



# Technical Approval Authority

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## *SWCD Inventory and Survey Findings*

In early 2012, BWSR conducted an inventory and survey of Minnesota Soil and Water Conservation Districts regarding Technical Approval Authority (TAA), the findings of which are presented in this report.

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## Executive Summary

### Background and Need

Technical Approval Authority (TAA) is a technical credentialing system used by the Natural Resources Conservation Service (NRCS), Soil and Water Conservation Districts (SWCDs) and the Board of Water and Soil Resources (BWSR) to enable more staff to independently provide technical assistance for conservation practices.

Anecdotal evidence suggests that over the last decade or so, SWCD and NRCS field office skills for programs and administration have increased while technical/engineering skills have decreased. Clean Water Fund grant programs require grantees to demonstrate technical qualifications, of which TAA can be a key measure for SWCD staff. MN NRCS leadership has committed to increasing the technical skills of NRCS field office staff, and in early 2011 began training pursuits designed to increase technical skills. BWSR helped coordinate SWCD staff participation in those efforts. While BWSR had received requests from some SWCD staff interested in increasing their TAA, up until now no one had benchmarked the current TAA levels or the commitment to increasing TAA for specific priority conservation practices. No one maintains a statewide list of SWCD staff TAA. As a result, BWSR did not have a solid understanding of overall SWCD TAA levels and use or interest among the districts for increasing TAA.

### Purpose

The purpose of this project was to inventory the TAA levels of all SWCD staff in Minnesota and to determine the interest and commitment of SWCD offices to increasing TAA for priority conservation practices. Beneficial results of the TAA inventory and survey include:

- benchmarking current TAA levels
- demonstrating the capacity and expertise of SWCD staff
- identifying TAA use and gaps
- supporting BWSR staff (especially Board Conservationists and Clean Water Specialists) in easily identifying technical qualifications associated with implementation of certain grant funds (such as Cost-Share and Clean Water Funds)
- helping to coordinate and prioritize future training to increase TAA, and
- serving as a tool to measure and report change over time.

BWSR staff implemented a survey and inventory in the beginning of 2012 to record TAA levels as of the end of calendar year 2011.

## Inventory Findings

Of the 90 Soil and Water Conservation Districts in Minnesota, 82 SWCDs completed the 2011 TAA inventory by March 12, 2012.

### *TAA Inventory Numbers*

<b>Reported Data</b>	<b>#</b>
Reporting SWCDs	82
SWCDs with Engineering TAA	51
SWCDs with Eco Science TAA	64
Staff with at least 1 Engineering TAA	89
Staff with at least 1 Eco Science TAA	131

### *Most Common Conservation Practice TAA, by MASWCD / Technical Services Area*

<b>MASWCD Area</b>	<b>Engineering</b>	<b>Ecological Science</b>
1	Grassed Waterway (412)	Tree Planting (612)
2	Grassed Waterway (412) Wetland Restoration (657)	Conservation Cover (327) Critical Area Planting (342) Filter Strip (393) Tree Planting (612)
3	Well Decommissioning (351)	Riparian Forest Buffer (391) Tree Planting (612) Upland Wildlife Habitat Mgt. (645) Windbreak / Shelterbelt Estab. (380)
4	Underground Outlet (620) Water & Sediment Control Basin (638) Wetland Restoration (657)	Critical Area Planting (342)
5	Grassed Waterway (412)	Conservation Cover (327) Upland Wildlife Habitat Mgt. (645) Windbreak / Shelterbelt Estab. (380)
6	Diversion (362) Grassed Waterway (412) Underground Outlet (620) Water & Sediment Control Basin (638)	Critical Area Planting (342) Tree Planting (612) Windbreak / Shelterbelt Estab. (380)
7	Diversion (362) Grassed Waterway (412) Underground Outlet (620) Water & Sediment Control Basin (638)	Critical Area Planting (342)
8	No Engineering TAA Reported	Critical Area Planting (342) Upland Wildlife Habitat Mgt. (645)

### *MASWCD Area Boundaries*

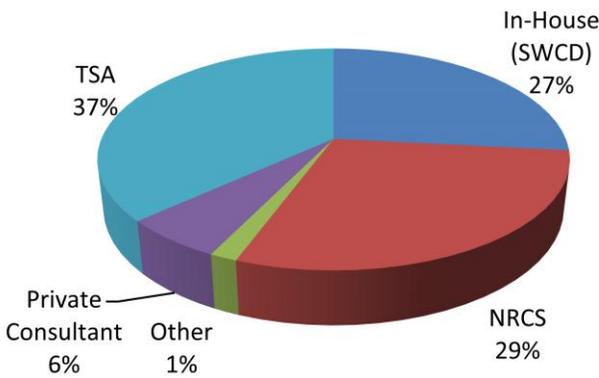


## Survey Findings

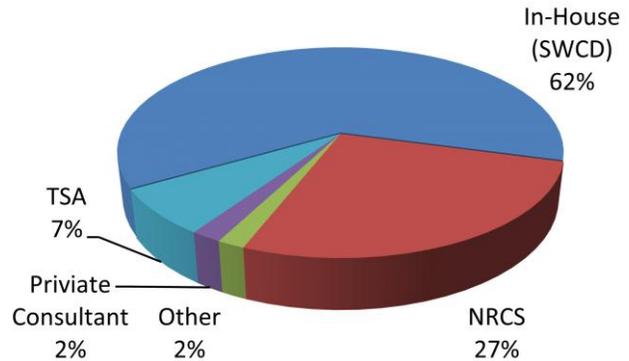
In addition to the inventory of TAA, BWSR wanted to understand SWCD interests and priorities for obtaining TAA. Ninety-six percent (96%) of the 82 reporting SWCDs completed the survey.

### *SWCD Self-Reported Technical Assistance Source Estimates for all 2011 Conservation Practices*

#### Engineering Practices

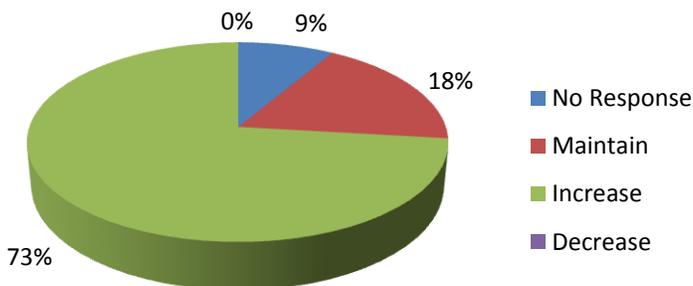


#### Ecological Science Practices



As the figures above illustrate, the SWCDs' self-reported estimates show it is more common for SWCDs to provide their own technical assistance for ecological science practices than for engineering practices. NRCS seems to be providing just over a quarter of all technical assistance, regardless of practice category. These averages also highlight that SWCDs rely much more on Technical Service Area (TSA) engineers and technicians for engineering (rather than for ecological science practice) technical assistance at this time, which should be expected. More information on SWCD self-reported estimates can be found in Section 5 of this report.

#### *SWCD TAA Goals*



SWCDs also have goals to increase their TAA levels. Survey results showed 73% percent of the participating SWCDs indicated a desire to increase TAA.

The SWCDs were also asked to identify any priority practices for increasing staff TAA. The practices most often identified as a priority for increasing staff TAA are shown in the table below.

*Reported priority practices*

<b>Practice</b>	<b># of SWCDs Reporting as a Top Priority to Increase TAA</b>	<b># of SWCDs with TAA</b>	<b># of Staff with TAA</b>
Water & Sediment Control Basin (638)	23	50	88
Wetland Restoration (657)	19	49	91
Grade Stabilization Structure (410)	18	24	38
Streambank Protection (580)	17	25	50
Shoreline Protection (580)	15	12	16
Grassed Waterway (412)	14	54	102
Bioretention Basin (712) *	10	3	7
Terrace (600)	8	45	67
Critical Area Planting (342)	7	59	112
Filter Strip (393)	7	55	100

\*The Bioretention Basin (712) was an interim practice that has been absorbed into other practices.

**Conclusions**

The survey and inventory provided useful information regarding the amount of current SWCD TAA, as well as SWCD commitment and priorities for increasing TAA. The majority (73%) of the SWCDs participating in the survey indicated a desire to increase TAA. Water and Sediment Control Basins, Wetland Restorations and Grade Stabilization Structures were the practices most often identified by the SWCDs as priority training and experience needs for increasing TAA.

The results were less clear in providing information about any actual shortfalls in SWCD TAA or resulting impact to the conservation delivery system. However it is expected that SWCD priorities for TAA reflect local practice priorities and technical assistance needs.

Overall, it appears that TAA status varies significantly between SWCD offices. While the inventory did not explore reasons for these variations they can likely be attributed to regional differences in demand for certain types of conservation practices and TAA, shifting program/staffing focus in field offices, and limited capacity to focus on TAA training in some SWCD offices.

The inventory and survey process pointed to an apparent lack of understanding among some SWCDs regarding the complexities of the TAA system, especially in regard to the purpose and use of ecological sciences practice “planning” TAA levels for engineering practices and their location in the ecological sciences chart. The process also highlighted confusion around the longevity of TAA “certification” for particular practices, the process for periodic review or check-in, or how/if recertification was necessary after a certain period of not using a specific TAA.

Additionally, there appeared to be some confusion regarding how TAA is conferred for specific engineering practices with limiting factors. Some SWCD reported having received different TAA for different phases of

specific practices, while others reported a “lumped” TAA for all phases of practices. These all highlight opportunities for building this knowledge base so that SWCDs can be better informed and better prepared to implement their TAA levels.

## **Recommendations**

Based on the complete results of the survey and inventory, BWSR has the following recommendations.

### **Future Survey/Inventory Recommendations**

- Use this inventory and survey as part of the annual SWCD reporting in eLINK4Web. Maintaining a tracking system for SWCD TAA will help BWSR better understand SWCD capabilities and training priorities and to benchmark changes of SWCD staff capability across Minnesota.
- Design future surveys to gather information about any needs that are not being met by the TAA processes and why. A connection needs to be made between any technical assistance shortages SWCDs might be facing and the TAA process, both for specific practices and engineering versus ecological science practices.
- Design future surveys to retrieve information about current TAA activity and how frequently specific TAA skills are used.
- Investigate the regional differences in technical assistance levels to help prioritize needs (for both TAA and associated training and experience).
- Ask SWCD staff to further articulate specific classroom versus on-the-job experiential learning needs.
- Consult with NRCS to clarify how TAA is conferred for specific engineering practices with limiting factors and adjust future inventories as needed.

### **Training Recommendations**

- Develop and provide a general “TAA 101” training explaining the process for both ecological science and engineering practices, as well as job classes, practice implementation phases and the value of TAA, with input from the NRCS.
- Determine results to date of SWCD participation in the 2011 Grassed Waterways and Water and Sediment Control Basin trainings. Statewide, 20 SWCD staff participated in the classroom training portion for Grassed Waterways and 16 SWCD staff participated in the WASCOPS classroom training. One way to measure success and better understand capacity is to see if SWCD TAA levels for these practices have increased.
- Investigate enhanced mentoring opportunities across SWCD borders and between SWCDs and TSAs for experience that leads to TAA.
- Partner with the NRCS to determine specific trainings for some of the identified priority practices that also meet NRCS priorities, identify opportunities for collaboration on shared trainings, implement training and evaluation to increase SWCD TAA levels in 2013 and beyond.
- Identify synergies to increase on-the-job experiential learning that occurs post-classroom training.

## **TAA Program Recommendations**

- Consult with NRCS regarding consistency of TAA assignment statewide in relation to limiting factors and how demonstrated competence is defined.
- Consult with NRCS to clarify how the process for staying current with TAA works for SWCD staff.
- Explore with the NRCS opportunities for Construction Inspection TAA for multiple practices where the skill set is the same or very similar.
- Work with the NRCS to identify how BWSR engineers can recommend engineering TAA for BWSR technicians and SWCD TSA engineers can recommend engineering TAA for SWCD technicians.
- Disseminate this report and applicable information to SWCDs, MASWCD, BWSR and NRCS staff and to highlight immediate opportunities for collaboration and shared services. Track any outcomes of this work.

## I. Project Context

### Background

Technical Approval Authority (TAA) is a technical credentialing system used by the Natural Resources Conservation Service (NRCS), Soil and Water Conservation Districts (SWCDs) and the Board of Water and Soil Resources (BWSR) to enable more staff to independently provide technical assistance for conservation practices, and as a component of quality assurance processes.

The TAA system applies to both ecological science and engineering practices and is based on three criteria: 1) training; 2) experience, and; 3) demonstrated competence. Training and experience can include classroom, online and on-the-job formats, as available and applicable for different conservation practices. Demonstrated competence involves technical supervision and review by someone with TAA until a person demonstrates adequate qualifications for TAA. BWSR uses TAA as a measure of SWCD staff capabilities to plan, design, install and provide technical sign-off of conservation practices for the State Cost Share program and Clean Water Fund programs. The TAA system is an important component of the conservation partnership of NRCS, BWSR and SWCDs.

### Need

Anecdotal evidence suggests that over the last decade or so, SWCD and NRCS field office skills for programs and administration have increased while technical/engineering skills have decreased. The conservation delivery system in Minnesota is critical for the success of numerous federal and state programs targeting conservation on private lands and associated water quality restoration and protection. Clean Water Fund grant programs require grantees to demonstrate technical qualifications, of which TAA can be a key measure for SWCD staff. MN NRCS leadership has committed to increasing the technical skills of NRCS field office staff, and in early 2011 began training pursuits designed to increase field office technical skills. BWSR helped coordinate SWCD staff participation in those efforts. While BWSR had received requests from some SWCD staff interested in increasing their TAA, up until now no one had benchmarked the current TAA levels or the commitment to increasing TAA for specific priority conservation practices (such as grassed waterways or water and sediment control basins). Additionally, no one maintains a statewide list of SWCD staff TAA. As a result, BWSR did not have a solid understanding of overall SWCD TAA levels and use, or interest among the districts for increasing TAA.

### Purpose

The purpose of this project was to inventory the TAA levels of all SWCD staff in Minnesota and determine the interest and commitment of SWCD offices to increasing TAA for priority conservation practices. Beneficial results of the TAA inventory and survey include:

- benchmarking current TAA levels,
- demonstrating the capacity and expertise of SWCD staff,
- identifying TAA use and gaps,
- supporting BWSR staff (especially Board Conservationists and Clean Water Specialists) in easily identifying technical qualifications associated with implementation of certain grant funds (such as Cost-Share and Clean Water Funds),

- helping to coordinate and prioritize future training to increase TAA, and
- serving as a tool to measure and report change over time.

BWSR staff implemented an inventory and survey in the winter of 2012 to record TAA levels as of the end of calendar year 2011. Additional details about the project process are available in Appendix 1, page 26.

This report documents findings and recommendations for next steps.

## II. Technical Approval Authority Process for Engineering Practices

The process for Technical Approval Authority is different for ecological science and engineering practices. Engineering TAA uses three (3) phases of practice implementation (Inventory and Evaluation; Design; and Construction) and five (5) job classes (I – V, lowest to highest). The system categorizes scale and complexity, as well as defines the associated level of TAA for each of the three (3) phases of practice implementation.

The practice of engineering is regulated in Minnesota by the Board of Architecture, Engineering, Land Surveying, Landscape Architecture, Geoscience and Interior Design (referred to herein as the Registration Board). The Registration Board has determined that "the responsible professional engineer" (for NRCS the State Conservation Engineer (SCE)) must determine if "the design of a non-hazardous project constitutes the practice of engineering." If it does, the design of that project may only be approved by a professional engineer or a qualified federal employee working within the scope of their employment. All practices marked with an asterisk on the Engineering Technical Approval Authority chart (see Appendix 2, page 27) have been determined by the SCE to constitute professional engineering practice. In certain circumstances, complicating factors may cause other work to be considered professional engineering practice as well.

What this licensure requirement means in terms of the TAA system is that with the exception of federal engineers working within the scope of their employment, the practice of professional engineering requires state licensure. As a result, technicians cannot supervise or sign off on job classes of practices that are determined to be the practice of professional engineering. The following is an excerpt from the Engineering TAA Charts:

**Table 1: Engineering TAA Chart Example**

Practice Code	Practice Name	Limiting Factors	Units	Job Class					Maximum Approval Authority		
				I	II	III	IV	V	I & E	Design	Construction
412	Grassed Waterway	Capacity	cfs	25	50	100	200	500*	I to V	I to V	I to V

This example illustrates the different job classes and TAA levels. For example, if an SWCD technician had a TAA level II for Design, he or she would be able to design and approve grassed waterways handling up to 50 cubic feet per second (cfs) of water (as designed in accordance with the 412 practice standard). In this example, an engineering technician can achieve TAA for up to job class IV.

While there is a professional engineer licensure requirement for a number of engineering practices, there are many practices for which SWCD technicians are eligible to achieve Technical Approval Authority. The methods and extent to which TAA is assigned are outlined below.

**Delegation of Engineering TAA by NRCS to Soil and Water Conservation District (SWCD) or Technical Service Area (TSA) Technicians**

- TAA will be recommended by the NRCS Area Engineer on worksheet MN-ENG-013 upon request by the SWCD or TSA Board. The Area Engineer will obtain input from others as appropriate.
- TAA for SWCD employees who are not licensed professional engineers may only include Class I thru V practices which are not considered professional engineering practice.
- TAA for SWCD employees will be assigned by the SWCD Board.
- If the SWCD Board does not agree with the recommended TAA, they can forward an appeal to the Minnesota Board of Water and Soil Resources Chief Engineer and NRCS State Conservation Engineer for review.
- Employees must sign the TAA ethics statement on worksheet MN-ENG-013 before the approval authority is valid.
- Other public agency or non-profit employees operating under agreement with the NRCS may receive TAA under this same process.

**III. Technical Approval Authority Process for Ecological Science**

Ecological Science TAA uses two (2) phases of practice implementation (Practice Planning; and Practice Design, Application and Compliance) and three (3) approval levels (A, B, or C, highest to lowest). Ecological science TAA is applied to both ecological science practices, as well as to the ecological science planning aspects of engineering practices. Table 2 shows an example of the Ecological Science TAA chart. The complete Ecological Science TAA chart can be found in Appendix 3, page 38.

*Table 2: Ecological Science TAA Chart Example*

Practice Code	Practice Name	Approval Level	Approval Level	Comments
		Practice Planning	Practice Design, Application and Compliance	
311	Alley Cropping	A, B, or C	A, B, or C	

Under the TAA program a Technician can have TAA for both phases of practice implementation. In addition, many Engineering practices also have an ecological science planning component. As a result, it is possible that a technician may be delegated TAA for just the ecological science planning component, but not the engineering practice itself. For example, a Technician may have TAA for the vegetation planning component of a grassed waterway, but not the I&E, design or construction aspects of the project.

Information regarding the delegation of Ecological Science Technical Approval Authority is outlined below.

**Delegation of Ecological Sciences TAA by NRCS to SWCD or TSA Employees**

1. Supervisors shall work with their employees to arrange for an assignment of Technical Approval Authority for Ecological Science Practices.
  - a) For SWCD employees, TAA ratings shall be recommended by the SWCD Manager to the NRCS District Conservationist. The District Conservationist will review the recommendations and provide additional information as needed to the NRCS Area Resource Conservationist who will delegate the appropriate TAA rating. The SWCD board must concur with TAA ratings for SWCD employees.

Note: SWCDs performing reimbursable work through contribution agreements as TSPs must have employees with the appropriate TAA.

- b) Private vendors are not given TAA ratings – they can be certified as Technical Service Providers (TSP) on the NRCS TechReg web site.
- c) Each person rated and accepting TAA shall review and sign the Ecological Sciences TAA delegation and acceptance form, which includes an ethics statement, after the ratings are approved.
- d) Ecological Science TAA shall be reviewed annually and updated as needed.

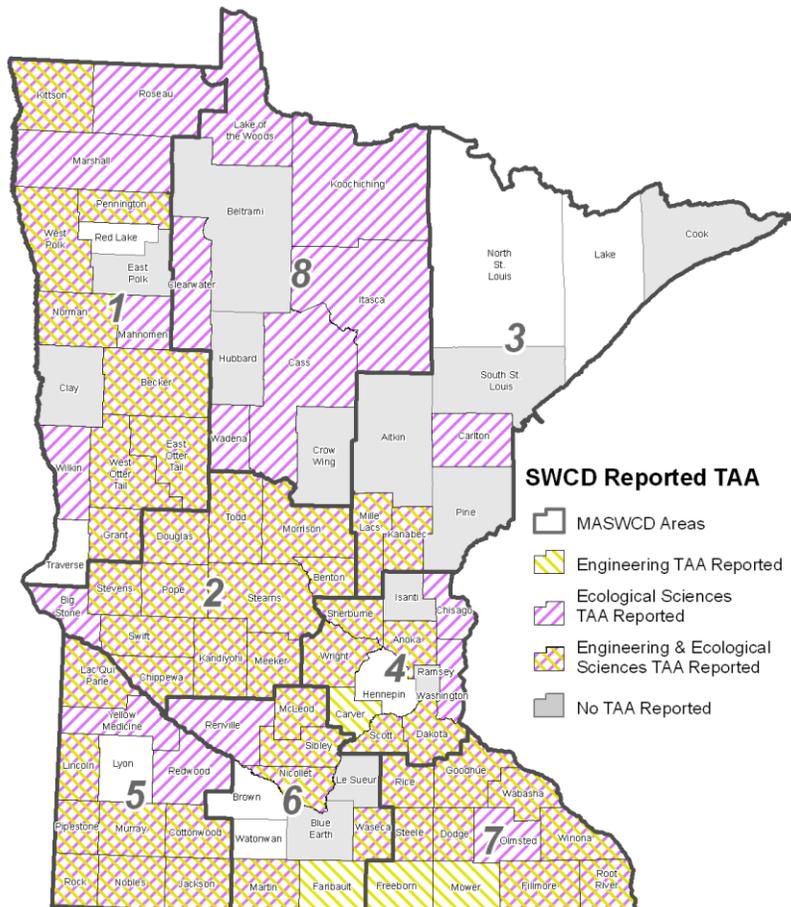
## IV. Inventory Findings

Of the 90 Soil and Water Conservation Districts in Minnesota, 82 SWCDs completed the 2011 TAA inventory by March 12, 2012. All data received by this date is included in this report. For an alphabetical listing of participating SWCDs, please see Appendix 4, page 47.

**Table 3: TAA Inventory Numbers**

Reported Data	%	#	notes
Reporting SWCDs	91%	82	Of the 90 SWCDs
SWCDs with Engineering TAA	62%	51	Of the 82 reporting SWCDs
SWCDs with Eco Science TAA	78%	64	Of the 82 reporting SWCDs
Staff with at least 1 Engineering TAA	--	89	
Staff with at least 1 Eco Science TAA	--	131	

**Figure 1: SWCDs Reporting TAA**



**Table 4: Inventory of Most Common Engineering Practices**

The five most common engineering practices for which SWCD staff have some level of TAA are:

	<b>Conservation Practice</b>	<b># of Staff reporting TAA</b>	<b># of Districts</b>
1.	Grassed Waterway (412)	72	45
2.	Water & Sediment Control Basin (638)	69	43
3.	Underground Outlet (620)	67	42
4.	Subsurface Drain (606)	60	39
5.	Diversion (362)	58	40

**Table 5: Inventory of Most Common Ecological Science Practices**

The five most common ecological science practices for which SWCD staff have some level of TAA are:

	<b>Conservation Practice</b>	<b># of Staff reporting TAA</b>	<b># of Districts</b>
1.	Windbreak / Shelterbelt Estab. (380)	113	63
2.	Tree Planting (612)	113	62
3.	Critical Area Planting (342)	112	59
4.	Upland Wildlife Habitat Mgt. (645)	107	58
5.	Conservation Cover (327)	104	56

**Table 6: Most Common Conservation Practice TAA, by MASWCD / Technical Services Area**

<b>MASWCD Area</b>	<b>Engineering</b>	<b>Ecological Science</b>
1	Grassed Waterway (412)	Tree Planting (612)
2	Grassed Waterway (412) Wetland Restoration (657)	Conservation Cover (327) Critical Area Planting (342) Filter Strip (393) Tree Planting (612)
3	Well Decommissioning (351)	Riparian Forest Buffer (391) Tree Planting (612) Upland Wildlife Habitat Mgt. (645) Windbreak / Shelterbelt Estab. (380)
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7	Diversion (362) Grassed Waterway (412) Underground Outlet (620) Water & Sediment Control Basin (638)	Critical Area Planting (342)
8	No Engineering TAA Reported	Critical Area Planting (342) Upland Wildlife Habitat Mgt. (645)

**Figure 2: MASWCD Area Boundaries**



**Total Practice Types Reported**

- Engineering: 49
- Ecological Science: 111

If multiple practices are listed, it signifies an equal number staff reports, by area. For a complete list of the conservations practices for which SWCD staff have TAA, please see Appendix 6 on page 53.

Across all engineering practices, SWCDs reported a median job class of “2” for I & E, “1” for Design, and “2” for Construction, meaning most SWCD staff with TAA only have achieved the first or second job class level. This is not unexpected because the higher job classes for many practices are considered the practice of professional engineering, and technicians cannot achieve TAA for the practice of professional engineering. However, for a number of key engineering practices (e.g. grassed waterway, terrace, and water and sediment control basin) the practice of engineering begins at job class IV or V, so technicians can achieve TAA up to job class III or IV for these practices.

## **Practices without TAA**

None of the 82 SWCDs participating in the inventory indicated TAA for the engineering practices listed below. While no explanation was identified through the inventory, there are a number of known or plausible reasons for this. Some of the engineering practices are considered to be the practice of professional engineering for all job classes and, therefore, SWCD technicians are ineligible to receive TAA for these practices. SWCDs may look to their Technical Services engineers and/or NRCS for technical assistance for some of the practices. Finally, TechReg certified TSPs may be looked to for technical assistance for newer practices such as Practice 554 Drainage Water Management.

## **Engineering:**

### Engineering Practices eligible for SWCD TAA but not Reported

- Channel Bed Stabilization (584)
- Drainage Water Mgmt (554)
- Sinkhole Area Treatment (527)
- Spring Development (574)
- Stream Crossing (578)
- Waste Transfer (634)
- Waste Treatment (629)

### Professional Engineering Only Practices; not eligible for TAA

- Anaerobic Digester (366)
- Animal Mortality Facility (316)
- Composting Facility (317)
- Dry Hydrant (432)
- Obstruction Removal (500)
- Roofs and Covers (367)
- Vegetated Treatment Area (635)
- Waste Storage Facility (313)

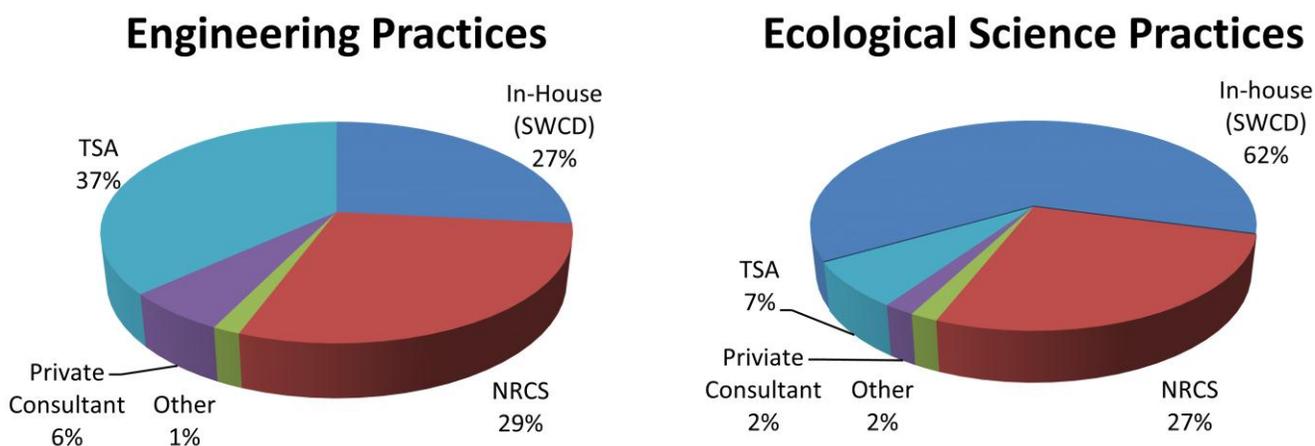
## V. Survey Findings

In addition to the inventory of TAA, BWSR wanted to understand SWCD interests and priorities for obtaining TAA. The survey consisted of six questions and a comments section (see Appendix 7 on page 57). SWCD offices could complete one survey per office (not by staff person) to better represent their overall interest in and commitment to TAA. Ninety-six percent (96%) of the 82 reporting SWCDs completed the survey. A summary of the survey data follows.

### SWCD 2011 Estimates of Technical Assistance Sources for Engineering and Ecological Science Practices.

The first survey question asked SWCDs to consider the technical assistance used for all 2011 conservation practices (both engineering and ecological science practices), then estimate the sources of technical assistance. Below are the averages of those estimates:

*Figure 3: SWCD Self-Reported Technical Assistance Source Estimates for all 2011 Conservation Practices*



As the figures above illustrate, the SWCDs' self-reported estimates show it is more common for SWCDs to provide their own technical assistance for ecological science practices than for engineering practices. The SWCD survey indicates that NRCS is providing approximately 25 – 30% of all technical assistance for SWCD projects, regardless of practice category. These averages also highlight that SWCDs rely much more on Technical Service Area (TSA) engineers and technicians for engineering (rather than for ecological science practice) technical assistance at this time, which should be expected.

Area comparisons also provide interesting findings as to the differences between regions of the State. Figures 4 and 5 highlight the technical assistance averages as distributed by the eight MASWCD/TSA areas. It is important to note that the area summaries shown in Figures 4 and 5 are self-reported estimates only, and not a tally of actual practices assisted throughout the year. Variation statewide should be expected,

due primarily to the differences in types of practices most common to a specific area (engineering vs. ecological science practices, as well as types of engineering or ecological science practices) and expertise available at associated SWCD, TSA and NRCS offices. For example grassed waterways or forest management practices are more or less prevalent in different areas of the state, as is available technical assistance.

**Figure 4: Engineering Technical Assistance Estimates, Based on MASWCD/TSA Areas**

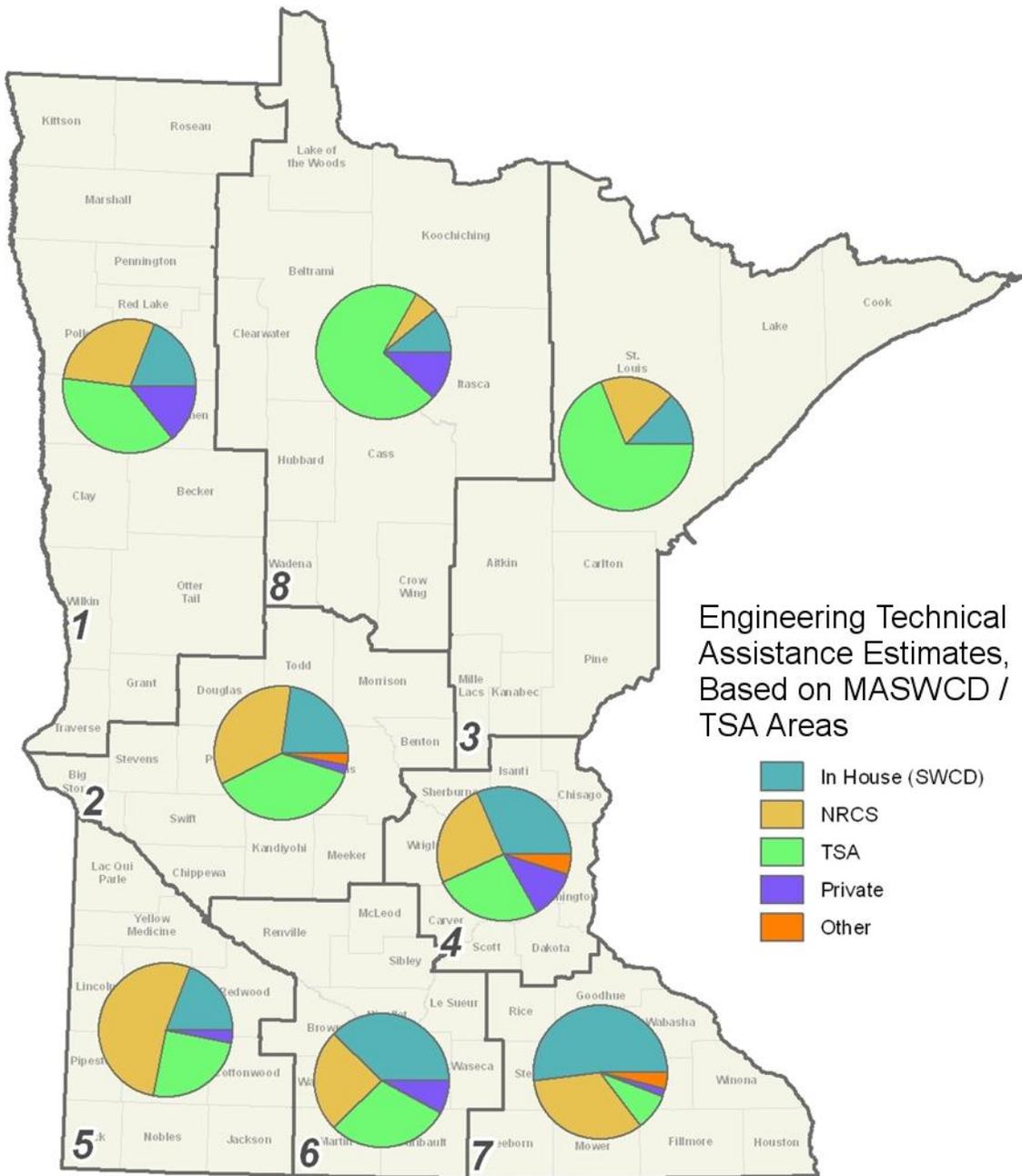
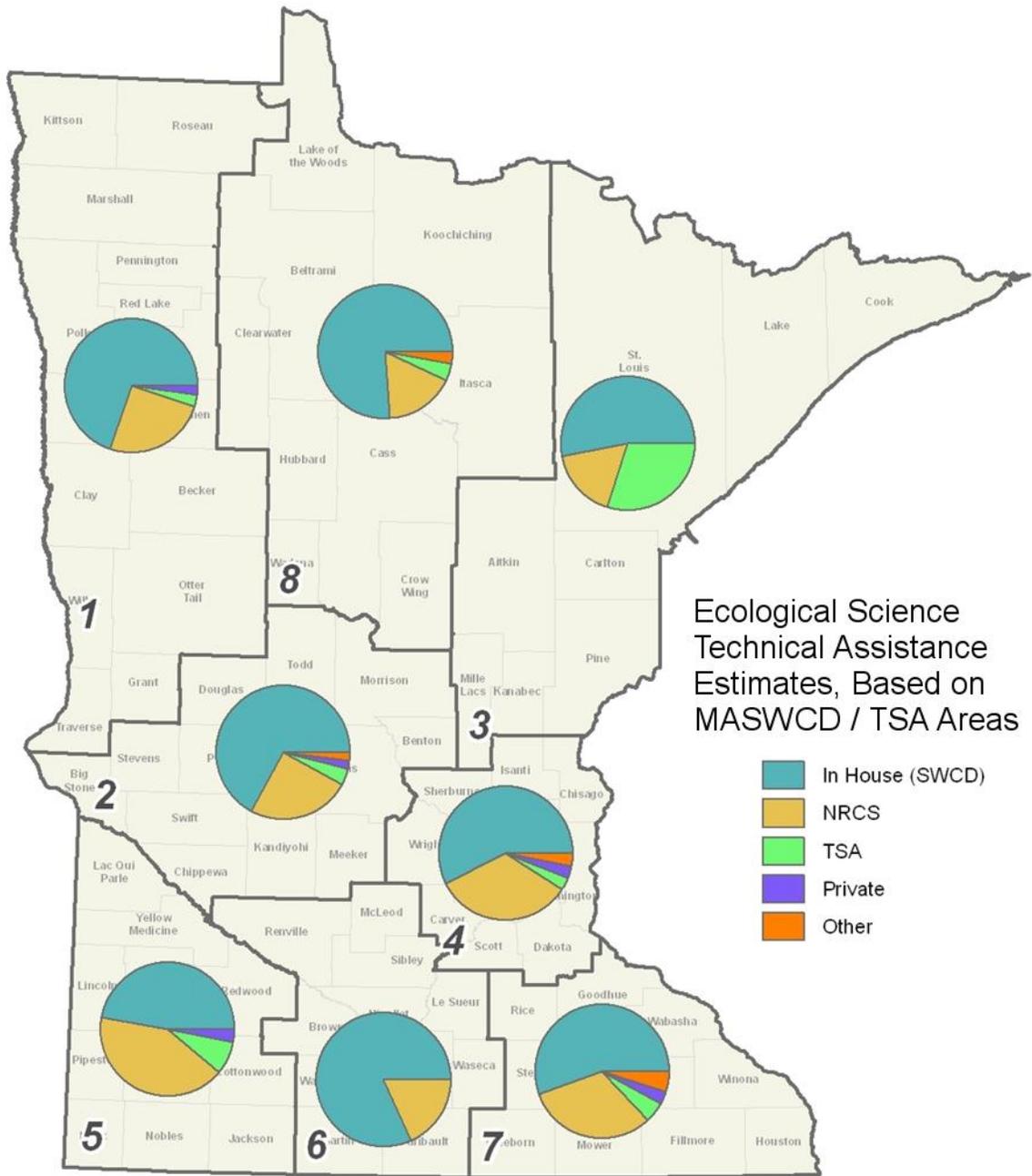


Figure 5: Ecological Science Technical Assistance Estimates, Based on MASWCD/TSA Areas



## SWCD Goal for TAA

BWSR recognizes that not all SWCDs may have the goal of increasing TAA. Some may be comfortable with their current partnerships or staff expertise. In survey question three, we asked SWCDs to tell us their overall technical skills goal for their office:

*Figure 6: SWCD TAA Goals*

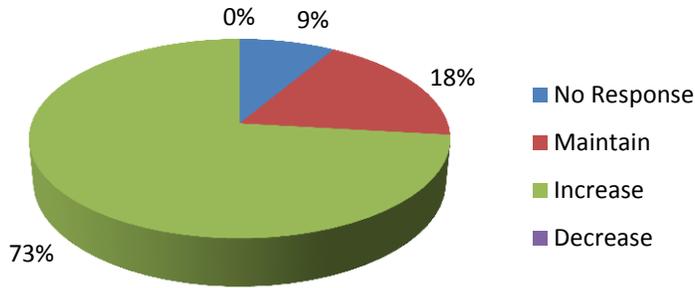


Figure 6 illustrates and confirms that most SWCDs are interested in increasing their TAA levels. The next two survey questions took that one step further by asking SWCDs to name the top three conservation practices where they would like to increase TAA in the coming year.

## SWCD Top Priority Conservation Practices to Increase TAA Levels

As part of the survey, each SWCD office was asked to list up to three practices they had identified as most important for increasing staff TAA levels. Table 7 lists the practices most often identified as a priority for increasing staff TAA.

Table 7 also indicates how many SWCD staff currently hold some level of TAA for each of these top practices, showing wide variation (112 staff currently have Critical Area Planting TAA while 16 staff currently have Shoreline Protection TAA).

**Table 7: Reported priority practices**

Practice	# of SWCDs Reporting as a Top Priority to Increase TAA	# of SWCDs with TAA	# of Staff with TAA
Water & Sediment Control Basin (638)	23	50	88
Wetland Restoration (657)	19	49	91
Grade Stabilization Structure (410)	18	24	38
Streambank Protection (580)	17	25	50
Shoreline Protection (580)	15	12	16
Grassed Waterway (412)	14	54	102
Bioretention Basin (712) *	10	3	7
Terrace (600)	8	45	67
Critical Area Planting (342)	7	59	112
Filter Strip (393)	7	55	100

\*Bioretention Basin (712) was an interim practice now integrated into 570 Stormwater Runoff Control.

While the survey did not ask WHY these practices are listed as priorities, some broad assumptions can be suggested:

- These top ten practices are common tools used to implement conservation priorities. See Appendix 8, page 59 for further information comparing eLINK reported data to the survey results.
- Some practices may be listed because of their increasing prevalence to address conservation issues. For example, the bioretention basin practice (now part of 570 Stormwater Runoff Control) has been used more as rain gardens have become a more popular and accepted means to address urban runoff.
- The diversity of practices listed as priorities (and no single practice being identified as a top priority by more than 23 SWCDs) may reflect the geographic diversity of Minnesota. For example, a wetland restoration is unlikely to be a strong TAA priority in northeastern Minnesota, but more likely in the northwestern or southern portions of the State.
- Current staff, existing working relationships and upcoming retirements may also influence TAA priorities. For example, if an SWCD has a strong working relationship with their TSA or NRCS Area Office which currently provides engineering services for specific practices, they may be less likely to identify those practices as a top priority for their own staff.
- Finally, in 2011, BWSR and the NRCS partnered to deliver training on two of the top ten practices listed as priorities to increase TAA: Grassed Waterway and Water & Sediment Control Basin (WASCOB). Their continued presence on this list may indicate further need or highlight the “on-

the-job” training (experience) component needed in addition to classroom work before TAA can be recommended.

The recommendations section of the report suggests specific next steps, including sharing this data with NRCS for collaborative opportunities to further training and experience for TAA.

## **Construction Inspection**

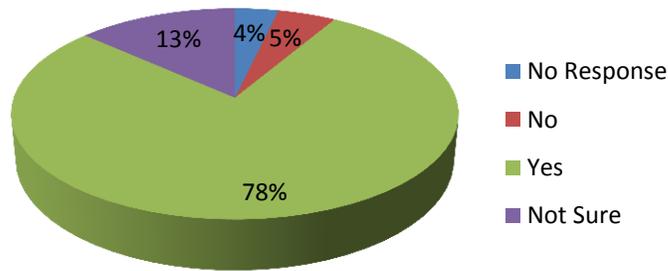
The TAA survey also asked SWCDs about their interest in providing construction inspection and their willingness to attend construction inspection training if provided. This question was included in the survey because construction inspection occurs onsite and is required during implementation of conservation practices designed by others, making the location and timing of the inspection critical. When SWCDs can provide competent construction inspection, the efficiency of conservation practice implementation is greatly enhanced, especially in comparison to others providing construction inspection from a more distant NRCS area office, TSA office or BWSR office.

As indicated in Figure 7, 79% of SWCDs participating in the TAA survey indicated interest in this regard. This points to a potential opportunity to enhance the partnership between BWSR, SWCDs and NRCS by increasing the construction inspection capabilities of the SWCDs. Additional TAA for SWCD staff could result in accelerated conservation practice implementation. Due to high workloads and limited current staff capacity, this is an area of interest to BWSR, NRCS, as well as SWCD TSA engineers.

RIM/WRP wetland restoration workloads provide a good example of the need for construction inspection training to assist implementation of associated projects over large areas of the State. BWSR engineering staff provided construction inspection training with a focus on wetland restorations at the 2011 BWSR Academy. The session was designed to be informational and build knowledge, but was not thorough training. The training was attended by approximately 35 LGU staff but was limited in scope due to Academy session length limits. Based on the interest level in this subject and on the survey results, it is recommended that additional coordination be done with NRCS and SWCDs to further explore, clarify, develop and provide priority construction inspection training for individual and/or related practices to increase TAA.

For project job classes that are the practice of professional engineering, construction inspection can be assisted by a local technician, with direct supervision and sign-off provided by the engineer of record for a project. Keys to this working relationship are experience and competence of the construction inspector, and good communication between the construction inspector and engineer of record (often including joint involvement in a preconstruction meeting with the contractor). Classroom, online and on-the-job training and experience are keys to increasing TAA, including for construction inspection.

*Figure 7: SWCD Interest in Providing Construction Inspection*



## VI. Conclusions

The TAA system has contributed to an increase in technical assistance throughout the conservation delivery system in Minnesota. However, the TAA credentialing system is somewhat complex and is dependent on training, experience opportunities and utilization. SWCD involvement has not been monitored or tracked at a statewide level. BWSR’s intentions when designing and conducting this survey and inventory were to obtain enough information to understand the current status and priorities for TAA. BWSR also wanted to understand any associated training and experience needs of SWCDs, as well as identify areas for increased partnership with the NRCS.

The survey and inventory provided useful information regarding the amount of TAA SWCDs currently have, as well as SWCD commitment and priorities for increasing TAA. The majority (73%) of the SWCDs participating in the survey indicated a desire to increase TAA. Water and Sediment Control Basins, Wetland Restorations and Grade Stabilization Structures were the practices most often identified by the SWCDs as priority training and experience needs for increasing TAA.

The results were less clear in providing information about any actual shortfalls in SWCD TAA or resulting impact to the conservation delivery system. However, it is expected that SWCD priorities for TAA reflect local practice priorities and technical assistance needs.

Overall, it appears that TAA status varies significantly between SWCD offices. While the inventory did not explore reasons for these variations they can likely be attributed to regional differences in demand for certain types of conservation practices and TAA, shifting program/staffing focus in field offices, and limited capacity to focus on TAA training in some SWCD offices.

The inventory and survey process pointed to an apparent lack of understanding among some SWCDs regarding the complexities of the TAA system, especially in regard to the purpose and use of ecological sciences practice “planning” TAA levels for engineering practices and their location in the ecological sciences chart. The process also highlighted confusion around the longevity of TAA “certification” for particular practices, the process for periodic review or check-in, or how/if recertification was necessary after a certain period of not using a specific TAA.

Additionally, there appeared to be some confusion regarding how TAA is conferred for specific engineering practices with limiting factors. Some SWCD reported having received different TAA for different phases of specific practices, while others reported a “lumped” TAA for all phases of practices. These all highlight opportunities for building this knowledge base so that SWCDs can be better informed and better prepared to implement their TAA levels.

## **VII. Recommendations**

Based on the results of the inventory and survey, BWSR has the following recommendations.

### **Future Survey/Inventory Recommendations**

- Use this inventory and survey as part of the annual SWCD reporting in eLINK4Web. Maintaining a tracking system for SWCD TAA will help BWSR to better understand SWCD capabilities and training priorities and to benchmark changes of SWCD staff capability across Minnesota.
- Design future surveys to gather information about any needs that are not being met by the TAA processes and why. A connection needs to be made between any technical assistance shortages SWCDs might be facing and the TAA process, both for specific practices and engineering versus ecological science practices.
- Design future surveys to retrieve information about current TAA activity and how frequently specific TAA skills are used.
- Investigate the regional differences in technical assistance levels to help prioritize needs (for both TAA and associated training and experience).
- Ask SWCD staff to further articulate specific classroom versus on-the-job experiential learning needs.
- Consult with NRCS to clarify how TAA is conferred for specific engineering practices with limiting factors and adjust future inventories as needed.

### **Training Recommendations**

- Develop and provide a general “TAA 101” training explaining the process for both ecological science and engineering practices, as well as job classes, practice implementation phases and the value of TAA, with input from the NRCS.
- Determine results to date of SWCD participation in the 2011 Grassed Waterways and Water and Sediment Control Basin trainings. Statewide, 20 SWCD staff participated in the classroom training portion for Grassed Waterways and 16 SWCD staff participated in the WASCOSBS classroom training. One way to measure success and better understand capacity is to see if SWCD TAA levels for these practices have increased.
- Investigate enhanced mentoring opportunities across SWCD borders and between SWCDs and TSAs for experience that leads to TAA.

- Partner with the NRCS to determine what specific trainings for some of the identified priority practices also meets NRCS priorities; identify opportunities for collaboration on shared trainings; implement training and evaluation that increase SWCD TAA levels in 2013 and beyond.
- Identify synergies to increase on-the-job experiential learning that occurs post-classroom training.

### **TAA Program Recommendations**

- Consult with NRCS regarding consistency of TAA assignment statewide in relation to limiting factors and how demonstrated competence is defined.
- Consult with NRCS to clarify how the process for staying current with TAA works for SWCD staff.
- Explore with the NRCS opportunities for Construction Inspection TAA for multiple practices where the skill set is the same or very similar.
- Work with the NRCS to identify how BWSR engineers can recommend engineering TAA for BWSR technicians and SWCD TSA engineers can recommend engineering TAA for SWCD technicians.
- Disseminate this report and applicable information to SWCDs, MASWCD, BWSR and NRCS staff and to highlight immediate opportunities for collaboration and shared services. Track any outcomes of this work.

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## Appendix 1: Project Concept and Timeline

### Project Concept:

To inventory the TAA levels of all SWCD staff in Minnesota and determine the interest and commitment of SWCD offices to increase TAA for specific conservation practices. This inventory will:

- benchmark current TAA levels,
- show (and share) the capacity and expertise of LGU staff,
- identify TAA use and gaps,
- support BWSR staff (especially BCs and CWS) to identify technical qualifications association with certain funds (such as Clean Water Funds),
- help to coordinate and prioritize future training to increase TAA, and
- serve as a tool to measure and report change over time (it is envisioned that SWCDs will update changes on an annual basis).

### Inventory:

Web-based database for SWCD staff to benchmark current TAA and then have access to update as needed when changes in TAA occur for individual staff.

### Timeline:

2011

Spring/Summer:	Develop concept and scope of work
June:	Announce concept at All-staff meeting
September 1-30:	Finalize concept; budget; and contact contractors
October 1-30:	Hire contractor set schedule
November 1-30:	Develop database
December 1-20:	Test database; revise as needed; develop guidance; follow-up with BWSR staff; announce upcoming concept to LGUs

2012

Jan 10, 2012:	Release to LGUs with guidance
Feb 20:	First TAA reporting due
Feb 21-March 10:	Follow-up with LGUs
Feb 27:	Feedback call with BCs
March 11- August 15:	Data analyzed; report draft
September 18:	Report released; start scheduling partner meetings
--	
Fall:	Add to annual SWCD reporting cycle

## Appendix 2: Engineering Technical Approval Authority

Natural Resources Conservation Service  
Title 210 – National Engineering Manual

### Part 501 - Authorizations

#### Subpart A – Review and Approval

#### MN501.3 Compliance of Engineering Work with Laws and Regulations

B. NRCS registered professional engineers may seal engineering plans when required by a permitting or funding agency. The need for sealing must be identified during the planning phase to ensure that all work is done under the direction of the responsible professional engineer.

C. The State Conservation Engineer (SCE) will be notified when any engineering plans prepared by the NRCS will need to be sealed by a licensed Professional Engineer rather than using the agency approval process.

(4) Plans prepared by the NRCS for dams, which require a dam safety permit, must be approved by an NRCS engineer but sealing is not required.

D. MN NRCS Assistance on Agricultural Waste Management Systems.

(1) Assistance for Agricultural Waste Management “Partial” Systems. In accordance with the following stipulations, NRCS may provide technical assistance on partial systems for feedlot pollution abatement.

(i) NRCS must plan a full solution for pollution abatement. A detailed engineering plan is not required; however, enough investigation must be done to determine the feasibility of the pollution abatement plan. The plan for the full solution must be presented to the producer and documented in the file. The following items must be included in the plan:

1. Pollution problem evaluation.
2. Solutions or alternatives considered to solve problem.
3. A statement that the practices installed under the partial systems are not considered adequate to solve the pollution problem.

(ii) Technical assistance for partial systems is limited to clean water runoff management practices. Technical assistance for other practices such as vegetative filters, or waste storage facilities may only be provided as part of a complete pollution abatement system that meets NRCS standards. Components installed for partial systems must meet the individual practice standards for those components.

(2) NRCS may provide technical assistance for non-permitted waste storage facilities under the following circumstances:

1. For facilities originally designed and construction certified by the NRCS but a permit was not obtained at the time of construction.
2. For preliminary investigations to determine if the storage facility is a pollution hazard that would qualify for financial or technical assistance from NRCS. Preliminary investigations do not provide borings of adequate depth or spacing to be used for final design purposes.

3. As part of a pollution abatement plan where work is needed to rehabilitate liners or abandon an existing storage facility to correct a pollution problem that currently exists.
4. Assistance for soil investigations should only be provided on sites where NRCS will be preparing a final design.

#### **MN501.4 Engineering Technical Approval Authority (TAA)**

##### **B. Engineering technical approval authority (Classes I thru V)**

(2) The practice of engineering is regulated in Minnesota by the Board of Architecture, Engineering, Land Surveying, Landscape Architecture, Geoscience and Interior Design (referred to herein as the Registration Board). The Registration Board has determined that "the responsible professional engineer" (for NRCS the SCE) must determine if "the design of a non-hazardous project constitutes the practice of engineering." If it does, the design of that project may only be approved by a professional engineer or a qualified federal employee working within the scope of their employment. All practices marked with an asterisk on the technical approval authority chart have been determined by the SCE to constitute professional engineering practice. In certain circumstances, complicating factors may cause other work to be considered professional engineering practice also.

##### NRCS Employees

- TAA for Class I to V practices may be delegated to qualified NRCS employees.
- TAA will be recommended by the Area Engineer familiar with that person's abilities. Worksheet MN-ENG-013 will be used to record the recommendation.
- TAA recommendations for work which is considered professional engineering practice must have the concurrence the SCE.
- TAA will be issued by the employee's administrative supervisor.
- TAA for Area Engineers will be recommended by the SCE.
- Employees must sign the TAA ethics statement on worksheet MN-ENG-013 before the approval authority is valid.

##### Soil and Water Conservation District (SWCD) or Joint Powers Area (JPA) Employees

- TAA will be recommended by the NRCS Area Engineer on worksheet MN-ENG-013 upon request by the SWCD Board. The Area Engineer will obtain input from others as appropriate.
- TAA for SWCD employees who are not registered professional engineers may only include Class I thru V practices which are not considered professional engineering practice.
- TAA for SWCD employees will be assigned by the SWCD Board.
- If the SWCD Board does not agree with the recommended TAA, they can forward it to the Minnesota Board of Water and Soil Resources Chief Engineer and NRCS SCE for review.
- Employees must sign the TAA ethics statement on worksheet MN-ENG-013 before the approval authority is valid.
- Other public agency or non-profit employees operating under agreement with the NRCS may receive TAA under this same process.

##### Licensed Professional Engineers (PEs) Operating under Contribution Agreements

- Licensed PEs operating under Contribution Agreements with the NRCS are considered to have TAA for all work within the scope of their license.
- PEs operating under contribution agreements will be required to certify plans in accordance with NEM 505.3B, Site Specific Plans and Specifications.

- The NRCS review of work submitted by PEs under contribution agreements will be limited to that described in NEM 505.3B.

### Filing

Copies of TAA worksheets and charts will be maintained by the employee and the recommending engineer. TAA should be reviewed annually and revised as necessary.

### Project Design

Employees are encouraged to work on certain phases of projects that exceed their approval level under the guidance and technical supervision of more experienced employees with the proper TAA.

It is not necessary or practical for the person with TAA to perform all the steps leading to a complete job. It is expected that employees without TAA will carry out functions (survey, design drafting, etc.) as far as their knowledge and abilities will permit.

All engineering designs will be checked for accuracy. This should be done by someone other than the one preparing them if possible. Staff in one-person field offices can check their own work on Class I and II projects.

Technical approval for engineering projects must be indicated with the signature, title, and date of signature being placed upon the engineering plans, investigation report, construction records or other supporting data.

### Construction Changes

Significant changes to engineering plans must be approved by the person who approved the original design. If this approval is done verbally, this conversation must be documented in the file. Significant changes may also require approval from permitting authorities such as the Minnesota Pollution Control Agency for feedlot plans.

Designs for Class VI to Class VIII jobs will be coordinated with the SCE individually. A design review and approval process specific to the job that is in accordance with policy and sound engineering practice will be used.

At the time that engineering plans are delivered to the cooperator, an approval statement must be signed and dated by the cooperator. Required wording for this cooperator approval statement is:

**I have reviewed and understand the plans and specifications and agree to complete the work accordingly. Failure to meet these plans and specifications may jeopardize any NRCS financial and technical assistance. I understand that it is my responsibility to secure all necessary permits and licenses, and to complete the work in accordance with all local, state, and federal laws. Modification of these plans or specifications must be approved by the Natural Resources Conservation Service before installation. I assume responsibility for negotiations and agreements with the contractors.**

Except as described below, this statement must be on the first page of engineering drawings. For simple plans that use job sheets, this statement may be included on a separate sheet instead of having it on the drawings. If separated, the cooperator's approval must include a reference to the plan it is being signed for, and must be kept in the cooperator's file.

## **MN501.5 Engineering Job Review**

### **B. Post Reviews.**

(i) Engineers on the area staff will review at least 5 percent of Class I, II and III jobs approved by area and field office personnel each year. The SCE will review at least 5 percent of the Class IV and V jobs approved by area/field office personnel each year. The Area Engineer is to send the SCE a summary list of jobs in this category by October 1 for the jobs that were constructed during the past year. The SCE will select jobs to be reviewed. Supporting design folders, drawings and specifications for those jobs selected for review are to be submitted to the SCE. The material submitted will be checked for conformance to state standards and sound engineering practices. On-site reviews to evaluate construction quality and other features may be scheduled. The SCE will make a written report to the State Conservationist when the review is complete.

(ii) Area staff will conduct a post review of the first plan submitted by each engineering Technical Service Provider (TSP) and a minimum of 5 percent of all plans submitted thereafter.

(210-V-NEM, Amend. MN1, Oct. 2011)

MN501-A.30

**CONSERVATION PRACTICE  
TECHNICAL APPROVAL AUTHORITY  
For Engineering Practices  
Assignment and Acceptance For:**

\_\_\_\_\_  
Employee Title

\_\_\_\_\_  
Employer Date

**Recommended by:**

\_\_\_\_\_  
Area Engineer Date

**Concurred by:** (Concurrence is only required for NRCS employees who are being delegated technical approval for work considered professional engineering practice.)

\_\_\_\_\_  
State Conservation Engineer Date

**Technical approval authority assigned by:**

\_\_\_\_\_  
Name Title

\_\_\_\_\_  
Signature Date

ETHICS STATEMENT

By signing this form, I agree to utilize my assigned technical approval authority only for work that I am competent and qualified to perform. I will seek assistance from others when complicating factors warrant.

I also understand that recommended conservation practices can have negative effects on some natural resources. I agree to consider the potential impacts of practices on all resources before recommending their use.

\_\_\_\_\_  
Employee's Signature Date

NOTE:

Practices marked with an asterisk are considered to be professional engineering practice. This was determined based upon complexity and potential hazards associated with the practice. Approval authority for these may be issued to qualified federal employees who are exempt from state registration requirements. Site specific conditions may cause a practice of any size to be considered professional engineering practice. Any practice with significant hazard potential will require Class VI approval.

Practices not included on the Engineering TAA chart will require Project-specific assignment of TAA by the state office.

Definitions of approval columns:

Inventory and Evaluation - Preliminary on-site investigation and preparation of sound alternative solutions of sufficient detail for the cooperator to make treatment decisions. May require assistance from higher levels for large or complex jobs.

Design - Designing and checking all aspects of the supporting data, drawings and specifications to insure that the planned practice will meet the purpose for which it is intended. Also setting any specific construction inspection requirements.

Construction - Surveys, layout, staking, inspection of materials and work, and making tests to determine that the job meets the plans and specifications. Specific duties authorized in inspection plans can be performed regardless of construction approval level.

NAME: \_\_\_\_\_ DATE: \_\_\_\_\_

Practice Code	Practice Name	Limiting Factors	Units	Job Class					Maximum Approval Authority		
				I	II	III	IV	V	I & E	Design	Construction
560	Access Road	Use	Type	Private	Private	Private	Private	Public*			
366	Anaerobic Digester (10)	Size	au	150*	300*	500*	1000*	All*			
316	Animal Mortality Facility	Capacity, dead animals	cu ft	1250*	2500*	5000*	All*	All*			
584	Channel Bed Stabilization	Design capacity	cfs	50	100*	200*	300*	500*			
		Design velocity	fps	2	4*	6*	8*	10*			
326	Clearing & Snagging	Drainage area	sq mi	0	0	1	4	All			
360	Closure of Waste Impoundments	Storage Volume	1000 cu ft	25	50	100*	200*	All*			
317	Composting Facility	Litter/Manure	cu ft	10000*	20,000*	50,000*	All*	All*			
		Capacity, dead animals	cu ft	1250*	2500*	5000*	All*	All*			
656	Constructed Wetland	Effective height	ft	4	5*	7*	8*	10*			
		offsite Impact (8)	Y/N	No	No	No	No*	Yes*			
		Watershed area	ac	10	50	100*	250*	2000*			
		Storage volume	ac ft	10	15	30*	50*	500*			
402	Dam	See Pond (378)									
356	Dike (9)	Water Height	ft.	0	0	4*	6*	10*			
362	Diversion	Capacity	cfs	25	50	100	200	500*			
554	Drainage Water Mgmt	Watershed area	ac	20	40	80	160	All			
432	Dry Hydrant	Static head	ft	4*	8*	12*	15*	All*			
752C	Environmental Assessment-CNMP	Animal Units	1000 lbs.	25	50	100	500	All		N/A	N/A
410	Grade Stabilization Structure (1)	Drainage area	ac	100	300*	640*	1200*	12800*			
		Prin. spillway dia.	in	12	18*	24*	36*	48*			
	Embankment	Effective height	ft	6	15*	20*	25*	35*			
		On public road	Y/N	No	No	No	No	Yes*			
	Drop Spillway	Net drop	ft	3	4	5*	6*	8*			
	Weir capacity	cfs	100	200	300*	400*	500*				

	Box Inlet	Net drop	ft	3	4	4	5*	6*			
		Weir capacity	cfs	100	200	300*	400*	500*			
		On public road	Y/N	No	No	No	No	Yes*			
	Chute Spillway - All Concrete Block (2)	Net drop	ft	3	4	5*	6*	6*			
		Capacity	cfs	50	100	150*	200*	250*			
	Geotextile Reinforced Vegetated Chute	Net drop	ft	3	4	5*	6*	6*			
		Capacity	cfs	50	100	150*	200*	250*			
	Chute Spillway (Rock riprap)	Net drop	ft	3	4*	5*	6*	8*			
		Capacity	cfs	10	25	50*	100*	500*			
	Side Inlets (to drainage ditch)	Net drop	ft	6	8	10	12*	16*			
		Diameter (pipe)	in	12	18	24	36*	48*			
412	Grassed Waterway	Capacity	cfs	25	50	100	200	500*			
561	Heavy Use Area Protection (3)	Site surface area	ac	0.1	0.5	1.5	5	>5*			
		Surface Protection	type sq ft	vegetation	gravel	concrete	roof	All*	<2500*		
449	Irrigation Water Mgmt	All	None	All	-	-	-	-			
442	Irrigation System, Sprinkler	Size of Irrigated area	ac	40	80	160	320	All			
468	Lined Waterway/Outlet	Drainage area	ac	10	20	100*	1000*	All*			
500	Obstruction Removal	Obstruction location (11)	each	Land*	Stream*	All*					
516	Pipeline	Length	ft	1000	2000	4000	5000*	10000*			
		Diameter	inches	1	1.25	1.5	2	All*			
		Pressure	psi	40	50	70*	90*	300*			
		Installation (4)	location	surface	surface	buried	buried	buried			
378	Pond (1)(9) Excavated	Use	type	wildlife	livestock						
						-	-	-			
	Embankment	Drainage area	ac	100	300*	640*	1200*	12800*			
		Effective height	ft	6	15*	20*	25*	35*			
		Prin. spillway dia	in	12	18*	24*	36*	48*			
	Storage volume	ac ft	5	15*	50*	100*	500*				
521A	Pond Sealing or Lining, flexible membrane lining membrane	Surface area	ac	0.1	1	5*	10*	All*			
533	Pumping Plant	Pump capacity	gpm	20	50*	100*	200*	3500*			
558	Roof Runoff Mgmt	Area of roof	sq ft	500	1000	2000	5000	All*			
367	Roofs and Covers	Size	sq ft	500*	2500*	10000*	25000*	>25000*			

350	Sediment Basin Embankment (1)	Watershed area	ac	5	10*	50*	100*	500*			
		Effective height	ft	6	10*	15*	25*	35*			
		Prin. spillway dia	in	12	18*	24*	36*	48*			
		Storage	ac ft	2	5*	15*	50*	100*			
527	Sinkhole Area Treatment	Treatment Complexity	type	divert	minor seal	moderate	moderate	high*			
		Failure Consequence	level	none	low	low	moderate*	high*			
574	Spring Development	Discharge	gpm	1	5*	10*	All*	All*			
570	Stormwater Runoff	Basin Size	sq ft	500	1000	2500	5000	All*			
	Control	Potential for ground-water contamination and/or offsite impacts		No	No	No	No	Yes*			
	Infiltration Basin	Runoff Mgmt	Site size	ac	1	2*	5*	10*	All*		
580	Shoreline Protection	WPH(5)	ft	1	1.5	2*	2.5*	3*			
		Raw bank height(6)	ft	1	3	5*	8*	20*			
	Streambank Protection	Capacity (bankfull)	cfs	100	250*	500*	1000*	5000*			
		Velocity (bankfull)	fps	2	4	6*	8*	10*			
578	Stream Crossing	Design capacity (culvert crossing)	cfs	25	50	250	500*	>500*			
		Design Velocity (ford crossing)	fps	2	3	4	5	>5*			
587	Structure for Water Control	Structure capacity	cfs	10	25	50*	100*	500*			
		Drainage area	ac	10	50	100*	250*	10,000*			
606	Subsurface Drain	Diameter	in	6	12	18	24	All*			
		Area drained	ac	60	160	240	320	All*			
607	Surface Drain, Field Ditch	Capacity (bankfull)	cfs	10	25	50*	100*	All*			
608	Surface Drain, Main or Lateral	Capacity (bankfull)	cfs	10	25	50*	100*	500*			
600	Terrace	Area Controlled (total system)	acres	10	20	50	100*	All*			
		Fill height	ft	4	8	10	12*	All*			
620	Underground Outlet	Ac drained per intake	ac	5	10	15	40	All*			
		Diameter	in	6	8	12	18	All*			

635	Vegetated Treatment Area	Animal Units per feedlot	no	50*	100*	300*	700*	1000*			
		Treatment level	Level	1,4,5*	1,4,5*	1-5*	1-5*	1-5*			
313	Waste Storage Facility (1)	Storage capacity	1000 cu ft	25*	50*	100*	500*	2000*			
		Depth to water table from pond bottom(7)	ft	5*	2-5*	<2*	All*	All*			
		Depth to bedrock from pond bottom	ft	>20*	10-20*	5-10*	3-5*	<3*			
634	Waste Transfer	Gravity Flow - length	feet	50	100	150*	200*	All*			
		Pressurized - rate	GPM	None	100	300*	500*	All*			
629	Waste Treatment	Design Capacity	gal/day	1000	5000	10000	20000	72000			
638	Water & Sediment Control Basin	Fill height	ft	6	8	10	12	35*			
636	Water Harvesting Catchment	See Pond (378)									
642	Water Well (10)	I & E only	gpm	2	20	50*	100*	All*		N/A	N/A
614	Watering Facility	Animal Units per site	no.	50	100	300*	500*	All*			
351	Well Decommissioning(10)	I & E only	in dia	2	3	4	6	All		N/A	N/A
658	Wetland Creation	see standard 657									
659	Wetland Enhancement	see standard 657									
657	Wetland Restoration	Effective height	ft	4	5*	7*	8*	10*			
		offsite Impact (8)	Y/N	No	No	No	No*	Yes*			
		Watershed area	ac	10	50	100*	250*	2000*			
		Storage volume	ac ft	10	15	30*	50*	500*			

*\* All levels marked with an asterisk are considered professional engineering practice. Special factors may cause other jobs to be considered professional engineering practice also.*

- (1) All with relatively impervious cutoff, simple foundation needs and standard or proven designs. Hazard class "a" only. Product of Storage x Height not to exceed 3,000. For standard 313, tank designs utilize pre-qualified standard drawings without structural modifications.
- (2) Includes all precast concrete block, articulated and non-articulated.
- (3) Requires joint approval by engineering and ecological sciences staff.
- (4) Pipeline will be installed a)above ground (surface) or b) the pipeline will be buried.
- (5) WPH = Wave Protection Height = Height above mean high water, see MN-TR2.
- (6) Raw Bank Height = Difference in feet from top of raw bank to water surface. See MN-TR2.
- (7) Depth to water table from pond bottom prior to installation of drain.
- (8) Project impacts public road(s), utilities, adjacent property, and/or public drainage systems.
- (9) Limited to low hazard situations or Class III (see NEM 501.4(B)(1).)
- (10) I & E only.
- (11) Classes 1-5 must all be low hazard sites. If any hazard, job is class 6.

All jobs not listed or more complex than those listed, which will be approved under the NRCS system, must be sent with supporting data to the state office for design.

## Appendix 3: Ecological Sciences Technical Approval Authority

### CONSERVATION PRACTICE TECHNICAL APPROVAL AUTHORITY For Ecological Sciences

#### Delegation and Acceptance For

\_\_\_\_\_  
Employee

\_\_\_\_\_  
Title

\_\_\_\_\_  
Supervisor

\_\_\_\_\_  
Date

#### ETHICS STATEMENT

By signing this form, I agree to utilize my assigned technical approval authority only for the conservation planning and implementation activities that I am competent and qualified to perform. I will seek assistance of other knowledgeable or experienced employees when complicating factors exist that limit my ability to fully understand all aspects of a planning situation.

I also understand that recommended conservation practices can have negative effects on some natural resources. I agree to consider the potential impacts of practices on all resources before recommending their use.

\_\_\_\_\_  
Employee's Signature

Technical approval authority delegated by:

\_\_\_\_\_  
Area Resource Conservationist

\_\_\_\_\_  
Date

INSTRUCTIONS FOR DELEGATING ECOLOGICAL SCIENCE  
TECHNICAL APPROVAL AUTHORITY

2. Supervisors shall work with their employees to arrange for an assignment of Technical Approval Authority for Ecological Science Practices.
  - a) For NRCS employees, TAA ratings shall be delegated by the Area Resource Conservationist and concurred with by their supervisor.
  - b) For SWCD employees, TAA ratings shall be recommended by the SWCD Manager to the District Conservationist. The District Conservationist will review the recommendations and provide additional information as needed to the Area Resource Conservationist who will delegate the appropriate TAA rating. The SWCD board will concur with TAA ratings for SWCD employees. Note: SWCDs performing reimbursable work as TSPs must have employees with the appropriate TAA.
  - c) Private vendors are not given TAA ratings they are certified as Technical Service Providers (TSP) on the TechReg web site.
  - d) Each person rated shall review and sign the TAA after the ratings are developed.
  - e) Ecological Science TAA shall be reviewed annually and updated as needed.

2. Definitions:

- a.) **Practice planning** – The individual has the required skills to inventory and evaluate the landscape resulting in a recommendation to incorporate the practice into a conservation plan. This ability includes the determination of practice applicability, feasibility, site selection, and development of a conservation planning document. Conservation plans include producer decisions to establish conservation practices.
- b.) **Practice design, application and compliance** – In addition to the skills required for including a specific practice in a conservation plan, the individual also has the knowledge, skills and ability required to fully implement the practice. Full practice implementation includes preparing detailed practice designs, conducting in-field practice layout, supervising practice installation based on prepared plans and specifications, and verifying that the applied practice meets standards and specifications.

**Note:** Lack of TAA for a given practice does not preclude the responsible NRCS employee from signing USDA cost share program contracts, contract support documents and practice referrals when that practice has been planned, designed and will be certified as being adequately completed by others with an appropriate TAA rating.

**ECOLOGICAL SCIENCE TECHNICAL APPROVAL AUTHORITY**

Name \_\_\_\_\_ Title \_\_\_\_\_ Grade \_\_\_\_\_

Delegated \_\_\_\_\_ Title \_\_\_\_\_

Concurred \_\_\_\_\_ Title \_\_\_\_\_

		Approval Level /2	Approval Level /3	
Practice Code	Practice Name /1	Practice Planning	Practice Design, Application and Compliance	Comments
<b>Ecological Science Practices /4</b>				
311	Alley Cropping			
314	Brush Management			
322	Channel Bank Vegetation			
327	Conservation Cover			
328	Conservation Crop Rotation			
332	Contour Buffer Strips			
330	Contour Farming			
585	Stripcropping			
340	Cover Crop			
342	Critical Area Planting			
589A	Cross Wind Ridges			
589C	Cross Wind Trap Strips			
647	Early Successional Habitat Dev./ Mgt.			
382	Fence			
386	Field border			
393	Filter Strip			
394	Firebreak			
395	Stream Habitat Improvement and			

	Management			
ECS Prac /4 (cont)		<b>Approval Level /2</b>	<b>Approval Level /3</b>	
<b>Practice Code</b>	<b>Practice Name /1</b>	<b>Practice Planning</b>	<b>Practice Design, Application and Compliance</b>	<b>Comments</b>
511	Forage Harvest Management			
490	Forest Site Preparation			
666	Forest Stand Improvement			
548	Grazing Land Mech. Treatment			
422	Hedgerow Planting			
603	Herbaceous Wind Barriers			
484	Mulching			
590	Nutrient Mgt.			
512	Pasture & Hay Planting			
595 /7 Level A	Integrated Pest Mgt			
595 Level B	Practice Establishment and Maintenance			
338	Prescribed Burning			
528 /8	Prescribed Grazing Dairy Beef Cow/Calf Ewe/Lamb Horses Other			
550	Range Planting			
562	Recreation Area Improvement			
329	Residue Mgt., NoTill & Strip Till			
345	Residue Mgt. Mulch Till			
346	Residue Mgt. Ridge Till			
344	Residue Mgt., Seasonal			
643	Restoration of Rare & Decl. Habt.			

391	Riparian Forest Buffer			
ECS Prac./4 (cont)		<b>Approval Level /2</b>	<b>Approval Level /3</b>	
<b>Practice Code</b>	<b>Practice Name /1</b>	<b>Practice Planning</b>	<b>Practice Design, Application and Compliance</b>	<b>Comments</b>
390	Riparian Herbaceous Cover			
612	Tree Planting			
660A	Tree/Shrub Pruning.			
645	Upland Wildlife Habitat Mgt.			
472	Use Exclusion			
633	Waste Utilization			
644	Wildlife Wetland Habitat Mgt.			
380	Windbreak / Shelterbelt Estab.			
650	Windbreak / Shelterbelt Renov.			
797 – Interim	Terrestrial Invasive Plant Species Pest Management			
<b>Engineering Practices /5</b>				
560	Access Road			
366	Anaerobic Digester – Controlled Temperature			
316	Animal Mortality Facility			
575	Animal Trails and Walkway			
326	Clearing and Snagging			
360	Closure of Waste Impoundments			
317	Composting Facility			
402	Dam			
356	Dike			
362	Diversion			
554	Drainage Water Management			

ENG prac./5 (cont)		<b>Approval Level /2</b>	<b>Approval Level /3</b>	
<b>Practice Code</b>	<b>Practice Name /1</b>	<b>Practice Planning</b>	<b>Practice Design, Application and Compliance</b>	<b>Comments</b>
432	Dry Hydrant			
410	Grade Stabilization Structure			
412	Grass Waterway			
561	Heavy Use Area Protection			
582	Open Channel			
516	Pipeline			
378	Pond			
521C	Pond Sealing or Lining, Bentonite Sealing			
521A	Pond Sealing or Lining, Flexible Membrane Lining			
533	Pumping Plant for Water Control			
558	Runoff Roof Management			
570	Runoff Management System			
350	Sediment Basin			
572	Spoil Spreading			
574	Spring Development			
584	Stream Channel Stabilization			
578	Stream Crossing			
580	Streambank and Shoreline Protection			

587	Structure for Water Control			
ENG Prac./5 (cont)		<b>Approval Level /2</b>	<b>Approval Level /3</b>	
<b>Practice Code</b>	<b>Practice Name /1</b>	<b>Practice Planning</b>	<b>Practice Design, Application and Compliance</b>	<b>Comments</b>
606	Subsurface Drain			
607	Subsurface Drain, Field Ditch			
608	Subsurface Drain, Main or Lateral			
600	Terrace			
620	Underground Outlet			
367	Waste Facility Cover			
313	Waste Storage Facility			
629	Waste Treatment			
635	Wastewater Treatment Strip			
638	Water and Sediment Control Basin			
636	Water Harvesting Catchment			
642	Water Well			
614	Watering Facility			
351	Well Decommissioning			
658	Wetland Creation			
659	Wetland Enhancement			
657	Wetland Restoration			
725 Interim	Sinkhole Treatment			

795 Interim	Biofilter			
<b>Optional Section /6</b>				
Approval Authority for use of equipment & tools		Has full knowledge and skill to use identified equipment for all USDA purposes	Needs additional training to fully utilize equipment or tool	
GPS Equipment				
Toolkit RUSLE2 WEQ/WEPS WIN-PST		_____	_____	

**Notes:**

1/ NRCS conservation practice standards are found in Section IV of Field Office Technical Guide. Planning shall be based on policy contained in the National Planning Procedures Handbook.

**2/ Practice Planning Approval Levels**

**Level A -** