedures found in the Corps Manual and Regional Supplements to address challenges faced with wetland identification in the agricultural landscape, and to collect certain information useful in the assignment of WC labels.

## STEP 1: WETLAND IDENTIFICATION

During Step 1 (wetland identification), the agency expert first applies Corps Manual Part IV, Section B—Preliminary Data Gathering and Synthesis and begins assembling the information and data that might be used to assist with decision making.

A wetland identification base map is prepared. The base map is used to identify which portions ([sampling units](#)) of the project area meet the FSA definition of a wetland under [normal circumstances](#). Normal circumstances can be summarized as the hydrologic conditions (depth, duration, frequency, and timing of inundation or saturation), and the resulting vegetation and soil features that would result:

- A. under [normal environmental conditions](#) (NEC), that is, the wet portion of the growing season under [normal climatic conditions](#) (NCC),
- B. under [best drained conditions](#) (if applicable), which represents the hydrologic conditions that resulted from pre-1985<sup>1</sup> [drainage](#), and
- C. in the absence of post-1985 drainage.

The evaluation of best drained condition (BDC) is required to consider the effect of drainage actions taken before 1985, which are “grandfathered” by the statute (FSA Procedures (5-26)). The NFSAM explains that BDC are *“the hydrologic conditions with respect to depth, duration, frequency, and timing of soil saturation or inundation resulting from drainage manipulations that occurred prior to December 23, 1985, and that exist during the wet portion of the growing season during normal climatic conditions. Consideration of the best drained condition will only occur when a site did not support woody vegetation on December 23, 1985, such that production of an agricultural commodity on that date was possible”* (NFSAM, Part 514.2).

The consideration of normal circumstances (NC), including NEC, BDC, and drainage actions taken after 1985 are incorporated into the wetland identification methods below. The agency expert is reminded that the concept of NC is critical to the wetland identification process and must be considered when making all decisions in Step 1.

In the absence of direct observation as provided in the FSA Procedures (5-48), (5-52), and (5-62), indicators are used to determine if a sampling unit supports a particular diagnostic factor. The use of indicators to predict conditions that would occur under NC is referred to as the “indicator-based approach to wetland identification” (FSA Procedures Part IV). Indicators can be observed using off-site data sources or on-site visits.

Step 1 concludes with completion of the wetland identification base map providing the size of the project area, the delineation of sampling units, the location of representative observation points, and whether (“yes” or “no”) each sampling unit meets the FSA wetland definition, under NC.

## 1.0 WETLAND IDENTIFICATION - METHOD AND LEVEL

FSA determinations utilize the routine methods (Corps Manual Part IV, Section D—Routine Determinations, FSA Procedures (5-10) and (5-11)), described in Corps Manual Part IV, Section C—Selection of Method, which provides three “levels” of routine determinations. For each sampling unit, the agency expert must decide which level of determination is most appropriate.

The levels, as applied at the sampling unit scale, are:

- A. **Level 1 – On-site Inspection Unnecessary** — Remote resources (off-site methods and indicators) are sufficient to make a decision on each of the three diagnostic factors for a sampling unit.

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<sup>1</sup> Unless otherwise noted, “1985” refers to December 23, 1985 throughout this document.

- B. **Level 2 – On-site Inspection Necessary** —On-site data (on-site methods and indicators) are necessary to make a decision on each of the three diagnostic factors for a sampling unit.
- C. **Level 3 – Combination of Levels 1 and 2** —Remote resources (off-site methods and indicators) are used for one or more factors of a sampling unit, while on-site data (on-site methods and indicators) are used for another factor of that same sampling unit (FSA Procedures (5-12)).

FSA Procedures (5-14) – (5-22) provide additional guidance on selecting the most appropriate level to identify wetlands. For the SOSM, this decision is not made at the project area scale, but rather for each sampling unit identified and delineated on the base map. The agency expert is responsible for determining the level of routine determination required (i.e., if off-site methods and indicators are sufficient to characterize each factor), and if Section F ([Atypical Situations](#)) applies. Additionally, the SOSM can be used to supplement Section G ([Problem Areas](#)) when on-site methods are being applied.

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#### 1.0.1 METHOD AND LEVEL ASSESSMENT

The method and level for each sampling unit will be selected using the following guidance:

- A. When remote resources adequately describe all three factors for a sampling unit a Level 1 determination can be completed using methods found in this document.
- B. When remote resources adequately describe only one or two factors for a sampling unit, a Level 3 determination can be completed using methods found in this document in conjunction with on-site methods described in the Corps Manual, Regional Supplements, and the FSA Procedures.
- C. The SOSM can be used to supplement the Atypical Situations (Part IV, Section F of the Corps Manual) methods (as supplemented by Chapter 5 of the Regional Supplement and the FSA Procedures) which rely on remote resources. These can be (in addition to on-site options) applied for one or more factors if recent (post-1985) significant alteration due to human activity (e.g., land clearing, filling, or drainage) or natural events have occurred.
- D. When conducting an on-site determination, if a sampling unit presently lacks hydrophytic vegetation or wetland hydrology indicators due to annual or seasonal fluctuations in precipitation or ground-water levels, or hydrophytic vegetation indicators are lacking due to seasonal fluctuations in temperature, methods for Problem Areas (Part IV, Section G of the Corps Manual as supplemented by Chapter 5 of the Regional Supplement and the FSA Procedures) are applied. This document provides additional methods to assist in the application of Section G.
- E. If conducting an on-site determination and soils are naturally problematic, Chapter 5 of the Regional Supplement may be applied. This document provides methods to assist in applying Chapter 5, Problematic hydric soils, Procedure 4(e), as well as alternatives to this procedure in the hydric soil factor assessment.

- F. If the agency expert determines that any sampling unit is not adequately characterized using remote resources, it will be evaluated on-site using appropriate sections of the Corps Manual, as supplemented by the Regional Supplement and FSA Procedures.

## 1.1 WETLAND IDENTIFICATION - BASE MAP

The wetland identification base map is a critical and required component in the wetland determination process. The findings documented on the base map inform the eventual decision on development of the wetland determination map, including the appropriate wetland type (WC label).

The base map, prepared according to *A* and *B* below, will include the following:

- Delineation and size of the project area;
- Delineation and numeration of unique [sampling unit\(s\)](#) (SU);
- Location and date of installation of drainage<sup>2</sup> features and/or other manipulations (if present);
  - *NOTE: NRCS evaluates the effects of drainage on agricultural lands within the drain's zone of influence, which has unique hydrology under NC. The physical drain itself is not evaluated as a SU and cannot contain a representative observation point.*
- Location and numeration of [representative observation point\(s\)](#) (ROP) within each SU;
- Denotation of “y” or “n” (yes or no) for each SU indicating whether or not the area is a wetland under NC.

### A. Base Map Procedure:

- (1) Outline and determine size of the project area.
  - (i) The project area is indicated by the participant or Farm Service Agency on the referral (e.g., forms AD-1026 or FSA-569).
  - (ii) The underlying base map image may only be finalized after consideration of the following SU delineation procedure.
- (2) Complete Preliminary Data Gathering and Synthesis.
  - (i) The following remote resources may be considered to complete Corps Manual Section B—Preliminary Data Gathering and Synthesis and to identify and delineate SUs.

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<sup>2</sup> Drainage is defined in FSA Procedures (2-6) as “Any human-induced, onsite or offsite, activity that results in an altered depth, duration, frequency, or timing of the hydrologic condition (inundation or saturation by surface or ground water) of the site.”

- a) Wetland inventory maps and/or previous non-certified determinations, if available. Areas identified as wetlands or potential wetlands may indicate a unique SU.
- b) Aerial imagery, including color infrared (CIR) imagery, representative of normal or drier than normal climatic conditions (see Appendix C). To evaluate NC, at a minimum one pre-1985 (earliest available) and one post-1985 (most recent available) image will be evaluated (FSA Procedures (5-9)). The following may indicate a unique SU:
  - Visible changes in plant community types
  - Surface water
  - Saturated conditions
  - Flooded or drowned-out crops
  - Stressed crops due to wetness
  - Differences in crops due to different planting or replanting dates
  - Inclusions of wet areas as set-aside or idled land
  - Areas of unharvested crops within a harvested field
  - Isolated areas that are not farmed with the rest of the field
  - Areas of greener vegetation
  - CIR wetness signatures
- c) National Wetland Inventory (NWI) maps. Each NWI polygon may indicate a unique SU.
- d) Soil survey and the hydric soils list. Identify listed hydric soil map units with hydric soil components as all or part of the name, soil map units with hydric soil inclusions, and map units with spot symbols indicating wetness. Each soil survey map unit or feature may indicate a unique SU. Due to the scale of soil mapping, SU boundaries may not correspond with soil map unit boundaries. Landform will be considered for hydric soil associations, minor components and inclusions, as unique SUs may be made up of those landforms that are designated hydric.
- e) United States Geological Survey (USGS) topographic maps for identified wetness features such as swamp symbols, water or other potential wetland symbols. Each feature may indicate a unique SU.
- f) Light Detection and Ranging (LiDAR) data (where available) or USGS topographic maps indicating landscape positions that are likely to collect or concentrate water. Such landscape positions may indicate a unique SU.

- g) Other inventory tools useful in identifying areas that do or would support unique plant communities resulting from similar soil properties, hydrologic regimes, and landscape positions, if available. This may include any specific resources identified in Sections 1.2 - 1.4 for the evaluation of the three diagnostic factors as well as other resources based on their availability and usefulness for characterizing the project area and delineating SUs.
  - (ii) In evaluating the resources in (A)(2)(i) above, the agency expert will locate any drainage features if present. If drainage is present, all available<sup>3</sup> imagery and farm records will be referenced to determine the year the drainage feature was installed (refer to Section 2.1.1). The year of drainage for each SU will be recorded on the data sheet (Appendix E- Pennsylvania NRCS CPA-32 Form, Imagery Review), and base map.
- (3) Identify and delineate SU(s).
- (i) A SU is the smallest portion of the project area for which consideration is made regarding a wetland identification decision. They are selected based on having (or would have under NC/NEC) similar plant communities resulting from similar soil properties, hydrologic regimes, and landscape positions. Each SU differs (landscape position, hydrology, soils, and vegetation) from other SUs within the project area. In Step 2 of the FSA wetland determination process SUs may be further divided or combined (FSA Procedures (2-12)).
  - (ii) When determining number and location of SUs the agency expert can use remote methods to meet the intent of “traversing the area” (Corps Manual, page 52) and will not be required to identify SUs on-site.
  - (iii) **For SUs without drainage:** The SU is delineated based on having (or would have under NC/NEC) different plant communities resulting from differing soil properties, hydrologic regimes, and landscape position in comparison to the surrounding SUs.
  - (iv) **For SUs with drainage:** The agency expert will determine if BDC will be afforded in delineating the SU and evaluating the hydrology factor (Section 1.4). Since areas affected by pre-1985 drainage must be separated from adjacent areas that are not, portions of the project area affected by drainage will be evaluated first.
    - a) If drainage was installed prior to December 23, 1985, and the site did not support woody vegetation on December 23, 1985 such that production

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<sup>3</sup> "All available" for the purpose of the SOSM means resources that are readily available to the agency expert and generally accessible to the public through a variety of means (government or non-government websites, etc.). This can also include information located in USDA offices that is tied to a particular land area or person which may not be publicly available.

of an agricultural commodity on that date was possible (refer to [Section 2.0.1](#)), the effect of the drainage (BDC) will be NC and the SU boundaries will be delineated based on the zone of influence of the drainage features as provided in (v) below.

- b) If drainage was installed prior to December 23, 1985, and the site supported woody vegetation on December 23, 1985, such that production of an agricultural commodity on that date was not possible (refer to Section 2.0.1), the effect of the drainage will not be considered NC and the SU boundaries will be delineated as detailed in (vi) below.
- c) If drainage was installed after December 23, 1985, the effect of the drainage will not be considered NC and the SU boundaries will be delineated as detailed in (vii) below.

(v) **For SUs with pre-1985 drainage manipulations and [Best Drained Condition](#) (BDC) is NC:** In order to delineate the SU, the agency expert must evaluate imagery and/or other data which reflects NC with consideration of when the manipulation took place and the BDC of the SU resulting from the drainage installation. The SUs should separate the project area into portions where the pre-1985 drainage: a) had no effect at all; b) had effect but the area potentially retained wetland hydrology (if applicable); and c) effectively removed wetland hydrology. In some instances, a geographic feature (such as a depression or an entire floodplain) will be bisected by sampling unit boundaries that divide the area into two or more of the categories above.

- a) All available imagery years must be reviewed, regardless of antecedent moisture condition<sup>4</sup> following the pre-1985 drainage manipulation year through 1985, or further if necessary. Consideration of years after 1985 may be necessary when the manipulation was installed in years immediately preceding 1985. Post-1985 imagery, including recent imagery, may be used if the agency expert determines they accurately reflect BDC due to effective drainage maintenance.
- b) Both climate status of the image and the likely status of drainage maintenance (i.e., if the drainage feature(s) was functioning in an “as-built” condition on the image date) must be considered when deciding if an image reflects the BDC. Only those imagery years determined to reflect BDC will be considered in the delineation of the SU.

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<sup>4</sup> “Antecedent moisture condition” refers to the climatic analysis of the period preceding the date of the image. An image is typically classified as being representative of “normal,” “drier than normal,” or “wetter than normal” climatic conditions. Antecedent moisture condition, climate status, normal, dry, or wet-year image, or similar references are used interchangeably to refer to whether an image is reflective of normal, drier or wetter than normal climatic conditions.

- c) The resources listed in (A)(2)(i) above, and/or additional resources such as producer submitted drainage worksheets, scope and effect guidance, methods in EFH Chapter 19 (Drainage Equations for Lateral Effect Determination), watershed district maps, road culvert elevations, and/or county drainage maps may also be used to determine the boundaries of SUs, if those resources reflect BDC.
  - d) Based on the synthesis of collected data reflecting BDC of the SU, the agency expert will delineate the SU boundary. The agency expert will (a) do this on a single image that best represents BDC of the SU and record the image year on the datasheet (Appendix E-Pennsylvania NRCS CPA-32 Form, Imagery Review), or (b) will otherwise describe how BDC of the SU was evaluated (e.g., drainage information, engineering analysis, or on-site investigation).
  - e) For SUs where BDC of the pre-1985 drainage activity has completely removed wetland hydrology (the SU is effectively drained, e.g., by pattern tile or protected by levee), there may be no difference in photo tones or signatures between the area affected by drainage and that which is not. In these cases, delineation of the SU boundary may be based solely on landscape position and/or soil survey information.
  - f) If BDC of the drainage feature(s) is not able to be assessed using off-site resources, then a site visit will be made to assess the drainage and delineate the SU with consideration of zones of influence adjacent to the drainage feature.
- (vi) **For SUs with pre-1985 drainage manipulations and BDC is not NC:** Although BDC are not NC, contemporary effects of the drainage (if any) must be considered, as this may affect the WC label assignment in Step 2. Thus, areas where hydrology is currently impacted by the pre-1985 drainage feature shall be identified as a separate SU from adjacent areas outside the contemporary zone of influence of the drainage feature. The agency expert will utilize the procedure in (v) above with the following exception. To ensure that BDC is not afforded, only data that represents the current or contemporary effect of the drainage will be considered when determining the SU boundary.
- (vii) **For SUs with post-1985 drainage manipulations:** The effect of drainage is not NC and SUs will be delineated without regard to the effect of post-1985 drainage. The agency expert will utilize the appropriate procedures in (iii), (v), or (vi) above while only considering data that does not represent the effect of the post-1985 drainage manipulation. These SUs may later need to be divided in Step 2 based on the zone of influence of post-1985 drainage, as this may affect WC label assignment.
- (4) Record SUs on a final base map image. In Pennsylvania, the 1980's NHAP orthophotography will most often be adequate for the base map image.

However, the agency expert can use best professional judgement to select the base map image while considering the following guidance.

- (i) For project areas with SUs where BDC is considered, an image that most accurately reflects BDC for the entire project area should be used.
  - (ii) For project areas entirely with SUs where BDC is not considered (including those SUs without drainage), an image that best reflects NEC for the entire project area should be used.
  - (iii) For project areas with a combination of SUs with and without drainage, the base map should be recorded on an image that best represents NC for the entire project area.
  - (iv) SUs will be numbered using numerals (1, 2, etc.) as the primary designation. If a SU is made up of multiple non-contiguous polygons (e.g., multiple basins with similar landscape positions, hydrologic regimes, and soil properties), they will receive sub-designations of lower-case letters (1a, 1b, etc.).
- (5) Designate a [Representative Observation Point](#) (ROP) for each SU. The ROP is identified on the base map at a location best representing the hydrology of the SU. For Level 1 determinations, typically the ROP will be located approximately halfway between the edge of the SU and the center of the SU and will not be located within a surface ditch or other drainage manipulation, if present.
- (i) Unique site characteristics or remote data set quality (e.g., cloud cover) may require flexibility in the location of any ROP.
  - (ii) For SUs made up of multiple non-contiguous polygons, only one ROP will be identified.
  - (iii) Indicators for each wetland diagnostic factor shall be based upon conditions at the SU's ROP location.
- (6) Analyze data, determine and record on the base map whether each SU is or is not a wetland.
- (i) Each SU may be analyzed for the three wetland diagnostic factors (hydrophytic vegetation, hydric soils, and wetland hydrology) using the following procedures (1.2 - 1.4).
  - (ii) If all three factors are present within a SU, then record a "y" (SU is a wetland under NC) on the base map for the SU.
  - (iii) If any factor is not present, then record an "n" (SU is not a wetland under NC) on the base map for the SU. Due to the [FSA wetland definition](#) and definitions of the three factors, if any factor is not present then the wetland definition is not met.

**B. Additional requirements:**

- (1) Base maps are required to be clear and legible. Therefore, they should be produced using the latest computer software mapping technologies. This easily facilitates the display of SUs on various base map images when necessary.
- (2) The base map scale should be sufficient to record multiple SUs and be easily read. In some instances, more than one base map may need to be created using different scales to ensure all SUs and ROP locations are clear and visible.
- (3) Datasheets will be used to record relevant data and decisions regarding evaluation of the three wetland diagnostic factors for each SU. The datasheet from the appropriate Regional Supplement may be used, or in lieu of the Regional Supplement datasheet, the Pennsylvania State Off-site Methods Datasheet may be used (Appendix E- Pennsylvania NRCS State Off-Site Wetland Determination Datasheet). An NRCS-CPA-32 Imagery Review form may be used to record the imagery review. See Appendix E.
- (4) If needed, Conservation Assistance Notes (NRCS-CPA-6 notes) may be used in addition to datasheets for a SU and may be attached to the Regional Supplement datasheet.
- (5) A single resource tool may contain multiple data sources. For example, Web Soil Survey (WSS) contains multiple data sources (e.g., Hydric Soils, Water Features Table, vegetative data, etc.). Multiple data sources (e.g., NWI, OSD, vegetative data from WSS) can be used to support the decision for a single factor. However, if a remote data source is applied as the sole data source for a single factor, it cannot be applied as the sole data source for any other factor. For example, if NWI was solely applied to indicate hydrophytic vegetation, it cannot be solely applied to indicate hydrology; it must be supplemented with additional hydrology data. Similarly, aerial imagery cannot be solely applied to indicate both hydrology and hydrophytic vegetation.

## 1.2 WETLAND IDENTIFICATION - HYDROPHYTIC VEGETATION

The off-site procedures for determining if [hydrophytic vegetation](#) is present in each SU are found in the Corps Manual Level 1 procedure, Subsection 1, Step 2. They require that the agency expert examine available vegetation data and list the dominant plant species. The indicator status for each dominant species is then recorded, and when more than 50 percent of the dominant species in a plant community have an indicator status of OBL, FACW, or FAC, hydrophytic vegetation is determined to be present.

