



DESIGN AND IMPLEMENTATION ACTIVITY

Soil Health Management

DEFINITION

Develop site specific recommendations and designs for soil health related practices that address the 4 principles of soil health as identified in CPA 116 or a conservation plan.

CRITERIA

General Requirements

A Design and Implementation Activity (DIA) is the planning and designing of a single practice or any combination of structural, vegetative, or land management practices and management activities to treat one or more resource concerns.

The DIA documents the verification of the client's conservation plan, and the development of the implementation requirements or plans and specifications for each planned conservation practice.

The TSP will complete Implementation Requirements for vegetative and land management practices as outlined in each state adopted Conservation Practice Standard (CPS) and Statement of Work (SOW) found in the Natural Resources Conservation Service (NRCS) Field Office Technical Guide for the state in which the practices are being implemented.

The TSP will maintain an ongoing record of DIA related discussions with the client. The TSP will document on a conservation assistance notes form (CPA-6) or other format that includes all components of the CPA-6 (client objectives, dates of assistance, all parties present, notes of significant information, alternatives considered, and decisions reached). Any correspondence between the TSP and the client related to the development of the DIA will be included in the record.

The TSP may use any of the Conservation Practice Documents, such as Job Sheets, templates, Standard Detail Drawings, etc. located in the state's Field Office Technical Guide.

This activity includes designing and implementing a system of conservation practices that follow the 4 principles of soil health:

- 1. Minimize soil disturbance** by implementing conservation practices such as reducing tillage, managing irrigation, controlling traffic, prescribed grazing, integrated pest management to improve soil structure and water infiltration, reduce aggregate breakdown, and protect soil organism habitat and organic matter.
- 2. Maximize soil cover** by implementing conservation practices such as using cover crops and surface residue management to reduce nutrient runoff, buffer soil temperature, reduce evaporation, reduce erosion, reduce aggregate breakdown, protect soil organic matter, and provide habitat for biological organisms.
- 3. Maximize biodiversity** using diverse crop rotations, application of soil carbon

amendments, multi-species cover crops, and livestock to improve nutrient cycling, break disease cycles, and stimulate below ground activity.

- 4. Maximize living roots** by implementing conservation practices such as using cover crops, crop rotations, and perennial crops to maximize time periods of active growth throughout the year that provide soil biota a continuous food source.

The activity will meet the NRCS planning criteria for one or more of the following resource concerns:

- Soil organic matter depletion
- Soil compaction
- Soil organism habitat loss or degradation
- Aggregate instability
- Concentration of salts or other chemicals
- Plant productivity and health
- Wind erosion
- Sediment transported to surface water
- Sheet and rill erosion
- Naturally available moisture use

The activity will meet the state adopted NRCS Conservation Practice Standards (CPS) and Statements of Work (SOW) included in the client's conservation plan or EQIP Contract and include a combination of the following primary practices and activities that address all four principles of Soil Health:

Code	Primary Practice or Activity
216	Soil Testing
327	Conservation Cover
328	Conservation Crop Rotation
329	Residue and Tillage Management, No-Till
334	Controlled Traffic Farming
340	Cover Crop
345	Residue and Tillage Management, Reduced-Till
484	Mulching
449	Irrigation Water Management
512	Forage and Biomass Planting
528	Prescribed Grazing
550	Range Planting
590	Nutrient Management
595	Pest Management Conservation System
610	Salinity & Sodic Soil Management
808	Soil Carbon Amendment

The Activity includes developing implementation requirements for practices that can be used to enable the transition to a full-scale Soil Health Management System.

Supporting practices may be designed with primary practices over a transition period to provide the necessary means toward improved soil health.

Code	Supporting Practice
314	Brush Management
315	Herbaceous Weed Treatment
324	Deep Tillage
330	Contour Farming
333	Amending Soil Properties with Gypsum Products
338	Prescribed Burning
342	Critical Area Planting
382	Fence
394	Firebreak
516	Pipeline
548	Grazing Land Mechanical Treatment
561	Heavy Use Area Protection
574	Spring Development
575	Animal Trails and Walkways
580	Streambank and Shoreline Protection
614	Watering Facility
642	Water Well

Technical Requirements

Ensure that all activities and deliverables from CPA 116 or conservation plan have been completed. If not, revise and update the Soil Health Management Plan using the following components:

1. Client interview and documentation of objectives completed under the Soil Health Management Plan Conservation Planning Activity 116 or conservation plan. Objectives may include:
 - a. Improve soil health
 - b. Improve plant vigor, quality, or yield
 - c. Increase water infiltration and storage
 - d. Prevent or reduce erosion
 - e. Improve nutrient cycling and reduce off-farm inputs
 - f. Improve production cost efficiency
 - g. Sequester carbon
 - h. Increase system resilience
 - i. Others as appropriate

2. Inventory of resources completed under the Soil Health Management Plan Conservation Planning Activity 116 or conservation plan, including:
 - a. Crops grown, and planned rotation by field
 - b. Tillage, planting, weed management and harvest equipment used
 - c. Soil amendments used (e.g. compost, manure, biosolids, gypsum, lime, etc.)
 - d. Typical nutrient program including forms, rates and timing of applications
 - e. Typical pesticides used
 - f. Kind/class of livestock and number,
 - g. Cover crop use, including species, and planting and termination methods
 - h. Soil water management concerns (i.e. field too wet or too dry at planting)
 - i. Soil maps and descriptions, to include:
 - i. Map unit and texture
 - ii. Drainage class and hydrologic soil group
 - iii. Ecological site and forage suitability group (when applicable)
 - iv. Soil health properties and interpretations (where appropriate)
 - j. Calculations from current erosion prediction technology used to include estimates of SCI and STIR
3. Assessment of resource concerns using State approved tools for the appropriate land use completed under the Soil Health Management Plan Conservation Planning Activity 116, or conservation plan, such as:
 - a. Soil Testing 216 Conservation Evaluation and Monitoring Activity
 - b. In-Field Soil Health Assessment for Cropland
 - c. Pasture Condition Score Sheet
 - d. Interpreting Indicators of Rangeland Health reference sheet
4. Evaluations
 - a. Planned cropping system rotations - by Soil Health Management Unit (SHMU)
 - b. Soil Erosion Prediction with SCI and STIR – using current technology
 - c. WIN-PST evaluation
 - d. Cover Crop utilization narrative for operation and each SHMU
 - e. In-Field Soil Health Assessment for Cropland for each SHMU, as applicable
 - f. Pasture Condition Score Sheet for each SHMU, as applicable
 - g. Interpreting Indicators of Rangeland Health reference sheet for each SHMU, as applicable
 - h. Soil Test Results- soil health, fertility, etc., as applicable
5. Soil Health Management Strategy
 - a. Narrative description of the goals of the plan, to be based on evaluations and to incorporate monitoring
 - b. Required practices with a narrative description and implementation requirements as defined by the state
 - c. Supporting practices with a narrative description and implementation requirements as defined by the state- only agreed to practices will be included in plan.
6. Resources
 - a. Producer interview template
 - b. Cropland In-Field Soil Health Assessment Worksheet
 - c. Pasture Condition Score Sheets
 - d. Interpreting Indicators of Rangeland Health
 - e. Technical Note 450-06
 - f. WIN-PST Website
 - g. RUSLE2 Website

- h. WEPS Website
- i. Soil Quality Technical Notes

Definitions

Soil health is the continued capacity for soil to function as a vital living ecosystem to support plants, animals, and humans.

Soil Health Management System (SHMS) is a collection of NRCS conservation practices that focuses on maintaining or enhancing soil health by addressing four soil health management principles: minimize disturbance, maximize soil cover, maximize biodiversity and maximize the presence of living roots.

Soil Health Management Unit (SHMU) is one or more planning land units with similar soil type, land use, and management that can vary in size or acreage depending on soil texture, topography, and cropping system. SHMU is like a conservation management unit but designed to assess soil health status and potential limitations on soil health indicators.

DELIVERABLES

Two copies (hardcopy or electronic) of the plan must be developed—one for the client and one for the NRCS field office. At the client's request, Technical Service Provider (TSP) can deliver NRCS's copy to the NRCS Field Office. The client's copy must include the implementation requirements or plans, specifications, operation and maintenance, and quality assurance plan, unless the client requests other documents from this section. The NRCS copy must include all items identified herein. An additional electronic copy of the plan should also be uploaded on NRCS Registry.

1. Cover Page

Cover page reporting the technical services provided by the TSP. Cover page(s) must include the following:

- a. Client information: Name, farm bill program, contract number, and contract item number.
- b. TSP information: name, address, phone number, email, TSP number, TSP expiration date; and county of service.
- c. Farm identification:
 - i. Farm name, owner name, street address, and county/state.
 - ii. Primary phone number of the client.
- d. Statement by TSP that services provided:
 - i. Comply with all applicable Federal, State, Tribal, and local laws and requirements.
 - ii. Meet applicable NRCS standards, specifications, and program requirements.
 - iii. Are consistent with the conservation program goals and objectives for which the program contract was entered into by the client.
 - iv. Incorporate alternatives that are both cost effective and appropriate to address the resource issues.

- v. Include the date and name of the TSP that developed the Soil Health Management Plan Conservation Planning Activity 116 or conservation plan upon which this DIA is based.
- e. TSP certification statement: signature and date.
- f. Client acceptance statement:
 - i. A statement that the plans and specifications adequately represent existing conditions and the selected preliminary design alternatives, and the client understands and will abide with the operation and maintenance plans.
 - ii. Signature of the client and date the client received the plans.
- g. Block for NRCS reviewer acceptance (to be completed by NRCS).

