SOUTH DAKOTA
NATURAL RESOURCES CONSERVATION SERVICE
STATE OFFSITE METHODS

For the 1985 Food Security Act, as amended.

South Dakota Natural Resources Conservation Service
State Offsite Methods

TABLE OF CONTENTS

SECTION 1

1.0 INTRODUCTION

The National Food Security Act Manual (NFSAM) provides internal agency policy related to the Highly Erodible Land Conservation and Wetland Conservation provisions of the 1985 Food Security Act (FSA). Part 514.7 of the NFSAM explains that the FSA wetland determination process requires a technical determination of whether or not the site (sampling unit(s)) is a wetland, then a separate independent determination of whether or not any exemptions to the provisions apply. Based on these two decisions, a certified wetland determination map is prepared with an appropriate Wetland Conservation (WC) label assigned to each sampling unit (sampling units may be combined). The size of each area with a WC label is provided. Thus, the FSA wetland determination decision includes three independent steps: Step 1: Wetland Identification, Step 2: Assignment of WC Labels and Step 3: Sizing.

To accomplish the first step (wetland identification), the Secretary of Agriculture directed the Natural Resources Conservation Service (NRCS) to develop and utilize offsite and onsite wetland identification procedures (7 CFR 12.30(a)(4)). The NRCS responded by providing such procedures in the NFSAM. The NFSAM Part 527 FSA Wetland Identification Procedures directs that NRCS will utilize Part IV: Methods contained in the Corps of Engineers Wetland Delineation Manual (Corps Manual) for onsite and offsite determinations. The NFSAM explains that the on-site procedures contained in the Corps Manual are supplemented by the Corps Regional Supplements and the FSA variances to the Corps Methods, as provided in Part 527 FSA Wetland Identification Procedures.

The FSA Wetland Identification Procedures provide that the Corps offsite procedures found in Part IV, Section D, Subsection 1 – Onsite Inspection Unnecessary can be augmented with the development of State Offsite Methods (SOSM). ***The purpose of this document is to provide procedures that the NRCS will utilize for rendering decisions when onsite inspection (field indicators) is unnecessary. Additionally, this document provides guidance related to the assignment of WC labels and sizing.*** The SOSM incorporates by reference the current versions and pertinent sections of the following documents:

1. National Food Security Act Manual (NFSAM)
2. Food Security Act (FSA) Wetland Identification Procedures (NFSAM Part 527 Appendix)
3. 1987 United States Army Corps of Engineers (USACE) Wetland Delineation Manual, Technical Report Y-87-1 (‘87 Manual)
4. USACE Regional Supplements (Great Plains and Midwest) to the ’87 Manual
5. Title 210 Engineering, National Engineering Handbook (NEH), Part 650, Engineering Field Handbook (EFH), Chapter 19 - Hydrology Tools for Wetland Determination

The NRCS presented the SOSM to the State Technical Committee to solicit feedback and recommendations as required in paragraph (2-14) of the FSA Wetland Identification Procedures. These SOSM take into account unique regional, state, and local wetland characteristics. As directed by the Secretary of Agriculture, these SOSM were developed consistently with other states in the Northern Plains portion of the Prairie Pothole Region. This document adheres to regulations and policies in effect as of the date of this document but may be subject to change.

Paragraph (2-14) of the FSA Wetland Identification Procedures defines SOSM as “*Methods developed by the NRCS for the sole purpose of supplementing the offsite methodology in the*

Corp Manual (decisions made using Level 1 or Level 3) *for use in identifying wetlands for FSA purposes. The adoption process for State Offsite Methods will include solicitation of State Committee recommendations. These methods may replace or supplement methods provided for in State Mapping Conventions.*"

For FSA purposes, the term "wetland" is defined in 16 U.S.C. section 3801(a)(18) as land that—

A) Has a predominance of hydric soils.
B) 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.
C) Under normal circumstances supports a prevalence of such vegetation.

For the purposes of FSA and any other act, this term does not include lands in Alaska indentified as having high potential for agricultural development that have a predominance of permafrost soils.

According to paragraph (3-2) of the FSA Wetland Identification Procedures, "*This definition is unique to the statute, and all decisions regarding the identification of FSA wetlands must be based on this definition. The statute adds further clarity to the concept of an FSA wetland by defining "hydric soil" and "hydrophytic vegetation" (as those concepts will be applied to the WC provisions) and by the specific direction given to the Secretary as to the hydric soils and hydrophytic vegetation criteria that must be developed by USDA (16 U.S.C. Section 3801(b)(1)).*"

Wetland identification decisions are based on conditions that are expected to occur under Normal Circumstances. The FSA Wetland Identification Procedures paragraph (2-10) defines Normal Circumstances (NC) as, "*The soil and hydrologic conditions that are normally present, without regard to whether the vegetation has been removed (7 CFR section 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:*

a. *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.*
b. *During the wet portion of the growing season under normal climatic conditions (normal environmental conditions)."*

The FSA Wetland Identification Procedures paragraph (2-11) defines Normal Environmental Conditions (NEC) as. "*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 (2-12) on a site during the wet portion of the growing season in a normal climatic year.*"

Normal Circumstances as used in the FSA wetland definition requires that decisions be based not on anomalies, but rather what would normally occur on the sampling unit during NEC (FSA Procedures paragraph (3-3)). In the Corps methods, the concept of "normal" is separated into the disturbance-based concept of normal circumstances (typical/atypical situations) and the climate-based concept of normal circumstances called "normal environmental conditions" (NEC). The NRCS adopts this concept that a determination of "normal" is a two-pronged

consideration (FSA Procedures paragraph (3-4)). For FSA purposes the agency expert will determine the normal circumstances (NC) of the sampling unit as those that would be expected to occur,

(1) In the absence of post-12/23/1985 drainage actions that alter the normal soil or hydrologic conditions.
(2) In the absence of an alteration (removal or change) in the plant community such that a decision cannot be made if the site would support a prevalence of hydrophytic vegetation if undisturbed.
(3) During the wet portion of the growing season during a year experiencing normal weather patterns.

In the absence of direct evidence, the decision if a sampling unit meets a particular diagnostic factor (wetland hydrology, prevalence of hydrophytic vegetation, and a predominance of hydric soils) is assisted by confirmation of the presence of indicators. The use of indicators to predict the conditions that would occur under NC is referred to as the "indicator-based approach to wetland identification." Indicators can be obtained from remote sensed data sources or onsite visits.

The Corps, EPA, and NRCS utilize the indicator-based approach to assist in decision-making. The ultimate decision if a site meets the FSA criteria for any of the three diagnostic factors is made from a preponderance of evidence, best professional judgment, and the FSA definitions, criteria, or both, of hydrophytic vegetation, hydric soils, and wetland hydrology (FSA Wetland Identification Procedures paragraph (4-3)).

According to Paragraph (4-4) of the FSA Wetland Identification Procedures, "*The decision if the site is an FSA wetland is ultimately rendered based on the determination of a presence or absence of each of the three factors under NC. Areas determined to support wetland hydrology, a prevalence of hydrophytic vegetation, and a predominance of hydric soils (all under NC), as each factor is defined by the FSA, are wetlands subject to the WC provisions of the act*."

SECTION 2

2.0 FSA WETLAND DETERMINATION PROCESS STEP 1: WETLAND IDENTIFICATION

Persons utilizing the SOSM must have the appropriate "Wetland Job Approval Authority(s)" delegated and documented in accordance with current NRCS policy (Section III of the Field Office Technical Guide). As a reminder, the first step in the wetland identification process is to subdivide the project into different areas called sampling units (FSA Procedures (2-12)) and identify each sampling unit on a base map. Then for each sampling unit, an independent consideration of each of the three wetland diagnostic factors is made. For each sampling unit the agency expert must decide when applying Section C: Selection of Method of the 'Corps Manual which level is most appropriate.

- Level 1 is rendering a decision using offsite resources for each of the three factors. The assessment of each factor must be independent of the other factors and a different remote data source must be used for each factor. **Note:** A single resource document (tool) can contain multiple data sources. Each can be used as an indicator for a different factor. For example, a soil survey contains multiple data sources (soils map, hydrology data, vegetative data, and use limitation data). A quadrangle map is a source for elevation data, landuse data, and hydrology data (i.e. water symbols). The mandate is that a single remote data source (i.e. soil map unit) cannot be applied to more than one factor.

- Level 2 is rendering a decision without using remote data sources. The exception is if Section F (Atypical Situation) or G (Problem Area) is needed. Those sections are only applied after a decision is made to use onsite methods (even if remote data sources are eventually used to render a decision).

- Level 3 is rendering a decision using offsite resources (i.e. Soils mapping) for 1 or 2 factors and using on site indicators (i.e. drift lines) for the other factor(s).

Wetland determinations are technical decisions resulting from the determination of whether or not an area is a wetland (wetland ID), including a determination of the appropriate wetland type (WC compliance label) and size (FSA Wetland Identification Procedures paragraph (2-18)). Therefore, the NRCS identifies three unique and separate steps to the wetland determination process. Within the first two steps each of the three wetland diagnostic factors must be assessed independently to determine if a decision can be rendered at the diagnostic factor level using offsite data sources.

To the extent possible the NRCS will utilize Level 1 to render its decision for each of the three factors and, unless otherwise specified in these procedures or as established in state policy, the agency expert retains the responsibility to determine when insufficient offsite resources exists and a Level 2 or Level 3 decision is warranted.

NOTES:

- All agency decisions during Step 1 are made at the sampling unit level.
- The term "imagery" refers to all forms of remotely captured imagery or photography, digital or analog, at all resolutions.
- Unless otherwise stated, the use of "1985" in this document refers to December 23, 1985.

2.1 DEVELOP A BASE MAP

Users will graphically subdivide the project into sampling units on a base map image using resources A through E (as available) below as indicated. The base map needs to be large enough to read and record multiple sampling units in one location (e.g. concentric circles). A sampling unit will only be recorded once. Sampling unit boundaries do not need to match exactly between resources, and whenever possible the sampling unit boundary from resource B will be used. The agency expert determines sampling unit validity. Sampling units will be located using the following remote resources:

A. Review the NRCS wetland inventory maps **OR** official determinations, if available. Each previously identified polygon may be a sampling unit.

B. Review appropriate imagery. Each signature listed below not matching resource A above is a sampling unit:
   - Hydrophytic vegetation
   - Surface water
   - Saturated conditions
   - Flooded or drowned-out crops
   - Stressed crops due to wetness
   - Differences in vegetation due to different planting or replanting dates
   - Inclusions of wet areas as set-aside or idled land
   - Circular or irregular areas of unharvested crops within a harvested field
   - Isolated areas that are not farmed with the rest of the field
   - Areas of greener vegetation (especially during dry years)

   Note: The term "appropriate" means that the agency expert will select the imagery year or years that best represents Normal Circumstances, including "Normal Environmental Conditions", to identify and size sampling units. To the extent possible, Section I of the NRCS Field Office Technical Guide will include designation of the image year(s) (2 to 4 different images) determined to reflect Normal Environmental Conditions for specific geographic locations.

   For sampling units without pre-1985 manipulations, Base Map development will include use of the imagery year which best reflects Normal Environmental Conditions as identified in Section I of the FOTG is required.

   For sampling units with pre-1985 manipulations, when developing the Base Map the agency expert must determine and utilize imagery which reflects Normal Circumstances with consideration of when the manipulation was installed and the best drained condition of the sampling unit. To determine the best drained condition, the agency expert must review imagery years immediately following the approximate manipulation year and/or use other resources such as producer submitted drainage worksheets, drainage equations, watershed district maps, road culvert elevations and'\or county drainage maps to determine the present or absence of sampling units and their size.

C. Review the National Wetland Inventory (NWI) maps. Each NWI polygon not matching resources A or B above is a sampling unit.

D. Review the soil survey and the county hydric soils list. Identify listed hydric soil map units, map units with hydric soils as part of their name, or soils with hydric inclusions, and map units with conventional wetland symbols. Each soil survey feature not matching resources A, B, or C above may be a sampling unit.

E. Review other inventory tools, if available. Note sampling units as applicable.

F. Identify a single representative non-wetland (upland) sampling unit for each project area (tract or field) using the soil survey resource. The agency expert will use best professional judgment to select a single representative non-hydric soil map unit.

- Proceed to Section 2.2.

2.2 DETERMINE REMOTE INDICATORS FOR HYDROPHYTIC VEGETATION

The term hydrophytic vegetation "means 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" (16 U.S.C. section 3801(a)(13)). The site must support hydrophytic vegetation under normal circumstances. Refer to Part V, subpart C, paragraphs (5-41) through (5-46), of the FSA Wetland Identification Procedures for further information and allowable variances from the Corps methods in identification of hydrophytic vegetation.

The following remote indicators are suggestive (indicates) that the hydrophytic vegetation definition (plants growing in water or growing in a reduced substrate) is met.

1. Ecological Site Descriptions (ESD).

2. Approved NRCS wetland reference site data.

3. National Wetland Inventory (NWI) mapping.

4. Official Soil Series Descriptions (OSD).

5. Prior land-based (on the ground) photography.

6. Atypical procedures found in the Corps Manual and Chapter 5 Problematic Vegetation Procedures of the appropriate Regional Supplement to the Corps Manual.

Hydrophytic Vegetation (no pre-1985 drain) Decision Threshold (the factor is met if):

1. ESD – the Historic Plant Climax Community (or Reference Community) plant composition table indicates the sampling unit is composed of plants that meet the definition (Prevalence Index (PI) < 3.0). Refer to Attachment A for further information.

2. Approved SD NRCS wetland reference sites that are within the same soil map unit (or inclusion), in the same Major Land Resource Area, and have similar precipitation zones. The selected reference site case file documentation indicates the sampling unit is composed of plants that meet the definition (PI < 3.0).

3. NWI Mapping – mapped as emergent, shrub vegetation, forested, or aquatic bed on an NWI map (e.g. PEM, PSS, PFO, or PAB).

4. OSD – Use this only if ESD information is not available. 1) Use and Vegetation indicates the site has plants that meet the hydrophytic vegetation definition (lists hydrophytic vegetation) and/or 2) Remarks indicates the vegetative zone of a Class of wetland as defined by Stewart and Kantrud, 1971 in Resource Publication 92.

5. Prior land-based (on the ground) photography – At least 2 sources/dates show plants growing in water under NC.

➢ Document decision on the worksheet and proceed to the Section 2.3.

Hydrophytic Vegetation (with pre-1985 drain) Decision Threshold (factor is met if):

This decision threshold can only be applied to sampling units if remote indicators of hydric soil and wetland hydrology are present (or are absent due to disturbance or other problem situations such as "Wetlands that Periodically Lack Indicators of Wetland Hydrology"). Therefore, ***proceed to Section 2.3 and Section 2.4 before determining this factor.***

The agency expert must verify that the sampling unit is in a landscape position that is likely to collect or concentrate water (refer to Chapter 5 – Problematic Vegetation Procedure (2)). The landscape position does not include the ditch itself, if applicable. If the drain no longer allows the sampling unit to "collect or concentrate water" then this factor cannot be met.

1. The Corps Methods, Regional Supplement Chapter 5 – Problematic Vegetation Procedure "[Great Plains - (d); Midwest – (c)] Areas affected by grazing," approach (4) is used.
    - Approach (4) states, "*if an appropriate ungrazed area cannot be located or if the ungrazed vegetation condition cannot be determined, make the wetland determination* (Step 1) *based on indicators of hydric soils and wetland hydrology*."

2. The Corps Methods, Regional Supplement Chapter 5 – Problematic Vegetation Procedure "[Great Plains - (e); Midwest – (d)] Managed plant communities," approach (4) is used.
    - Approach (4) states, "*if the unmanaged vegetation condition cannot be determined, make the wetland determination* (Step 1) *based on indicators of hydric soils and wetland hydrology*."

3. Prior land-based (on the ground) photography – At least 2 sources/dates show plants growing in water under NC.

For drained non-wetland sampling units, the ESD or OSD remote indicators may still be used as these sampling units would not have had predominance of hydrophytic vegetation in their undrained condition.

➢ Document decision on the worksheet and proceed to the Section 2.3.

2.3 DETERMINE REMOTE INDICATORS FOR HYDRIC SOILS

The term "hydric soil" means 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" (16 U.S.C. section 3801(a)(12)). Refer to Part V, subpart C, paragraphs 5-49 through 5-55, of the FSA Wetland Identification Procedures for further information and allowable variances from the Corps methods.

Title 7 CFR § 12.31(a)(1) states, "NRCS shall identify hydric soils through the use of published soil maps which reflect soil surveys completed by or through the use of onsite reviews."

Title 7 CFR § 12.31(a)(2) states, "NRCS shall determine whether an area of a field or other parcel of land has a predominance of hydric soils that are inundated or saturated as follows:"

- "If a soil map unit has hydric soil as all or part of its name, that soil map unit or portion of the map unit related to the hydric soil will be determined to have a predominance of hydric soils."

- "If a soil map unit is named for a miscellaneous area that meets the criteria for hydric soils (i.e., riverwash, playas, beaches, or water) the soil map unit will be determined to have a predominance of hydric soils."

- "If a soil map unit contains inclusions of hydric soils, that portion of the soil map unit identified as hydric soil will be determined to have a predominance of hydric soils."

The following remote indicators are suggestive (indicates) that the hydric soils definition is met.

1. Soils Maps (data) and County Hydric Soils Lists.
   - A county hydric soil list can be generated from the reports in Web Soil Survey.

Hydric Soils Decision Threshold (the factor is met if):

1. The sampling unit meets 7 CFR § 12.31(a)(2) as described above. If a soil map unit has hydric soil as part of its name or contains a hydric inclusion, that portion of the hydric component (major or minor) in the soil survey can be verified by either:
   a. Identifying that the landform (such as pothole/playa or non-pothole/playa) of the sampling unit is consistent with the landform (such as depression, closed depression, flats or swale) of the hydric component or inclusion; **or**,
   b. Using the soil series.

   - If a field visit based on offsite evidence is required for a map unit that is non-hydric, including minor components, then hydric soil indicator documentation is required.

   ➢ Document decision on the worksheet then proceed to Section 2.4.

2.4 DETERMINE REMOTE INDICATORS FOR WETLAND HYDROLOGY

Wetland Hydrology means 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. Refer to Part V, subpart C, paragraphs (5-56) through (5-60), of the FSA Wetland Identification Procedures for further information and allowable variances from the Corps methods.

The saturation indicators as discussed below are indicative of soils having groundwater within 12 inches of the soil surface within the sampling unit. Inundation is defined as the presence of surface water at any depth within in the sampling unit.

The following remote indicators are suggestive (indicates) that the wetland hydrology definition is met:

1. Imagery showing surface water inundation (INU) by ponding or flooding under NC.
2. Imagery showing a Color Tone difference (CT) due to wetness that is reflective of NC that: a) was occurring on the date of the imagery, or b) that occurred previous to the

imagery but the evidence of this wetting event remains evident. A CT is any hydrology signature listed in the remote sensing methods. Color tones provide clear distinctions in the condition of the sampling unit compared to the condition in the surrounding field including, but not limited to, size and color. Color tones include:

- Hydrophytic vegetation
- Saturated conditions
- Stressed crops due to wetness
- Differences in vegetation due to different planting or replanting dates
- Inclusion of wet areas as set-aside or idled land
- Circular or irregular areas of unharvested crops within a harvested field
- Isolated areas that are not farmed with the rest of the field
- Areas of greener vegetation (especially during dry years)

3. Numerical hydrologic analysis methods which calculate that the frequency and duration of saturation and/or inundation meet the Objective Criteria thresholds (below).

Users are advised that sampling units and wetness signatures in field(s)/tract(s) with perennial vegetative cover (such as pasture, rangeland, CRP, and woodland) may not be readily visible. In such cases, ***field verification is required as well***.

Wetland Hydrology (no pre-1985 drainage) Decision Threshold (the factor is met if):

- Wetness signatures are found on at least 50 percent of imagery reviewed. The imagery review will consist of all available normal years starting with the most recent year image going back to 1980 (see Attachment C). Wetness signature abbreviations include INU (Inundation) and CT (Color Tone difference).
    - If a post-1985 conversion (e.g. ditch) is observed then the wetness signature review period will start from the year of conversion and include all available prior year imagery.

- For any numerical analysis method used, the Objective Criteria for wetland hydrology is: 14 or more consecutive days of inundation (flooding or ponding) or saturation (a water table within 12" of the soil surface) during the growing season with a 50% chance annual probability of occurrence.

Wetland Hydrology (with pre-1985 drainage) Decision Threshold (the factor is met if):

- Wetness signatures are found on at least 50 percent of imagery reviewed. All imagery is to be used, regardless of the "slide indicator status." The agency expert must determine Normal Circumstances in consideration of when the manipulation was installed and the best drained condition of the sampling unit. To determine the best drained condition, the agency expert must review imagery years immediately following the approximate manipulation year through 1985 or further, if necessary. The agency expert must consider lack of maintenance (e.g., tile blowout) and recent maintenance when reviewing imagery. Wetness signature abbreviations include INU (Inundation) and CT (Color Tone difference).

- For any numerical analysis method used under Normal Circumstances, the Objective Criteria for wetland hydrology is: 14 or more consecutive days of inundation (flooding or ponding) or saturation (a water table within 12" of the soil surface) during the growing season with a 50% chance annual probability of occurrence.

➢ Document decision on the worksheet and proceed to Step 2.5.

2.5 FINALIZATION OF BASE MAP

The agency expert will analyze the sampling unit Step 2.2, 2.3, and 2.4 worksheet answers:

- If all three factor definition answers are yes (the factors are met) for a sampling unit then record a “Y” (yes) on the base map for the sampling unit.
- If any factor definition answer is no (a factor is not met) for a sampling unit then record an “N” (no) on the base map for the sampling unit.
- Provide a copy of the final base map to the case file.
- This final base map will be used to complete Section 3 and Section 4.

SECTION 3

3.0 FSA WETLAND DETERMINATION PROCESS STEP 2: ASSIGNMENT OF WC LABELS

Sampling units identified as a "Y" (wetland) or "N" (non-wetland) in Section 2 will be assigned the appropriate WC compliance label as determined by any applicable exemptions found in the current version of the NFSAM. **Note:** Unless otherwise stated, the use of "1985" in this document refers to December 23, 1985.

3.1 VERIFICATION OF PRE- 1985 CROPPING HISTORY

The following are suggestive (indicates) that pre-1985 cropping history ("agricultural commodity produced at least once before 1985" (7 CFR 12.2)) is met.

1. Imagery (pre-1985) shows cropping and/or attempted cropping.

2. Imagery (pre-1985) shows woody vegetation removal AND the sampling unit is on a soil and/or landform that historically supported native woody vegetation (e.g. woody vegetation is native to the ESD/OSD).

3. Farm Service Agency records indicate pre-1985 cropping history (crop must have been planted – does not include other records such as prevent plant) and imagery concurs.

Cropping History Decision Threshold (met if):

1. Pre-1985 cropping history appears on at least one remote indicator.

➢ Document decision on the worksheet and proceed to Section 3.2.

3.2 VERIFICATION OF PRE-DECEMBER 23, 1985 MANIPULATION(S)

Manipulations are defined by regulation as an 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) for the purpose of or to have the effect of making possible the production of an agricultural commodity.

Responsibility to provide evidence (7 CFR 12.5(b)(7)) states*, "it is the responsibility of the person seeking an exemption related to converted wetlands under this section **to provide evidence** such as receipts, crop-history data, drawings, plans or similar information, for purposes of determining whether the conversion or other action is exempt in accordance with this section."* **It is not the NRCS' responsibility to search for evidence; rather, it is the NRCS responsibility to see if the producer provided records can be confirmed.**

The following remote indicators are suggestive (indicates) that pre-1985 manipulation(s) could be confirmed.

- 1985 or earlier aerial photography showing a manipulation(s) (NFSAM Part 514).
- Pre-1985 NRCS records showing a verified manipulation(s).
- Pre-1985 land-based photographs showing a manipulation (e.g. tile inlet/outlet)

Pre-1985 Manipulation Decision Threshold (the factor is met if):

1. The manipulation appears on at least one indicator.

➢ Document decision on the worksheet and proceed to the next section.

3.3 VERIFICATION OF POST-1985 POTENTIAL CONVERSION

The following remote indicators are suggestive (indicates) that post-1985 a potential conversion occurred.

- Post-1985 imagery/aerial photography showing a manipulation(s) (NFSAM Part 514). If the manipulation is first visible in 1986 imagery, further investigation is needed to determine whether the manipulation occurred before or after December 23, 1985.
- Post-1985 NRCS or Farm Service Agency records showing a manipulation(s).
- Post-1985 producer provided records showing a manipulation(s).
- Post-1985 land-based photographs showing a manipulation (e.g. tile inlet/outlet)
- United States Geological Survey (USGS) NED 1/9 Arc Second LIDAR data showing a manipulation.

Post-1985 Potential Conversion Decision Threshold (the factor is met if):

1. The manipulation appears on at least one indicator that is not LIDAR.

2. The manipulation appears on LIDAR and a second dated indicator.

- Remember, a site visit is required for potential wetland violations.

➢ Document decision on the worksheet and proceed to the next section.

3.4 VERIFICATION OF POTHOLE OR PLAYA LANDFORM

The following remote indicators are suggestive (indicates) that the site is either a pothole or playa.

For potholes:

1. Imagery and/or land-based photography shows ponding of water or evidence that ponding occurs in a closed topographic depression in a glaciated upland (non-floodplain, non-drainage way) landscape. The term upland follows the concept from the national Soil Survey Handbook (NSSH).

2. LIDAR shows a closed topographic depression in a glaciated upland landscape position.

3. USGS Topographic map or other land survey shows a closed topographic depression in a glaciated upland landscape position.

4. Soil Survey data shows a depression, pothole, or closed topographic depression in a glaciated upland landscape position. Refer to Attachment B for further information.

For playas:

1. Imagery and/or land-based photography shows ponding of water or evidence that ponding occurs in a closed topographic depression in an upland (non-floodplain, non-drainage way) landscape. The term upland follows the concept from the national Soil Survey Handbook (NSSH).

2. LIDAR shows a closed topographic depression in an upland landscape position.

3. USGS Topographic map or other land survey shows a closed topographic depression in an upland landscape position.

4. Soil Survey data shows a depression, playa, or closed topographic depression in an upland landscape position. Refer to Attachment B for further information.

Pothole or Playa Decision Threshold (met if):

1. The landform appears on at least one remote indicator.

➢ Document decision on the worksheet and proceed to the next section.

3.5 VERIFICATION OF CONSECUTIVE LENGTH (DURATION) OF PONDING AND/OR SATURATION DURING THE GROWING SEASON ON DECEMBER 23, 1985 IN MOST YEARS (50% CHANCE OR MORE) - COMPLETE THIS STEP (3.5) ONLY IF A MANIPULATION WAS DOCUMENTED IN STEP 3.2.

The following remote indicators are suggestive (indicates) that the duration required to meet the criteria for a specific WC compliance label is met.

1. 1980 through 1985 Farm Service Agency aerial imagery (taken during the growing season as defined in Part 514.2 of the NFSAM) showing wetness signatures.

2. Any other 1985 or earlier aerial photography such as high altitude black and white photos of suitable scale and quality (taken during the growing season as defined in Part 514.2 of the NFSAM) showing wetness signatures.

3. NRCS record showing field verified manipulation with an assessment of duration such as drainage equations found in NEH Chapter 19.
   - The saturation indicators as discussed below are indicative of soils having groundwater within 12 inches of the soil surface within the sampling unit. Inundation is defined as the presence of surface water at any depth within the sampling unit.

Ponding and/or Saturation duration Decision Threshold (the factor is met if):
Producer provided records indicate the authorized drainage has been maintained and wetness signatures are not the result of lack of maintenance. If no producer provided records then the agency expert is to presume maintenance has been conducted and wetness signatures are valid

For potholes and playas:

1. At least 50 percent of all years with wetness signatures indicating saturation and/or inundation. Wetness signature abbreviations include INU (Inundation) and CT (Color Tone difference).

2. Results of analytical techniques (such as drainage equation(s)) show that saturation would not be removed from the sampling unit within 14 days.

For all other geomorphic settings (landscape positions):

1. At least 50 percent of all years with wetness signatures indicating inundation. Wetness signature abbreviations include INU (Inundation).

2. Results of analytical techniques (such as drainage equation(s)) show that ponding would not be removed from the sampling unit within 15 days.

➢ Document decision on the worksheet and proceed to the next section.

3.6 DETERMINATION OF THE REQUIRED CONDITIONS FOR THE FOLLOWING WC LABELS

Refer to Part 514 of the NFSAM, 7 CFR 12.2 and 7 CFR 12.5 for a full discussion of the requirements for various exemptions. This SOSM specifically will address NW, W, PC, FW, FWP, *CW, and *CW plus year. All other WC compliance label assignments require the use of the NFSAM and possible onsite investigations. The NRCS determined that the WC Label Assignment Table (Table 1.0) will be used to determine if the required conditions for the following WC labels are met.

Table 1.0 Wetland Conservation compliance label matrix.

Step 1			Step 2						
Hydrophytic Vegetation	Hydric Soils	Wetland Hydrology	Pre-1985 Cropping History	Pre 12/23/85 Manipulation	Post 12/23/85 Manipulation	Landform	Ponding Duration	Saturation Duration	WC Label
Y for ALL factors			Y or N	N	N	Any	n/a	n/a	W
			Y	Y	N	Pothole/playa	Y or N	Y	FW
			Y	Y	N	Non-pothole	Y	n/a	FW
			Y	Y	N	Non-pothole	N	n/a	NW
			N	Y	N	Pothole/playa	Y or N	Y	FWP
			N	Y	N	Non-pothole	Y	n/a	FWP
Y	Y	Y or N	Y	Y	N	Pothole/playa	N	N	PC
Y	Y	Y or N	Y	Y	N	Non- Pothole	N	n/a	PC
N[1]	Y	Y	Y	Y	N	Pothole/playa	Y or N	Y	NW
N[1]	Y	Y	Y	Y	N	Non- Pothole	Y or N	n/a	NW
Y for ALL factors			Y or N	Y or N	Y only if 12/23/1985 to 1990	Pothole/playa	Y or N	Y	*CW
			Y or N	Y or N	Y only if 12/23/1985 to 1990	Non- Pothole	Y	n/a	*CW
			Y or N	Y or N	Y (any year)	Pothole/playa	Y or N	Y	*CW[2]
			Y or N	Y or N	Y (any year)	Non-pothole	Y	n/a	*CW[2]
			Y or N	Y or N	Y	Pothole/playa	Y or N	Y	*CW + yr
			Y or N	Y or N	Y	Non- Pothole	Y	n/a	*CW + yr
N for any factor			Y or N	N	N	Any	N	N	NW
			Y or N	N	N	Any	Y	Y	NW
			Y or N	N	N	Any	Y	Y	NW
			Y or N	N	N	Any	N	N	NW
			Y or N	N	N	Any	Y	Y	NW
			Y or N	N	N	Any	N	N	NW

[1] No hydrologic manipulated remote indicator exists (Section 2.2).

[2] If the post-1985 drainage manipulation is completed by an organized Drainage District

*For converted wetlands, an onsite investigation must be conducted and “making production possible or more possible” must be determined.

SECTION 4.0

4.0 FSA WETLAND DETERMINATION PROCESS STEP 3: DETERMINATION OF SIZE AND DEVELOPMENT OF CERTIFIED WETLAND DETERMINATION MAP

4.1 TRANSFERRING BASE MAP SAMPLING UNITS TO WC COMPLIANCE LABELED POLYGONS

The agency expert will, as appropriate, further divide or combine the sampling units identified in Section 2.0 into labeled polygons for the certified wetland determination map. This decision is based on the answers to the steps in Section 3.0 (e.g. pothole/non-pothole, cropping history, manipulation, hydrology duration).

For example, a sampling unit has the following characteristics:

- Step 1 - Meets all 3 factors (e.g., base map = "Y")
- Step 2 - Has pre-1985 cropping history on the west half and no pre-1985 cropping history on the east half (in grass); has a pre-1985 manipulation in it; is a pothole; meets saturation duration.

The sampling unit has different pre-1985 cropping history on the east and west halves, yet all other characteristics (Step 1 and 2 answers) apply to the entire sampling unit. Therefore, the sampling unit should be divided into two labeled polygons for the certified wetland determination map.

The non-wetland polygon will represent the remainder of the project area acres.

4.2 CERTIFIED WETLAND DETERMINATION (CWD) MAP

The agency expert is reminded that size of an area is not part of the wetland criteria; there is no minimum size threshold. The NRCS determined that the labeled polygons on the CWD map are delineated using desktop digitizing methods.

The suggested CWD map size is 1 square mile (section) on a 8.5" by 11" paper. Site number and acres will be labeled on the CWD map. A separate site map, at a higher quality scale, may be provided in addition to the labeled CWD map for clarity.

ATTACHMENT A

ECOLOGICAL SITE DESCRIPTION (ESD) INFORMATION

A matrix correlating soil map unit components to ecological site is available in Section 1, State Offsite Methods, of the SD Field Office Technical Guide (FOTG).

Where to find ESDs:

1. SD FOTG: 1) Select Section II; 2) Select Statewide Soil and Survey Information; 3) Select 2. Rangeland Interpretations; 4) Select a. Ecological Site Descriptions; 5) Select MLRA; 6) Select ESD

2. Web Soil Survey: 1) define area of interest; 2) Select Soils Data Explorer Tab; 3) Select Ecological Site Assessment Tab; 4) Select ESD

3. Ecological Site Description System / ESIS website: http://esis.sc.egov.usda.gov/Welcome/pgReportLocation.aspx?type=ESD

In the event there is no ESD, agency experts may utilize the Range Site Descriptions. Contact the State Rangeland Management Specialist or State Biologist for assistance locating ESDs.

Ecological Site Descriptions and Range Site Descriptions are based on relative weight of component species, rather than the percent cover measure cited in the Corps Methods. Both measures are viable for determining the ecological significance of the species comprising the plant community. Relative weight is arguably a better measure but was not specified in the Corps Methods because it is not a rapid assessment technique. Applying the hydrophytic vegetation indicator tests to the ESD or Range Site data is allowed by the Corps Manual, paragraph 23, flexibility provisions.

ATTACHMENT B

SOILS INFORMATION

The NRCS will use the definition of pothole and the definition of playa as noted below. This definition is subject to change via the rule-making process. However, any change in definition will not change the soils the state considers pothole or playa soils.

1. Pothole – [glacial geology] A type of small pit or closed depression, generally circular or elliptical, occurring in an outwash plain, a recessional moraine, or a till plain; including lake plains**.**
   Note: A closed depression is one that, prior to any anthropogenic drainage, ponded water. Also, generally circular or elliptical does not preclude irregular shapes. Drainage is defined in the FSA Wetland ID procedures.

   In SD, potholes are found east of the Missouri River. Pothole soils include, but are not limited to, the following:

Nishon	26	Rimlap	31	Toko
Oldham	27	Shue	32	Tonka
Overshue	28	Southam	33	Venlo
Parnell	29	Tetonka	34	Worthing
Plankinton	30	Tiffany		

2. Playa - The usually dry and nearly level lake plain that occupies the lowest parts of closed depressions, such as those occurring on intermontane basin floors. Temporary flooding occurs primarily in response to precipitation-runoff events. Playa deposits are fine grained and may or may not have high water table and saline conditions.
   Note: Usually dry means dry in a normal year.

   In SD, playas are found west of the Missouri River. Playa soils include, but are not limited to, the following:

   Dimmick, Heil variant, Hoven Variant, McKenzie, Scott, and Kolls

Where to find Landform and hydric soils:

1. Web Soil Survey: 1) Navigate to your area; 2) Define area of interest; 3) Select Soils Data Explorer Tab; 4) Select Soil Reports Tab; 5) Hydric Soils, then click on View Soil Report

2. Official Soil Series Descriptions: https://soilseries.sc.egov.usda.gov/osdnamequery.asp

ATTACHMENT C

HYDROLOGY INFORMATION

If numerical analysis methods are used, wetland hydrologic conditions will be met in accordance with the criteria outlined below. In all instances, the agency reserves the option to implement techniques not outlined in this SOSM provided the method results in computation of numbers that can be compared to the Objective Criteria.

I. Drainage Equations

Drainage equations can be used for sampling units subject to pre- and/or post-1985 surface and subsurface drainage. The wetland hydrology threshold is met for areas a distance from a drainage feature at which the groundwater table is at or above 12" from the surface for 14 or more consecutive days.

The equation generally used shall be the van Schilfgaarde Equation, although Kirkham's Equation may be necessary for surface ponding. The surface storage factor shall be 0.1", the distance to impermeable layer shall be 10 feet, and the time factor shall be 14 days. Soils data inputs shall be computed using Rosetta software. Rosetta data shall be computed using the "Best Possible Model", and Rosetta inputs shall be obtained from Soil Data Access for the analyzed map units. The NDDrain software shall be used to perform the van Schilfgaarde computations.

For groundwater discharge landscape positions, the lateral effect distance will be tripled (see SD NRCS Hydrology Technical Note Number 4 for further details).

II. Drainmod

Drainmod software can be used for either undrained sites or sites drained by subsurface tiling or surface ditching. The Drainmod model uses daily data for temperature and precipitation. For pre-1985 conditions, the period of record used shall be 1971-2000. For post 1985 drainage conditions, the period of record shall end with the calendar year nearest the conversion date. Soils data requirements are the same as for Drainage Equations.

III. SPAW Model

For Recharge Depressions, the SPAW model can be used to determine the depth, duration, and frequency of ponding. The weather data used for SPAW will consist of at least 20 years of continuous daily rainfall and temperature records from the closest NWS weather station. The model can be used for both pre-and post drainage conditions. For pre-drained conditions, the period of record used shall be 1971-2000. For post drained conditions, the period of record shall end with the calendar year nearest the conversion date. The watershed conditions used for the Field Model shall be based on pre-1985 conditions for pre-drainage analysis. The watershed conditions shall be based on the conditions at the time of drainage for post-1985 conversions.

IV. Flood Inundation Modelling

For landscapes subject to stream flooding, such as riverine landscapes, wetland hydrology can be analyzed based on flooding inundation. Inundation can be analyzed

either by hand computations, or by use of the HEC-EFM (Ecosystem Functions Model). Data inputs for HEC-EFM shall contain at least 20 years of continuous daily mean flow data, but no more than 30. This period of record shall end at the end of the available water year closest to the determination date. The analysis can be used for both pre and post drainage conditions. For pre-1985 conditions, the period of record shall be the longest available continuous record set within the 1971-2000 period. For post 1985 conversions, the period of record shall be the longest available continuous record set ending with the water year closest to the conversion date, but no longer than 30 years.

V. Groundwater Monitoring

For groundwater monitoring, a minimum of 10 years of continuously collected records shall be used, and the records must cover the dates within the wetland growing season for each year. Records on a more than daily time step shall be converted to daily records by straight line interpolation. The daily records shall be used to calculate the 50th percentile of the groundwater depths within 12" of the surface for 14 or more consecutive days during the wetland growing season on an annual basis.

VI. Other

Other numerical analysis methods are appropriate if the method results in computation of numbers that can be compared to the Objective Criteria. These methods can include, but are not limited to, monthly time-step water budgeting, combinations of methods to cover combinations of dynamic flooding, static ponding, and soil saturation, and others.

The State Conservation Engineer **<u>may</u>** approve analysis methods not specifically detailed in this document.

Scenarios for the use of numerical analysis methods are: Normal Conditions and Converted Conditions. The period of record for the Normal Conditions climate factors, as well as other analysis inputs shall be those during the 1971-2000 period. The period of record for the Converted Conditions scenario shall be the period just preceding the conversion date.

For all numerical analysis methods used, the areal extent of inundation and or saturation can be mapped using the best available techniques for topographic mapping. These techniques include, but are not limited to, HEC-RAS, HEC-GeoRAS, and appropriate GIS Spatial Analyst methods.

<u>Development of National Weather Service Climate Station Rainfall Normalization Tables</u>

1. National Weather Service (NWS) Climate Stations are taken from the stations listed in *Monthly Station Normals of Temperature, Precipitation, and Heating and Cooling Degree Days 1971-2000* (NOAA Climatography of the United State Report No. 81) and similar reports for Iowa, Minnesota, Nebraska, North Dakota, and South Dakota.
   - These climate stations meet the criteria set forth by Chapter 19, Part 650 (page 19-24), of the Engineering Field Handbook, **"Determine the climate station nearest to the site that has sufficient records to have had statistical information calculated for it."**
   - These climate stations are reported and maintained with WETS tables through the NRCS National Water and Climate Center in Portland, Oregon.

2. WETS table information is used to complete the Rainfall Normalization Tables (also called Rainfall Data Sheets) developed for each NWS Climate Station utilized in the NWS Climate Station Zone Map.
    - Climate Stations are listed by the Common Name and Station ID.
    - Other information taken from WETS table:
        i. Latitude, Longitude
        ii. County
        iii. Normal Precipitation for March through September for the 1971-2000 year period.
        iv. 30% Bounds (Dry and Wet) for March through September for the 1971-2000 year period.
        v. Actual Precipitation for March through September for all years from 1980 to the current year.
    - Example:
        i. Common Name: Brookings 2 NE
        ii. Station ID: SD1076
        iii. Latitude, Longitude: 4420, 09646 (44.20, -96.46 in Degrees Decimal Minutes)
        iv. Normals and Bounds are reported in inches
        v. Actual Precipitation is reported in inches

3. When data is missing, replacement data is taken from the NWS Climate Station reported in AgACIS WETS tables nearest to the station missing data. The replacement data is clearly identified and referenced on the Rainfall Normalization Table.
    - Example: In March 2007, data was missing for Brookings 2 NE. The Brookings NWS Station (SD1079) was used for this missing data.

4. The NRCS will utilize the official NWS climate station information.
    - The NWS Climate Stations are used for precipitation normalization due to the data quality and the availability of statistical data.
    - If local and NWS station weather data exists, the NWS station data is used.
    - When a climate station no longer collects data or is “discontinued”, a replacement station may be identified for use.

5. The following is the procedure used for the Normalization.
    - Determine 30% lower and upper boundaries for antecedent precipitation for the 3 prior months from the WETS table, and assign antecedent monthly weighting factors.
    - Weighting Factors:
        i. 1st Prior Month = 3
        ii. 2nd Prior Month = 2
        iii. 3rd Prior Month = 1
    - Multiply the actual rainfall for each month by the weighting factor.
    - Sum the totals and compare this with the 30% bounds as multiplied with the weighted factor of the same period.
    - Apply a Normalization tag (Wet, Dry, Normal).

Development of NWS Climate Station Zone Map

1. Each station is located on a map, using its historical Latitude and Longitude as given for the station from 2003 WETS table data.
2. A map of Thiessen Polygons is created from the NWS Climate Station locations so that each station's cell is divided into absolute Thiessen polygons.

Methodology of using Rainfall Normalization Tables

1. Determine the NWS Climate Station (with available slide normalization data) to use for your sampling units.
    - Utilize the most recent NWS Climate Station zone map that is available in SD Technical Guide (SDTG), Section 1, which spatially outlines the area closest to each station as shown in the NWS Climate Station Zone Map, or
    - Utilize the NWS Climate Station Zone layer by overlaying the file over the sites' locations in your GIS platform.
    - If more than one station overlays your sampling unit, choose the predominant station for the sampling unit area.

2. Determine what aerial photographs/images are available.
    - The date (month, year, and day -when available) that the image was captured or processed must be part of the image's record.

3. Review of all aerial imagery is suggested, regardless of whether the months preceding the image are dry, normal, or wet for precipitation.
    - In a dry year, a wetland may have the darkest green color as it has moisture available when surrounding areas don't.
    - In wet years, sampling units may drown out, may not be cropped, or may have standing water.
    - These help the user locate all sampling units so that each can be examined for possible wetness signatures.
    - Generally, only images taken during the growing season are used. Using professional judgment, and following applicable SOSM, a dataset of available slides is compiled.

4. Using the known or estimated date of the images, determine the "Normal" years based on the Rainfall Data Sheets for the selected NWS Climate Station for your sampling units.
    - ***Select all available normal years starting with the most current year that both imagery and normalization are available, back to 1980.***
    - If at least 5 normal years are not available, going back to 1980, then add an equal number of wet and dry years until a minimum of five years are obtained. Select wet and dry years that are nearest to the normal range. Do not select wet and dry years that are extremes.

The normal years are determined by applying the flight month and year to obtain the slides that have a slide indicator status of "NORM" or normal. Typically, the previous 3 months before the month of the slide flight are used to categorize the slide; however, if the slide was

flown late in the month (e.g., July 22 or later), the month of the flight should be used as one of 3 previous months.

- For example, if a photo was taken on **July 1** then April, May, and June are the 3 prior months that will be used. Therefore, **select July from the Slide Indicator Status** heading of the appropriate rainfall data sheet file because July uses the precipitation from the three previous months of April, May, and June.
- For example, if the slide was flown on **July 22 or later;** then May, June, and July are the 3 previous months that are used. Therefore, select **August from the Slide Indicator Status** heading of the appropriate rainfall data sheet file because August uses the precipitation from the three previous months of May, June, and July

5. Prepare a Remotely Sensed Data form of normal years.
   - Indicate the year, month, and day (if available) of the imagery that has been selected for evaluation on the form.
   - Review the imagery, and record the observed wetness signature using the codes provided on the form.
   - Absence of a wetness signature can be noted with a dash.

6. Determine sampling unit hydrology.
   - Count the number of wetness signatures observed for each sampling unit.
   - Divide that total by the number of years reviewed to obtain a ratio or percentage.
   - Record the ratio or percentage on the form.