The following assessments describe remote data sources and how they can be used to document if hydrophytic vegetation is present under NC for each SU. These assessments can be used to supplement the following procedures in the Corps Manual and Regional Supplements:

- Corps Manual Section D, Subsection 1 - Onsite Inspection Unnecessary, Step 2 (Determine whether hydrophytic vegetation is present)
- Corps Manual Section F (Atypical Situations), Subsection 1, Step 4 (Determine whether plant community types (that previously occurred) constitute hydrophytic vegetation)

- Corps Manual Section G (Problem Areas), Step 4 (Determine whether wetland indicators are normally present during a portion of the growing season)
- Regional Supplement Chapter 5, Difficult Wetland Situations – Problematic Hydrophytic Vegetation

To determine if hydrophytic vegetation is present in a SU, agency experts may use assessments in Section 1.2.1 with the following consideration:

- If the agency expert determines the vegetation of any SU is not adequately characterized using remote resources, it will be evaluated on-site using the appropriate sections of the Corps Manual, as supplemented by the Regional Supplement and FSA Procedures.

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### 1.2.1 HYDROPHYTIC VEGETATION ASSESSMENT

To determine if each SU meets the hydrophytic vegetation factor under NC, the agency expert may use the following resources in the manner indicated to supplement the above listed procedures. The agency expert is reminded that vegetation data is observed at the location of the ROP. Only one source of data is required to confirm the hydrophytic vegetation SOSM indicator; however, the agency expert is encouraged to use all available resources to strengthen the decision. Unless otherwise noted, the hydrophytic vegetation SOSM indicator is met if more than 50 percent of dominant species have an indicator status of OBL, FACW, and/or FAC. The agency expert will document the decision and indicate on the PA NRCS Off-site Wetland Determination Datasheet if the hydrophytic vegetation SOSM indicator is met.

*NOTE: For pre-1985 drained SUs where BDC is considered, the off-site resources in A through D must be specific to drained areas<sup>5</sup> and the vegetation that would be present under BDC. If there is not adequate information to characterize the vegetation off-site, application of Level 2 (on-site) methods may be required, including non-remote resource options in Corps Manual Section F and Chapter 5 of the Regional Supplement if vegetation is disturbed or problematic.*

**A. Ecological Site Descriptions (ESDs)** – ESD information is provided by soil map unit component. In order to use ESD information, the landform of the SU must match the landform of the soil component as provided in the hydric soils list. Additionally, the SOSM indicator may only be used if the following are provided (please consult with the State Soil Scientist if using any ESDs to meet the hydrophytic vegetation indicator status):

- (1) “Additional community tables” that list species and canopy or foliar cover percent. The “50/20 rule” described in Chapter 2 of the Regional Supplement will be used to select dominant species. If canopy or foliar cover is presented as a range (e.g., 5-40%, or 0-5%), an average of the low and high-end values will be used for each species. If data for multiple communities is provided, all plant

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<sup>5</sup> Certain NWI classifications or soil map units may identify whether they are specific to drained sites.

communities must be individually evaluated and meet the SOSM indicator in order to use it for the ROP. Exceptions to this are:

- (i) If an ESD provides a “Reference State” or “Reference Community,” only that community needs to be evaluated.
  - (ii) If a particular community can be confirmed as representative of the SU through field investigation or LiDAR data (confirming landform and local relief of the SU matches the geographic/landscape position described for the community in the ESD), only that community needs to be evaluated.
- (2) “Table 1. Dominant plant species” (only use if additional community tables are not provided). All species listed will be considered dominant.

- B. **Official Series Descriptions (OSDs)** – If the “Use and Vegetation” section lists plant species that are identifiable to the species level, all listed species will be considered dominant. Alternatively, if the OSD indicates the soil supports plants that meet the hydrophytic vegetation definition (e.g., “plants growing in water or a reduced substrate”), the hydrophytic vegetation SOSM indicator is met.
- C. **NWI Maps** – If the SU at the ROP location is mapped with a class of emergent, scrub-shrub, forested, or aquatic bed (e.g., codes EM, SS, FO, or AB) on an NWI map, the hydrophytic vegetation SOSM indicator is met. If the NWI classification contains a special modifier (e.g., Partly Drained/Ditched (d)) then the agency expert must verify on-site or with remote resources (e.g., LiDAR) that the NWI classification is reflective of NC for the SU.
- D. **Aerial Imagery** - If the dominant vegetation is clearly visible on aerial photography and can be identified to species (e.g., *Typha latifolia* or *Phalaris arundinacea*) it will be considered dominant. Additionally, if vegetation is observed growing in water (emergent, submerged, or floating) on normal-year imagery, the sampling unit will be determined to meet the hydrophytic vegetation SOSM indicator.

### 1.3 WETLAND IDENTIFICATION – HYDRIC SOILS

The off-site procedures for determining if hydric soils are present in each SU are found in the Corp Manual Level 1 procedure, Subsection 1, Step 5. They require that the agency expert examine soils data and determine if the soil is listed as a hydric soil. By regulation (7 CFR 12.31(a)), NRCS is afforded the opportunity to use two different processes to determine if an area has a predominance of hydric soils: (1) utilization of soil maps; or (2) an on-site evaluation (FSA Procedures (5-51)). If the agency expert determines the soil map is sufficient, they can proceed with a Level-1 determination, or a Level-3 determination where the soils are determined off-site. When soil mapping is used, the criteria in 7 CFR 12.31(a)(2) will be followed as described in Section 1.3.1 below.

The following assessment describes how soil mapping can be used to document if hydric soil is present under NC for each SU. This assessment can be used to supplement the following procedures in the Corps Manual and Regional Supplements:

- Corps Manual Section D, Subsection 1 - Onsite Inspection Unnecessary, Step 5 (Determine whether hydric soils are present)
- Corps Manual Section F (Atypical Situations), Subsection 2, Step 4 (Determine whether hydric soils were formerly present)
- Regional Supplement Chapter 5, Difficult Wetland Situations

To determine if hydric soils are present in a SU, agency experts may use assessments in Section 1.3.1 with the following consideration:

- If the agency expert determines the soil of any SU is not adequately characterized using remote resources, it will be evaluated on-site using the appropriate sections of the Corps Manual, as supplemented by the Regional Supplement and FSA Procedures.

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### 1.3.1 HYDRIC SOILS ASSESSMENT

To determine if a SU has a predominance of hydric soils off-site, the agency expert will use 7 CFR 12.31(a)(2) in the manner indicated below.

If the SU at the ROP location is comprised of a soil map unit meeting the criteria below, the SU will be determined to meet the hydric soil SOSM indicator. The landform of the SU must be documented on the PA NRCS Off-site Wetland Determination Datasheet.

- A. If a soil map unit has hydric soil as all of its name, that soil map unit shall be determined to meet the hydric soil SOSM indicator;
- B. If a soil map unit is named for a miscellaneous area that meets the criteria for hydric soils (e.g., riverwash, playas, beaches, water, aquents, alluvial land, or tidal marsh) the soil map unit shall be determined to meet the hydric soil SOSM indicator;
- C. If a soil map unit has hydric soil as part of its name, that portion of the map unit related to the hydric soil shall be determined to meet the hydric soil SOSM indicator if the SU landform is consistent with the landform (e.g., depression, closed depression, flats, swale, drainageway) of the hydric component on the hydric soils list;
- D. If a soil map unit contains inclusions of hydric soils, that portion of the soil map unit identified as hydric soil shall be determined to meet the hydric soil SOSM indicator if the SU landform is consistent with the landform (e.g., depression, closed depression, flats, swale, drainageway) of the hydric inclusion (i.e., component) on the hydric soils list.

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### 1.3.2 ASSESSMENT FOR OBVIOUS NON-WETLANDS

The following assessment is provided in order to promote efficiency in completing wetland determinations on areas of obvious non-wetlands where the potential for false-negative indicators of hydrophytic vegetation and hydric soils can confidently be ruled out (e.g., on sloping hillsides). This assessment may be completed by agency experts at their discretion when completing wetland determinations in such areas, except this procedure will not be used on SUs where pre- or post-1985 drainage manipulations were identified in Section 1.1.

Wetlands, for FSA purposes, must meet all three factors (hydrophytic vegetation, hydric soil, and wetland hydrology). When a SU has failed to meet hydrophytic vegetation and hydric soils, it can be assumed to fail wetland hydrology provided the potential for false negatives for vegetation and soils can be ruled out using off-site resources with a high degree of confidence. When it has been determined the SU meets neither the hydrophytic vegetation nor hydric soils SOSM indicators, the following criteria may be used to rule out the potential for false negatives for vegetation and soil:

- A. The soil map unit(s) which comprise the SU contain <20% hydric component(s);
- B. LiDAR data or USGS topographic maps confirm that the SU is sloping or convex, and contains no landscape positions likely to collect or concentrate water;
- C. During the application of Preliminary Data Gathering and Synthesis and preparation of the base map, no wetness signatures on aerial imagery that may be caused by ground water discharge (e.g., seeps) or any other indication of wetness (e.g., changes in vegetation, soil color, presence of wetland mapping, soil survey symbols, etc.) were found.

If the SU does not meet hydrophytic vegetation or hydric soil indicators, and all the above criteria are met, the agency expert may indicate “no” on the datasheet for wetland hydrology, and “n” on the base map for the SU.

#### 1.4 WETLAND IDENTIFICATION - WETLAND HYDROLOGY

The off-site procedures for determining if [wetland hydrology](#) is present in each SU are found in the Corp Manual Level 1 procedure, Subsection 1, Step 3. They require the agency expert to examine the documented hydrology data and decide if the area is periodically inundated or has saturated soils. Guidance on using remote data sources is also provided in Chapter 4, “Wetland Hydrology Indicators” of the Regional Supplements.

The assessments in Section 1.4.1 have been developed using the concepts from Chapter 4 of the Regional Supplements and describe remote data sources and how they can be used to document if wetland hydrology is present under NC for each SU. These assessments can be used to supplement the following procedures in the Corps Manual and Regional Supplements:

- Corps Manual Section D, Subsection 1 - Onsite Inspection Unnecessary, Step 3 (Determine whether wetland hydrology is present)
- Corps Manual Section F (Atypical Situations), Subsection 3, Step 4 (Determine whether wetland hydrology previously occurred)
- Corps Manual Section G (Problem Areas), Step 4 (Determine whether wetland indicators are normally present during a portion of the growing season)
- Regional Supplement Chapter 5, Difficult Wetland Situations

To determine if wetland hydrology is present in a SU, agency experts may use assessments in Section 1.4.1 with the following considerations:

- The decision of whether the SU supports wetland hydrology must be made with consideration of NC, including NEC, and BDC (when required for sites with pre-1985 drainage).
- When making a decision on wetland hydrology with a need to determine normal climatic conditions, NRCS will use a fixed precipitation date range of 1971-2000 (7 CFR 12.2, 12.31(c)(4)).
- For sites affected by pre-1985 drainage, and woody vegetation was not present within the SU such that production of an agricultural commodity was possible, hydrology will be determined based on the Best Drained Condition (the BDC of the SU will be NC) (7 CFR 12.31(c)(2)).
- For assessments including aerial imagery review, evaluation of NEC associated with each image will be determined using the procedures in EFH Hydrology Tools, Part 650.1911, Remote Sensing Applications, as detailed in Appendix C. The evaluation will result in each aerial image being determined to be reflective of normal climatic conditions/NEC (normal), wetter than NEC (wet), or drier than NEC (dry).
- The agency expert shall ensure any data used are reflective of conditions that would occur (or did occur) under NC, including NEC, and BDC (if necessary).
  - For example, water table data may indicate a high-water table for a SU but may not reflect NC if the SU was drained prior to 1985, or if the water table data reflects conditions outside of the growing season.
  - Similarly, historic data may show a swamp feature as occurring in a SU, but the site no longer supports wetland hydrology due to pre-1985 drainage.
- As an alternative to the methods provided below, appropriate analytical techniques for determining frequency and duration of saturation, inundation, or both found in EFH Hydrology Tools may be used to document the presence of wetland hydrology when objective hydrology criteria are included in the SOSM for the hydrology tool used (FSA Procedures (5-61)). Alternatively, objective criteria for utilizing EFH Hydrology Tools may be included in the NRCS Field Office Technical Guide.
- If the agency expert determines the hydrology of any SU is not adequately characterized using remote resources, it will be evaluated on-site using the appropriate sections of the Corps Manual, as supplemented by the Regional Supplement and FSA Procedures.
- As an alternative to assessments in Section 1.4.1, the hydrology factor can be verified directly if a site visit is conducted under NC by direct observation of inundation or saturation by surface or groundwater found to occur at a frequency and duration sufficient to support a prevalence of FSA hydrophytic vegetation (FSA Procedures (5-62)).

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#### 1.4.1 WETLAND HYDROLOGY ASSESSMENTS

Section 1.4.1 is divided into the following assessments:

- A. **No Post-1985 Drainage:** Procedures Supplementing Corps Manual Section D—Routine Determinations; Subsection 1: On-site Inspection Unnecessary
  - (1) **Hydrology for Sites Without Pre-1985 Drainage.**
  - (2) **Hydrology for Sites With Pre-1985 Drainage Where BDC is Considered**
  - (3) **Hydrology for Sites With Pre-1985 Drainage Where BDC is Not Considered**

- B. **Post-1985 Drainage:** Procedures Supplementing Corps Manual Section F—Atypical Situations; Subsection 3: Hydrology; and Chapter 5 of the Regional Supplement)
- (1) **Hydrology for Sites With Post-1985 Drainage, and Without Pre-1985 Drainage**
  - (2) **Hydrology for Sites With Post-1985 Drainage, and With Pre-1985 Drainage Where BDC is Considered**
  - (3) **Hydrology for Sites With Post-1985 Drainage, and With Pre-1985 Drainage Where BDC is Not Considered**

*NOTE: All the above assessments may be used to supplement procedures in Corps Manual Section G (Problem Areas), Step 4 (Determine whether wetland indicators are normally present during a portion of the growing season) and Chapter 5 of the regional supplement when attempting to make an on-site determination and wetland hydrology indicators are lacking due to normal seasonal or annual variations in environmental conditions.*

To determine if each SU meets the wetland hydrology factor under NC, the agency expert may use the following resources in the manner indicated for the appropriate assessment. The agency expert is reminded that hydrology data is observed at the location of the ROP. Only one source of data is required to confirm the wetland hydrology SOSM indicator; however, the agency expert is encouraged to use all available resources to strengthen the decision.

- A. **No Post-1985 Drainage:** Procedures Supplementing Corps Manual Section D—Routine Determinations; Subsection 1: On-site Inspection Unnecessary

(1) **Hydrology for Sites Without Pre-1985 Drainage**

(i) **Web Soil Survey Water Features Report**

- a) The agency expert will confirm the landform of the SU is consistent with the landform of the respective soil component (as provided in the hydric soils list) listed on the Water Features Report. The SU meets the wetland hydrology SOSM indicator if the data in the Water Features Report documents any of the following:
  - A water table occurs within 12 inches or less of the soil surface during at least one month in the growing season<sup>6</sup>;
  - Frequent or very frequent ponding for a very long (more than 30 days) duration during at least one month in the growing season;
  - Frequent or very frequent flooding for a very long (more than 30 days) duration during at least one month in the growing season.

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<sup>6</sup> The presence of a water table within the upper 12 inches of the soil profile does not indicate wetland hydrology under NEC unless that water table is present during the growing season. [WETS Table data](#), or guidance provided in the Regional Supplements, can assist the agency expert in documenting the beginning and end of the growing season. Data from [WebWIMP](#) can also assist the agency expert in documenting the wet portion of a growing season.

(ii) **NWI maps**

- a) If any portion of the SU is mapped on the NWI with a water regime modifier of **B** (Seasonally Saturated), **C** (Seasonally Flooded), **D** (Continuously Saturated), **E** (Seasonally Flooded/Saturated), **F** (Semipermanently Flooded), **H** (Permanently Flooded), then the SU meets the wetland hydrology SOSM indicator.

(iii) **USGS topographic map or soil map symbols**

- a) If marsh symbols or other water/wetland symbols are present in the SU on a USGS topographic map or soils map, and the data is representative of NC, the SU meets the wetland hydrology SOSM indicator.

(iv) **Aerial Imagery Review** - Imagery is evaluated for signatures that indicate wetness occurring on the photo date and/or signatures that indicate wetness previously occurred during the growing season under NC (including NEC), as detailed below. The imagery review is conducted in the following manner:

- a) Imagery review will consist of a minimum of five years reflective of normal climatic conditions, except as specified below.
- b) If there are fewer than five “normal” images available, the imagery review will consist of all normal years available, plus an equal number of dry and wet years to total at least five images reviewed.
- c) Observed inundation (surface water due to ponding or flooding) on aerial imagery is recorded as INU. Wetness signatures indicative of saturation (e.g., stressed crops due to wetness, “drown-out,” evidence of replanting or not being able to plant, etc.) are recorded as SAT. INU and SAT may be observed on images when the SU is in cropland land use. Only INU may be observed on images where the SU is covered by perennial vegetation, except as provided below. Neither INU or SAT will be used on images where the SU has been or is being irrigated during that year.
- All wetness signatures (INU and SAT) are due to wetness reflective of NC (including NEC) that: a) was occurring on the date of the imagery, or b) that occurred before the date of the imagery, but evidence of this wetness remains.
  - Wetness signatures (INU and SAT) are clear distinctions in the condition of the SU compared to the condition in adjacent SUs or areas outside the project area.
  - Wetness signature (INU and SAT) observation is not synonymous with the identification of hydrology indicators provided in Chapter 4 of the Regional Supplements, which contain their own criteria and guidance.

- INU signatures show surface water inundation by ponding or flooding and can include light reflecting off standing water.
- SAT signatures show one of the following. It is not required to document the condition that led to the signature.
  - i. Dark saturated soil tones on sparsely vegetated or bare areas, with crop growing around the area, due to saturation being present on the photo date.
  - ii. Bare or sparsely vegetated soil due to areas left unplanted.
  - iii. Differences in vegetation, (e.g., patches of different crop or the same crop at different growth stages) due to different planting dates.
  - iv. Stunted crop as seen by severely reduced crop canopy cover, and of different color (usually yellow on color or brighter on black and white photography), than surrounding crop.
  - v. Hydrophytic vegetation observed as vegetation of different color (usually lighter green on color or brighter on black and white photography) than surrounding crop).
  - vi. Hydrophytic vegetation observed as vegetation of different color (usually lighter or darker green on color, or darker on black and white photography) than surrounding hay, pasture, or rangeland. This requires confirmation that the SU is in a water receiving landscape position and is the only SAT signature that may be used on SUs with perennial vegetation on the photo date.
- d) If wetness signatures (SAT or INU) are observed on 50 percent or more of the reviewed images, then the SU meets the wetland hydrology SOSM indicator.

(2) **Hydrology for Sites With Pre-1985 Drainage Where BDC is Considered.** This assessment is used when the agency expert has determined in Section 1.1(A)(3)(iv) that BDC is afforded for SUs with pre-1985 drainage. To assess wetland hydrology, the agency expert must evaluate imagery and/or other data which reflects NC with consideration of when the manipulation took place, and the BDC of the SU resulting from the drainage installation.

- (i) **Aerial Imagery Review** - Imagery is evaluated for signatures that indicate wetness occurring on the photo date and/or signatures that indicate wetness previously occurred during the growing season under

NC (including NEC), as detailed below. This review is based on the imagery evaluated in Section 1.1(A)(3)(v) for delineation of SUs with pre-1985 drainage where BDC is NC, and is conducted in the following manner:

- a) From those imagery years determined to reflect BDC identified in Section 1.1(A)(3)(v)(b), select all normal-year imagery (if available).
  - If more than one normal-year image is available, the wetland hydrology SOSM indicator is met if wetness signatures (SAT or INU as detailed in (A)(1)(iv)(c) above) are observed on 50 percent or more of the images.
  - If only one normal-year image is available, the wetland hydrology SOSM indicator is met if a wetness signature (SAT or INU as detailed in (A)(1)(iv)(c) above) is observed on that image.
- b) If a normal year image is not available from those imagery years determined to reflect BDC identified in Section 1.1(A)(3)(v)(b), the agency expert may use their best professional judgement to select the appropriate image year and use the following guidance:
  - On an image determined to reflect a wet year, if the presence of a wetness signature (SAT or INU as detailed in (A)(1)(iv)(c) above) is lacking, the wetland hydrology SOSM indicator is not met. If a wetness signature is present, the result is inconclusive.
  - On an image determined to reflect a dry year, if a wetness signature (SAT or INU as detailed in (A)(1)(iv)(c) above) is present, the wetland hydrology SOSM is met. If a wetness signature is absent, the result is inconclusive.

**(3) Hydrology for Sites With Pre-1985 Drainage Where BDC is Not Considered.**

This assessment is used when the agency expert has determined in Section 1.1(A)(3)(iv) that BDC is not afforded for SUs with pre-1985 drainage. To assess wetland hydrology, the agency expert must only evaluate imagery and/or other data which reflects the contemporary effects (if any) of the pre-1985 drainage.

- (i) The agency expert will utilize the procedure in (2) above, while only considering data representative of the current effect of drainage, to base the hydrology decision on the contemporary effects of drainage rather than BDC.
- (ii) This will ordinarily include analysis of aerial photos used to identify the SU boundary in Section 1.1(A)(3)(vi).

B. **Post-1985 Drainage:** The effect of post-1985 drainage is not NC and the hydrology decision must be made without regard to its effect. To determine if hydrology previously occurred prior to the post-1985 drainage, the agency expert may utilize the following assessments, which supplement Corps Manual Section F (Atypical Situations), Subsection 3, Step 4 (Determine whether wetland hydrology previously occurred); and Regional Supplement Chapter 5, Difficult Wetland Situations as an additional approach used under step 3 of the procedure for wetlands that periodically lack indicators of wetland hydrology.

**(1) Hydrology for Sites With Post-1985 Drainage, and Without Pre-1985 Drainage**

(i) The assessment under A(1) - “Hydrology for Sites Without Pre-1985 Drainage” above may be used to determine if the hydrology SOSM indicator would have been present under NC (prior to the post-1985 manipulation). The agency expert will ensure all data sources used reflect hydrologic conditions under NC (i.e., hydrologic conditions present before post-1985 manipulation).

**(2) Hydrology for Sites With Post-1985 Drainage, and With Pre-1985 Drainage Where BDC is Considered**

(i) The assessment under A(2) - “Hydrology for Sites With Pre-1985 Drainage Where BDC is Considered” above may be used to determine if the hydrology SOSM indicator would have been present under NC (prior to the post-1985 manipulation). The agency expert will ensure all data sources used reflect hydrologic conditions under NC (i.e., hydrologic conditions present before post-1985 manipulation).

**(3) Hydrology for Sites With Post-1985 Drainage, and With Pre-1985 Drainage Where BDC is Not Considered**

(i) The assessment under A(3) - “Hydrology for Sites With Pre-1985 Drainage Where BDC is Not Considered” above may be used to determine if the hydrology SOSM indicator would have been present under NC (prior to the post-1985 manipulation). The agency expert will ensure all data sources used reflect hydrologic conditions under NC (i.e., hydrologic conditions present before a post-1985 manipulation).

## STEP 2: WC LABEL ASSIGNMENT

In this step the agency expert uses the base map produced in Step 1 (wetland identification) to assign WC labels to each polygon on the map according to FSA exemptions. SUs with the same labels may be combined, or likewise a SU meeting the criteria for more than one label may be split during this step (FSA Procedures (2-12)). This SOSM also provides the following methods for evaluating the SU’s 1985 condition and other specific criteria (e.g., landform, land use, etc.) required for the WC label assignment process. This information, the current version of the NFSAM and 7 CFR Part 12 will be used to assign the appropriate WC label as determined by the criteria for any applicable exemptions.

### 2.0 WC LABEL ASSIGNMENT - PRESENCE OF WOODY VEGETATION IN 1985

The agency expert will first verify if the SU supported woody vegetation on December 23, 1985 to help determine whether it meets the criteria for a farmed wetland, farmed wetland pasture, prior converted cropland, or other WC label (NFSAM, 7 CFR Part 12). This verification will also be used in determining if BDC is afforded in Step 1. As such, this decision may have already been made for some SUs.

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### 2.0.1 1985 WOODY VEGETATION ASSESSMENT

*NOTE: For this purpose, established woody vegetation means perennial plants with woody stems that are least 5 years old, or with woody stems large enough that they could not be easily removed by normal agricultural cultivation or operation practices (e.g., discing, plowing, mowing, etc.). The following methods may be used to verify the presence of established woody vegetation in 1985.*

- A. When 1986<sup>7</sup> imagery shows that established woody vegetation was present, the presence of woody vegetation will be presumed on December 23, 1985. In Pennsylvania, the 1980's NHAP orthophotography will be used.
- B. If 1986 imagery is not available, presence of woody vegetation on December 23, 1985 will be presumed if the nearest-to-1986 available imagery prior to 1986, AND the nearest-to-1986 available imagery after 1986 BOTH indicate established woody vegetation. For example: imagery from 1982 shows established woody vegetation at the SU, as does imagery from 1988.
- C. When all available imagery from 1981 to 1985 shows an absence of established woody vegetation, the absence of woody vegetation will be presumed on December 23, 1985.
- D. The agency expert will also presume an absence of woody vegetation on December 23, 1985 when Farm Service Agency records confirm crop, hay, or pasture production between 1981 and 1985 (crop, hay or pasture must have been planted or existed at least once during this timeframe).
- E. The agency expert will indicate on the datasheet whether or not the site supported woody vegetation as of December 23, 1985.

### 2.1 WC LABEL ASSIGNMENT - PRE-1985 LAND USE AND MANIPULATION

The agency expert will determine whether the SU was used for crop, hay, pasture or other use prior to 1985, and will determine if the SU was manipulated before December 23, 1985. This information helps determine whether it meets criteria for a farmed wetland, farmed wetland pasture, prior converted cropland, or non-wetland WC label (NFSAM, 7 CFR Part 12 and Hydrology Indicators for the Identification of Farmed Wetlands as Defined in 7 CFR 12.2: Pennsylvania). Manipulations are any activity that drains, dredges, fills, levels, or otherwise manipulates (including the removal of woody vegetation or any activity that results in impairing or reducing the flow and circulation of water) an area for the purpose of, or to have the effect of, making agricultural commodity production possible. Since presence of established woody vegetation was

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<sup>7</sup> Because the date of enactment, December 23, 1985, occurs at the end of the calendar year, this assessment allows for the consideration that practices or activities conducted by that date may not appear in imagery from 1985.

already determined in [Section 2.0.1](#), this section provides guidance to record pre-1985 cropping or agricultural land use history and any additional manipulations.

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### 2.1.1 PRE-1985 LAND USE AND MANIPULATION ASSESSMENT

#### A. **Determining land use history:**

- (1) The following resources or information may be used to document pre-1985 cropping or other land use:
  - (i) 1986 or earlier imagery showing cropping and/or attempted cropping, hay/pasture, or other land use.
  - (ii) Farm Service Agency records indicating a crop or hay/pasture was planted prior to December 23, 1985.
  - (iii) Records provided by the USDA participant documenting pre-1985 cropping and/or attempted cropping, hay/pasture, or other land use.
- (2) The agency expert will document the type of pre-1985 cropping or other land use history (e.g., agricultural commodity, pasture, hayland, orchard, managed forest) on the Pennsylvania NRCS Off-site Wetland Determination Datasheet.

#### B. **Evaluating manipulations that occurred prior to 1985:**

- (1) When 1986 or earlier imagery shows manipulation(s) (e.g., evidence of tile installation, existing tile inlet/outlet, surface drain, tree removal, including stumps, etc.), the agency expert will describe the manipulation(s) for each sample unit on the Pennsylvania NRCS Off-site Wetland Determination datasheet.
- (2) If pre-1985 NRCS records describe manipulation(s), the agency expert will reference the records on the datasheet.
- (3) If the USDA participant provides records documenting pre-1985 manipulations, the agency expert will document the manipulation and its extent on the datasheet.

## 2.2 WC LABEL ASSIGNMENT - POST-1985 MANIPULATION

When the agency expert determines in Step 1 that a SU meets wetland criteria (“y” on base map), they will verify if a post-1985 manipulation has occurred to determine if a site visit is required to evaluate a potential conversion, or if there has been a manipulation which was not for the purposes of commodity crop production. This evaluation will help the agency expert determine if the SU meets criteria for certain WC labels including converted wetland and manipulated wetland (NFSAM, 7 CFR Part 12).

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### 2.2.1 POST-1985 MANIPULATION

If any of the below resources indicate a potential post-1985 conversion for the purpose of or to have the effect of making possible the production of an agricultural commodity, where such production would not have been possible but for such action, a site visit will be required to verify if a potential wetland conversion has occurred. This includes manipulations that could increase

yields, make an area farmable in more years, or allow forage production or pasture and hayland use. A site visit is not required if the activity clearly does not make production of an agricultural commodity possible (e.g., a building or road was constructed on-site, the site was planted to a permanent non-commodity crop like an orchard or vineyard, or a pond has been installed).

The following remote indicators suggest a post-1985 potential conversion. Review available resources for the following indicators and record the findings. The findings will be used to decide if a field visit is required and in the assignment of WC labels.

**A. Aerial Imagery**

- (1) If post-1985 imagery shows a manipulation which may result in a converted wetland, the agency expert will indicate the manipulation on the Pennsylvania NRCS CPA-32 form and make a site visit to determine if a wetland conversion has occurred. If the manipulation is first visible in 1986 imagery, further investigation may be needed to determine whether the manipulation occurred before or after December 23, 1985.
- (2) If post-1985 imagery shows a manipulation which clearly *does not* have an effect on agricultural commodity crop production (e.g., pond, structure, etc.), and thus could not result in a converted wetland, the agency expert will indicate the manipulation on the datasheet.

**B. NRCS or Farm Service Agency records**

- (1) When NRCS or Farm Service Agency records show a post-1985 manipulation which may result in a converted wetland, the agency expert will indicate the manipulation on the Pennsylvania NRCS CPA-32 form and make a site visit to determine if a wetland conversion has occurred.
- (2) When NRCS or Farm Service Agency records show a post-1985 manipulation which clearly *does not* have an effect on agricultural commodity crop production (e.g., pond, structure, etc.), and thus could not result in a converted wetland, the agency expert will indicate the manipulation on the datasheet.

**C. Producer records**

- (1) If the USDA participant provides records showing a post-1985 manipulation which may result in a converted wetland, the agency expert will indicate the manipulation on the Pennsylvania NRCS CPA-32 form and make a site visit to determine if a wetland conversion has occurred.
- (2) If the USDA participant provides records showing a post-1985 manipulation, which clearly *does not* have an effect on agricultural commodity crop production (e.g., pond, structure, etc.), and thus could not result in a converted wetland, the agency expert will indicate the manipulation on the datasheet.

**D. LiDAR data (where available)**

- (1) When post-1985 LiDAR indicates a manipulation which may result in a converted wetland, the agency expert will indicate the manipulation on the datasheet and make a site visit to determine if a wetland conversion has occurred.

- (2) When post-1985 LiDAR data indicates a manipulation which clearly *does not* have an effect on agricultural commodity crop production (e.g., pond, structure, etc.), and thus could not result in a converted wetland, the agency expert will indicate the manipulation on the Pennsylvania NRCS CPA-32 form.

## 2.3 WC LABEL ASSIGNMENT – GEOGRAPHIC LANDFORMS

Pennsylvania contains pothole wetlands as depicted in Appendix D. SUs occurring within these landforms and meeting the pre-1985 manipulation and agricultural commodity production requirements will be evaluated according to unique hydrology criteria based on the farmed wetland definition unique to these landforms (7 CFR Part 12). This assessment will only occur for SUs meeting all the following criteria:

- The SU is a “yes” or “y” on the base map; and
- The SU meets the pre-1985 manipulation assessment in Section 2.1.1; and
- The SU has evidence of pre-1985 agricultural commodity crop production as documented by the assessment in Section 2.1.1.

For SUs meeting these criteria, continue to the landform assessment(s) below to determine if the unique hydrology criteria for playas, pocosins, and potholes must be applied.

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### 2.3.1 PLAYA LANDFORM ASSESSMENT

A playa landform is *“a usually dry and nearly level lake plain that occupies the lowest parts of closed depressions (basins). Temporary inundation occurs primarily in response to precipitation-runoff events. Playas may or may not be characterized by high water table and saline conditions. They occur primarily in the Southern Great Plains”* (7 CFR 12.2; NFSAM, Part 514.2).

Playa landforms are not found in Pennsylvania.

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### 2.3.2 POCOSIN LANDFORM ASSESSMENT

A pocosin is *“a wet area on nearly level interstream divides in the Atlantic Coastal Plain. Soils are generally organic but may include some areas of high organic mineral soils”* (7 CFR 12.2; NFSAM, Part 514.2).

Pocosin landforms are not found in Pennsylvania.

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### 2.3.3 POTHOLE LANDFORM ASSESSMENT

A pothole is *“a closed depression<sup>8</sup>, generally circular, elliptical, or linear in shape<sup>9</sup>, occurring in glacial outwash plains, moraines, till plains, or glacial lake plains”* (7 CFR 12.2; NFSAM, Part 514.2). A pothole may be indicated by one or more of the following:

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<sup>8</sup> A closed depression is one that, prior to any anthropogenic drainage, ponded water.

<sup>9</sup> “Generally circular, elliptical, or linear in shape” does not preclude irregular shapes.

- Imagery and/or land-based photography showing ponding of water or evidence that ponding occurs
- LiDAR
- USGS topographic map or other land survey
- Soil Survey data

Potholes can occur in Pennsylvania as depicted in Appendix D throughout the glaciated northwest (MLRA 139) and northeast (MLRA 140) parts of the state.

A. Pothole decision threshold is met if the landform appears on at least one remote data source. The agency expert will record on the data form that the SU is in a pothole.

### **STEP 3: SIZING AND DEVELOPMENT OF DETERMINATION MAP**

The final step is to determine the size of each area delineated (Step 1) and assign a WC label (Step 2). The delineations, WC labels, and sizes of each delineation are documented on the certified wetland determination (CWD) map.

#### **3.0 CWD MAP**

There is no minimum size threshold for determining a wetland. Labeled polygons on the CWD map are delineated using digitizing methods. Maps must be of sufficient quality for making determinations of ineligibility for program benefits. At a minimum they must meet the following criteria:

- Legible to the extent that the location of designated wetlands in relation to other ground features can be determined.
- Sized so it is clear to the user the WC labels and acres assigned to each SU. Due to size or variability, it may be necessary to produce more than one map at different scales that are clear and understandable. The agency expert shall have authority to size and scale maps as needed.
- All polygons within the determined area must include the WC label and acreage.
- All wetland determination maps must be produced using the latest technologies. Hand drawn maps will not be produced.

## APPENDIX A – DEFINITIONS

### AGENCY EXPERT (NFSAM 514.1(E))

An employee determined by the State Conservationist to be qualified to complete certified wetland determinations. Agency experts must meet all of the following criteria:

- a) Have completed all the required training, including update courses.
- b) Have the appropriate job approval authority.
- c) Have demonstrated proficiency in making certified wetland determinations.

### ATYPICAL SITUATION (FSA PROCEDURES (2-15))

A situation in which either, or both, of the conditions below apply:

- a) An alteration (removal or change) in the plant community such that a decision cannot be made using routine methods if the site would support prevalence of hydrophytic vegetation under NC (e.g., if undisturbed or in the absence of a post-1985 drainage action).
- b) A post-1985 drainage action that has altered the normal soil or hydrologic conditions.

### BEST DRAINED CONDITION (BDC)

The hydrologic conditions with respect to depth, duration, frequency, and timing of soil saturation or inundation resulting from drainage manipulations that occurred prior to December 23, 1985, and that exist during the wet portion of the growing season during normal climatic conditions. (7 CFR 12.2(a))

When a wetland is affected by drainage manipulations that occurred prior to December 23, 1985, and did not support woody vegetation on December 23, 1985, such that production of an agricultural commodity on that date was possible, wetland hydrology shall be identified on the basis of the best drained condition resulting from such drainage manipulations. (7 CFR 12.31 (c)(2)).

### DRAINAGE (FSA PROCEDURES (2-6))

Any human-induced, on-site or off-site, activity that results in an altered depth, duration, frequency, or timing of the hydrologic condition (inundation or saturation by surface or ground water) of the site.

### HYDRIC SOIL (FSA PROCEDURES (2-8))

Soil that, in its undrained condition, is saturated, flooded, or ponded long enough during a growing season to develop an anaerobic condition that supports the growth and regeneration of hydrophytic vegetation.

## HYDROPHYTIC VEGETATION (FSA PROCEDURES (2-9))

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A plant growing in (A) water; or (B) a substrate that is at least periodically deficient in oxygen during a growing season as a result of excessive water content.

## MANIPULATION (NFSAM 514.2(G), 514.10(B)(2))

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The alterations that are considered manipulation may result from dams, dikes, ditches, diversions, subsurface drains, pumps, terraces, or dredge and fill. These measures may alter hydrology even if installed off-site from the effected wetlands. Grading, land-leveling, or land-clearing is considered manipulation.

## NORMAL CIRCUMSTANCES (NC, FSA PROCEDURES (2-10))

---

The soil and hydrologic conditions that are normally present, without regard to whether the vegetation has been removed (7 CFR 12.31(b)(2)(i)). For FSA wetland identification purposes, this concept is the consideration of normal and abnormal climate-based site changes and natural and artificial disturbance-based site changes that can create wetland identification challenges. “Normally present” is further explained as the vegetative, soil, and hydrologic conditions that occur under both of these conditions:

- Without regard to whether the site has been subject to drainage actions (see drainage definition) after December 23, 1985, and without regard to whether the vegetation has been removed or significantly altered.
- During the wet portion of the growing season under normal climatic conditions (normal environmental conditions).

## NORMAL CLIMATIC CONDITIONS (NCC, 7 CFR §12.2)

---

The normal range of hydrologic inputs on a site as determined by the bounds provided in the Climate Analysis for Wetlands Tables or methods posted in the Field Office Technical Guide.

## NORMAL ENVIRONMENTAL CONDITIONS (NEC, FSA PROCEDURES (2-11))

---

The climate-based concept of NC, defined as the physical conditions, characteristics (hydrology, soil, and vegetation), or both that would exist in a typical situation (2-15) on a site during the wet portion of the growing season in a normal climatic year.

## PROBLEM AREAS (CORPS MANUAL SECTION G)

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Wetland types in which indicators of one or more wetland parameters may be periodically lacking due to normal seasonal or annual variations in environmental conditions that result from causes other than human activities or catastrophic natural events.

## REPRESENTATIVE OBSERVATION POINT (ROP, CORPS MANUAL SECTION D)

---

A point within the SU that the agency expert has determined best represents the characteristics of the entire community (i.e., sampling point).

## SAMPLING UNIT (FSA PROCEDURES (2-12))

---

The smallest portion of the area subject to the wetland determination, delineation, or both for which consideration is made regarding a wetland determination decision. In Part IV of the Corps Manual, this unit is referred to as a unique “plant community.” In the supplements, the concept is referred to interchangeably as “plant community,” “vegetative unit,” and “landscape unit.” In Step 2 of the FSA wetland determination process sampling units (SU) may be further divided or combined.

SU are selected based on having (or would have) similar plant communities resulting from similar soil properties, hydrologic regimes, and landscape positions. Each SU differs (landscape position, hydrology, soils, and vegetation) from other SU within the project area.

#### WETLAND (16 U.S.C. §3801(A))

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Land that—

- Has a predominance of hydric soils.
- Is inundated or saturated by surface or groundwater at a frequency and duration sufficient to support a prevalence of hydrophytic vegetation typically adapted for life in saturated soil conditions.
- Under normal circumstances supports a prevalence of such vegetation.

#### WETLAND HYDROLOGY (FSA PROCEDURES (2-19))

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Inundation or saturation of the site by surface or groundwater during a growing season at a frequency and duration sufficient to support a prevalence of hydrophytic vegetation.

## APPENDIX B - ECOLOGICAL SITE DESCRIPTION INFORMATION

Ecological Site Descriptions (ESD) made available to the public include ESD that are considered provisional, approved, or correlated. ESD public information shall be utilized for the SOSM.

ESD information can be found using the following:

- A. Ecosystem Dynamics Interpretive Tool (EDIT) <https://edit.jornada.nmsu.edu/>
- B. Web Soil Survey (WSS)
  - (1) WSS: 1) Define Area of Interest; 2) Select Soil Data Explorer Tab; 3) Select Suitabilities and Limitations for Use Tab; 4) Select Land Classifications; 5) Select Ecological Site ID; 6) Select ESD.
  - (2) WSS: 1) Define Area of Interest; 2) Select Soil Data Explorer Tab; 3) Select Ecological Sites Tab; 4) Select “View All Ecological Sites Info” button; 5) Select link to the desired ESD within the generated list (link is to the EDIT website).
  - (3) WSS: 1) Define Area of Interest; 2) Select Soil Data Explorer Tab; 3) Select Soil Reports Tab; 4) Select Vegetative Productivity; 5) Select Link to Ecological Site Descriptions in EDIT; 6) Select link to the desired ESD (if available).

## APPENDIX C – CLIMATE INFORMATION

When making assessments that include aerial imagery review, evaluation of NEC/NCC (e.g., the designation of “normal”, “wet”, etc.) associated with each image will be determined using the procedures in EFH Hydrology Tools, Part 650.1911, Remote Sensing Applications, with the considerations discussed below.

The State Off-site Methods adopt and utilize the Rainfall Documentation Form(s) noted below. Agency experts may also utilize a State-provided imagery review documentation form other than the “Sequential Aerial Images Review Form” provided in EFH Hydrology Tools.

[WETS Table information](#) is used to complete the Rainfall Documentation Form. The agency expert will use best professional judgement in determining which climate station is most representative. Normally the station with data from 1971-2000 nearest to the area of interest will be chosen; this could include climate stations in adjoining states. If other reliable data closer to the site is available, it should be evaluated for use. In some cases, a WETS table for a discontinued weather station may be available, but current rainfall data is not. In these cases, the best possible data from the nearest site should be sought. In other situations, the agency expert will need to choose climate stations that may be further away than the nearest station but better represent the climate of the project area (for example, if the nearest climate station is on the other side of a mountain range that impacts rainfall and climate). In this situation, the agency expert may select a climate station on the same side of the mountain range in the same landscape (e.g., valley). There may be instances where multiple weather stations provide only partial data sets, and the agency expert may need to combine/average data from the multiple sources to come up with a complete data set. The agency expert should thoroughly document and describe any procedure that varies from the norm (choosing the station nearest to the area of interest) and cite Flexibility as provided in Paragraph 23 of the Corp Manual.

WETS Table data is generated after determining the most representative climate station and obtaining precipitation data for the site. Having selected the representative climate station, the agency expert selects the WETS Table radio button and ensures the year range is set to 1971 – 2000.

**AgACIS for Cherokee County**

1. Location ? »	2. Product »	3. Options »	4. View »
<p><b>Selected station:</b> MURPHY 4ESE</p> <p><b>Period of record:</b> Max Temperature: 1873-08-01 to 2022-08-04 Min Temperature: 1879-05-01 to 2022-08-04 Precipitation: 1872-01-16 to 2022-08-04 Snowfall: 1872-03-01 to 2022-08-04 Snow Depth: 1908-01-14 to 2022-08-04</p> <p><a href="#">View station menu</a> <a href="#">View map</a></p>	<p><input type="radio"/> Daily data for a month</p> <p><input type="radio"/> Daily almanac</p> <p><input type="radio"/> Monthly summarized data</p> <p><input type="radio"/> Calendar day summaries</p> <p><input type="radio"/> Daily/monthly normals</p> <p><input type="radio"/> First/last dates</p> <p><input type="radio"/> Temperature graphs</p> <p><input type="radio"/> Accumulation graphs</p> <p><input type="radio"/> TAPS</p> <p><input type="radio"/> FROST</p> <p><input type="radio"/> GROWTH</p> <p><input checked="" type="radio"/> <b>WETS</b></p> <p><input type="radio"/> DAYS</p> <p><input type="radio"/> Station information</p>	<p><b>Year range:</b> 1971 - 2000</p> <p><b>Thresholds:</b> 24 28 32</p>	<p><a href="#">Go</a></p>
<div style="border: 1px solid black; padding: 5px; display: inline-block;"> <p><b>1) Select WETS.</b></p> </div>			
<div style="border: 1px solid black; padding: 5px; display: inline-block;"> <p><b>2) Ensure date-range is 1971-2000. Do not change "Thresholds". 3) Then select "Go".</b></p> </div>			
<p><b>Product Description:</b></p> <p>WETS - month by month summary and probability analysis of temperature and precipitation. The table also provides first/last dates and length of growing season using three index temperatures (32, 28, and 24 degrees Fahrenheit by default) at 50 and 70 percent probabilities. A third tables provides monthly precipitation totals (in inches) for the period of record.</p>		<p style="text-align: center;">- Submit a question/comment - - Select a different county -</p> <p style="text-align: center;">  </p>	

The WETS Table generated identifies the boundary where 30% of precipitation values are wetter than normal and the boundary where 30% of values are drier than normal. "Normal" is represented by those values that fall between these two boundaries.

The table also provides growing season dates for the site represented by the climate station. NRCS uses the growing season date range as determined by a 50 percent probability of temperatures 28 degrees Fahrenheit or higher.

## AgACIS for Cherokee County

AgACIS
Format for export
Print
X

WETS Station: MURPHY 4ESE, NC  
Requested years: 1971 - 2000

Can be exported or printed.

Month	Temperature (°F)				Precipitation (inches)			
	Avg daily max	Avg daily min	Avg daily mean	Avg	30% chance will have		Avg number of days with 0.10 inch or more	Average total snowfall
					less than	more than		
Jan	48.6	26.0	37.3	6.02	4.24	7.15	9	1.9
Feb	52.9	27.4	40.2	5.04	3.34	6.05	8	2.0
Mar	61.0	33.3	47.2	5.85	4.28	6.88	9	0.0
Apr	69.5	39.8	54.6	4.62	3.36	5.44	8	0.0
May	76.4	49.1	62.8	4.85	3.59	5.69	8	0.0
Jun	82.8	57.8	70.3	4.76	3.12	5.72	9	0.0
Jul	86.0	62.4	74.2	4.95	3.62	5.82	9	0.0
Aug	85.5	61.5	73.5	4.66	3.19	5.55	8	0.0
Sep	80.2	55.8	68.0	3.92	2.44	4.74	7	0.0
Oct	71.0	41.9	56.5	3.06	1.54	3.74	5	0.0
Nov	60.9	33.6	47.2	4.57	3.29	5.39	8	0.1
Dec	51.9	27.4	39.6	4.69	3.23	5.59	8	0.7
Annual:					51.27	62.62		
Average	68.9	43.0	55.9	-	-	-	-	-
Total	-	-	-	56.99			97	4.7

Boundary for "drier than normal" values.

Boundary for "wetter than normal" values.

GROWING SEASON DATE

Requested years of data: 1971 - 2000  
 Years with missing data: 24 deg = 12 28 deg = 10 32 deg = 8  
 Years with no occurrence: 24 deg = 0 28 deg = 0 32 deg = 0  
 Data years used: 24 deg = 18 28 deg = 20 32 deg = 22

Growing Season Dates

Probability	Temperature		
	24 F or higher	28 F or higher	32 F or higher
50 percent *	Insufficient data	4/14 to 10/21 190 days	4/29 to 10/14 168 days
70 percent *	Insufficient data	4/9 to 10/26 200 days	4/25 to 10/18 176 days

\* Percent chance of the growing season occurring between the Beginning and Ending dates.

The table provides recorded precipitation values for each month, per year, where such data is available. These are the values entered into the "Rainfall" column of the Rainfall Documentation Form, indicating precipitation values from the first, second, and third months prior to the imagery date.

## AgACIS for Cherokee County

AgACIS

Format for export

Print

X

### STATS TABLE

Total precipitation (inches)

Yr	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annl
1872	M0.43	15.10	M0.70	4.40	2.70	8.20	7.50	6.80	3.80	T	5.30	M12.50	67.43
1873			M5.50	M1.30	M3.90	4.50	M7.81	M4.60	3.30	2.50	2.60	M0.48	36.49
1874	M0.51	6.70	9.00	15.30	M0.10	5.80	4.20	13.20	3.90	2.00	6.80	3.50	71.01
1875	M8.00	12.10	14.10	5.40	1.20	6.40	M9.40		4.90	2.90	M4.00	M15.30	83.70
1876	4.70	4.70	M3.60	M11.30	10.50	M3.00	5.90					4.80	48.50
1877	7.10		M5.70	6.90	1.40	5.10	7.80	3.30		3.40	M9.10	3.50	53.30
1878	4.00	M0.90	3.40	M3.80	1.80	M0.73	M4.30	M3.30	1.60	5.70	4.00	M3.20	36.73
1879	M5.10	M4.80	M3.00	M2.30		2.10	6.50	6.70	0.70	5.30	M6.40	M4.80	47.70
1880	M5.10	M1.40	11.50	M7.30	4.50	M3.10	5.30	M5.20	M3.70	M0.70	M1.04	M3.00	51.84
1881	M3.20	M3.60	M3.80	M2.80	M1.50	M9.75	M3.40	1.35	M4.00		M2.80	6.55	42.75
1882	M22.90	M4.50	M6.00	M3.20	M4.05	M5.35	M4.30	M3.80	M0.17	3.80	3.80	M3.05	64.92
1883		5.30	M3.30	M9.60	M1.00	5.25	M3.60						28.05
1884		M6.80	M10.90	M5.00	2.50	M4.05	M5.01	2.05	1.00				41.12
2007	M3.57	2.46	3.23	3.62	4.64	2.80	7.27	4.03	0.56	2.73	2.23	9.75	52.19
2008	2.69	5.11	6.56	4.84	M6.79	4.92	4.62	6.43	8.80	7.59	6.41	8.87	73.81
2009	M8.78	7.67	4.21	5.05	6.44	M1.13	5.33	2.34	4.89	2.67	3.30	9.14	60.95
2010	M4.58	2.42	9.96	M3.76	M2.00	6.76	M4.46	2.98	5.64	3.27	6.15	4.82	56.80
2011	5.32	M2.46	5.22	M3.57	2.67	3.43	3.92	8.82	M4.16	5.28	M0.56	7.11	52.52
2012	M11.27	6.16	4.55	M6.55	3.78	M7.46	8.76	8.75	M4.83	M1.00	4.74	M9.19	77.04
2013	M2.79	4.37	2.61	M3.75	M3.29	M4.43	5.64	M2.99	M5.45	6.89	2.88	3.73	48.82
2014	4.26	3.47	3.25	M6.88	2.66	3.96	8.98	4.26	3.59	3.75	8.53	13.43	67.02
2015	3.16	4.99	1.95	2.47	4.09	M4.29	3.86	2.22	1.00	0.19	1.27	4.36	33.85
2016	4.08	2.74	6.54	7.09	5.97	5.86	6.62	2.85	3.38	5.55	0.90	3.79	55.37
2017	1.76	7.07	4.93	4.61	7.11	5.68	6.77	10.37	4.79	3.55	6.54	9.97	73.15
2018	5.82	9.88	6.85	6.71	M4.66	5.29	5.73	1.60	0.51	7.37	3.29	6.74	64.45
2019	6.61	10.99	M6.72	7.17	4.75	5.85	1.87	8.29	5.17	6.37	2.54	4.35	70.68
2020	4.02	6.59	10.19	1.76	7.14	6.02	5.28	11.96	6.20	4.17	1.50	5.06	69.89
2021	4.68	8.36	4.04	3.48	M7.28	1.42	4.54	M0.90					34.70

Actual rainfall ("Rainfall") measured at the climate station, per month, per year.

Notes: Data missing in any month have an "M" flag. A "T" indicates a trace of precipitation. Data missing for all days in a month or year is blank.

Creation date: 2022-08-05

When determining the 3-months-prior to the date of a selected image, the date the image was captured may be considered. For example, if the image was taken on July 22<sup>nd</sup>, and it is known there was no significant precipitation event after that date, July may be appropriate as the "first month prior", according to best professional judgement. It may be useful to determine extreme wet and dry monthly precipitation values that might have a greater effect on precipitation averaging and weighting (e.g., precipitation in the 10<sup>th</sup> or 90<sup>th</sup> percentiles).

There are three options for assessing precipitation by which States may evaluate precipitation data and determine if the data is representative of normal climatic conditions. There are also corresponding Rainfall Documentation Forms developed for each option to assist States in calculating the data on the National HELC/WC SharePoint site.

- Option 1 includes use of weighted time and wetness conditions.
- Option 2 includes use of weighted time and antecedent precipitation.
- Option 3 includes use of unweighted time, wetness condition, or antecedent precipitation.

The National HELC/WC SharePoint site provides an example of [using WETS Table data to populate the form for Option 2](#). The Rainfall Documentation Form for all three options can be found under the first Growing Season technical video in an Excel spreadsheet titled “Normal Climatic Conditions\_3Options”. Pennsylvania agency experts will utilize Option1. Results will be recorded on the NRCS CPA-32 Imagery Review Form (Appendix E).

Pennsylvania developed excel spreadsheets that automate the calculations. Please contact the Pennsylvania State Soil Scientist or State Compliance Specialist for location of WETS excel spreadsheets.

**For Option 1**, determine 30 percent lower and upper boundaries for precipitation for 3 months prior to the photo date using the WETS table and assign the following monthly weighting factors:

- 1<sup>st</sup> Month Prior = 3
- 2<sup>nd</sup> Month Prior = 2
- 3<sup>rd</sup> Month Prior = 1

After determining whether precipitation in each of the three months was normal, wet, or dry, assign the condition value provided on the Rainfall Documentation Form:

- Dry = 1
- Normal = 2
- Wet = 3

Multiply the condition value for each month by the weighting factor.

Sum the totals.

- If the sum is 6-9, the prior period has been drier than normal.
- If the sum is 10-14, the prior period has been normal.
- If the sum is 15-18, the prior period has been wetter than normal.

Apply a Normalization tag (slide indicator status) of Normal, Wet, or Dry.

	Long-term rainfall records <sup>1</sup>				Rainfall	Wet, Normal, Dry	Condition Value	Month Weight	Product of two previous columns
	Month	30% <	Average	30% >					
3rd Prior month	March	4.28	5.85	6.88	4.04	DRY	1	1	1
2nd Prior month	April	3.36	4.62	5.44	3.48	NORMAL	2	2	4
1st Prior month	May	3.59	4.85	5.69	7.28	WET	3	3	9
		21.77		34.83				SUM:	14.00
	User Entered								<b>NORMAL</b>

Condition Value  
 Dry =1  
 Normal =2  
 Wet =3

Note: If sum is  
 6-9 Then prior period has been drier than normal  
 10-14 Then prior period has been normal  
 15-18 Then prior period has been wetter than normal

Note the slide indicator status (normal, wet, or dry) for each image on the imagery review documentation form, and document if a wetness signature is observed at the representative observation point for the sampling unit(s) in each image (see Aerial Imagery Review in Section 1.4.1).

See EFH Hydrology Tools, Part 650.1911, Remote Sensing Applications for additional details.

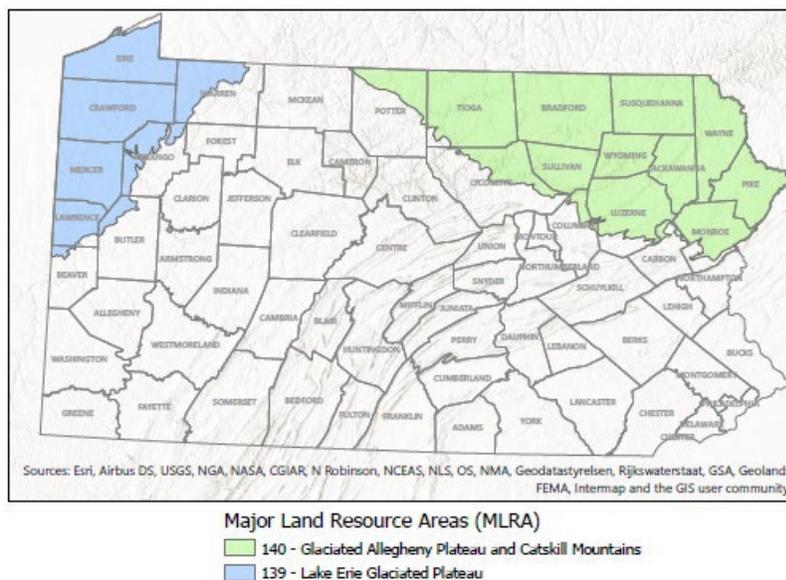
The [WebWIMP](#) (Web-based, Water-Budget, Interactive, Modeling Program) website provides additional climate data including monthly and annual climatic water balance graph, which can be used to determine the wet portion of the growing season.

## APPENDIX D – POTHoles IN PENNSYLVANIA

Definition - Pothole means a closed depression, generally circular, elliptical, or linear in shape, occurring in glacial outwash plains, moraines, till plains, and glacial lake plains. (7 CFR 12.2)

Pothole identification is important because it is a unique landform that has different hydrologic criteria for meeting the Food Security Act (FSA) definitions of Farmed Wetland (FW) and Farmed Wetland Pasture (FWP). The hydrologic criteria are defined in 7 CFR 12.2.

Potholes are most commonly found in the prairie-pothole region of the upper midwestern United States, but they can also occur in Pennsylvania throughout the glaciated northwest (MLRA 139) and northeast (MLRA 140) parts of the State. Pennsylvania potholes are more common in the terminal moraine in scattered closed depressions of southeast Mercer County, and in the ground moraine (till plain) of Erie, Crawford, Mercer and Lawrence counties in northwestern Pennsylvania. In the northeastern part of the State, they can be found in the pitted outwash plains and in the kettle-kame topography and ablation till areas of Bradford, Lackawanna, Luzerne, Lycoming, Monroe, Pike, Potter, Sullivan, Susquehanna, Tioga, Wayne and Wyoming Counties.



Field staff can identify potholes in areas with hydric soils or hydric soil components that occur in the glaciated landform positions of the counties described above. LiDAR can also be used in the identification of the scattered closed pothole depressions in an otherwise flat landform.

Soils that may be associated with potholes include, but are not limited to, the following soil series:

Adrian	Canandaigua	Frenchtown	Luray	Norwich
Alden	Carlisle	Getzville	Medihemists	Rexford
Aquepts	Chippewa	Halsey	Medisaprists	Sebring
Ashville	Conneaut	Haplaquents	Mill	Shelmadine
Atherton	Edgemere	Lamson	Nolo	Terric Haplosaprists
Canadice	Fredon	Lithic Haplosaprists	Norchip	

## APPENDIX E – PENNSYLVANIA STATE OFF-SITE METHODS DATA SHEETS

Pennsylvania NRCS State Off-site Wetland Determination Documentation Sheet

Under development

NRCS CPA-32 Imagery Review Form

Under development

## APPENDIX F- IMAGERY SOURCES

This section may be updated as new resources become available.

-PASDA Pennsylvania Imagery Navigator: [Pennsylvania Imagery Navigator and Download Tool \(psu.edu\)](#)

-Google Earth Pro: Download the application from USDA-OCIO-CEC Software Center

-USGS EarthExplorer: [EarthExplorer \(usgs.gov\)](#)

-ArcGIS Pro: Various imagery is available in Project templates.

-Local County F Drives and NAIP imagery (contact State GIS or Business Tools Specialists)

-1985 scanned aerial photos with GIS index are available for the following counties (contact the State GIS or Business Tools Specialists for access):

- Adams
- Berks
- Bradford
- Clearfield
- Crawford
- Cumberland
- Elk
- Erie
- Franklin
- Jefferson
- Lancaster
- Lebanon
- Lehigh
- Lycoming
- Mercer
- Northampton
- Potter
- Schuylkill
- Snyder