2. Conservation Assistance Notes and Correspondence

- a. Conservation Assistance Notes (NRCS-CPA-6) or other format that includes all components of the CPA-6.
 - i. Document the client's objectives.
 - ii. Document each interaction with the client, include notes and results of that interaction, date, and initials of the TSP.
 - iii. Document each site visit, activity in the field, results of each site visit, all parties present, date, and initials of the TSP.
- b. Any correspondence between the TSP and the client relating to the development of the DIA.

3. Maps

- a. Maps to include, but not be limited to:
 - i. General location map of the implementation areas showing access roads to the location
 - ii. Conservation Plan map may consist of several maps to account for the entire implementation area and must identify the Soil Health Management Units SHMU grouping of Farms/Tracts/Fields included in the SHMP, with boundaries
 - iii. Sensitive/Critical Areas Map with narrative description
 - iv. Soil map units identified by field or SHMU and interpretations or soil properties as defined by the state including drainage class and hydrologic group, ecological site and forage suitability group, soil health properties and interpretations
 - v. Other maps, as needed, with appropriate interpretations.
- b. At a minimum, all maps developed for the DIA will include:
 - i. Title block showing:
 - Map title.
 - Client's name (individual or business).
 - Prepared with assistance from USDA – NRCS
 - Assisted By [TSP planner's name].
 - Name of applicable conservation district, county, and State.
 - Date prepared.
 - ii. Map scale.

- iii. Information needed to locate the implementation area, such as geographic coordinates, public land survey coordinates, etc.
- iv. North arrow.
- v. Appropriate map symbols and a map symbol legend on the map or as an attachment.

4. Planning

- a. Include reference to and update when needed, the client's conservation plan with each of the following parts:
 - i. Existing conservation practices by field or Soil Health Management Unit (SHMU)
 - ii. Operation equipment inventory
 - iii. Soil maps and reports as described in Item 3, above
 - iv. Nutrient strategies by crop rotation
 - v. Pest Management Strategy (PAMS narrative and pesticides typically utilized in operation with EPA registration #), as applicable
 - vi. Soil amendments used in the operation by field or SHMU, as applicable
 - vii. Livestock utilized in the operation and applicable management details, as applicable
- b. Include a record of the alternatives developed in the conservation plan (a minimum of two alternatives must be developed).
- c. Include a record of the preferred alternative for practice, which includes:
 - i. SHMU label (name, number, or both).
 - ii. NRCS practice name and code.
 - iii. Amount to be applied.
 - iv. Brief description of the planned practice (practice narrative).
 - v. Date the planned practice is scheduled to be implemented.
 - vi. As needed, applicable "Conservation Practice Overview" sheets or other prepared material.
 - vii. Operation and maintenance agreements and procedures.
 - viii. Available maps, sketches, and designs resulting from the planning process that will be useful to the client in implementing the plan.

5. Documentation

Provide documentation of:

- a. Soil Health Management Plan Strategy that includes a written description of the goals of plan.
- b. Laboratory results of soil health testing, as applicable, and why they support the need for the conservation plan and planned practices.
- c. In-field soil health assessment or other appropriate assessment results, as applicable.
- d. Other tools used to assess resource concerns.
- e. Each designed conservation practice, details, location, and timing.
- f. Include all documentation associated with Technical Requirements section or reference to the completed CPA 116.

6. Implementation Requirements

- a. Develop written Implementation Requirements for each planned (non-engineering) conservation practice included in the preferred alternative, including facilitating practices.

- i. Include, as a minimum, all items listed in each CPS “Plans and Specifications” section.
 - ii. Include both visual / photographic and narrative descriptions of the work. Provide descriptive information on the quality of the completed work and the quantities of all materials and labor required for completion of the work.
 - iii. Describe the standards for final project approval and certification for each contract identification number.
 - iv. A location map, plan view and written information are required. These items may be included in a single document where all specification information is included on the plans, or in multiple documents where the specifications are independent of the plans.
- b. Prepare an operation and maintenance plan for each design that the client will use after implementation of the practices are complete.
- i. Include, as a minimum, all items listed in each CPS “Operation and Maintenance” section.

References

USDA Natural Resources Conservation Service. Field Office Technical Guide.

<https://efotg.sc.egov.usda.gov/#/>

USDA Natural Resources Conservation Service. National TSP Website.

<https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/technical/tsp/>

USDA Natural Resources Conservation Service. National TSP Resources.

<https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/programs/technical/tsp/?cid=nrcseprd1417414>

USDA Natural Resources Conservation Service. Soil Health Technical Note 450-04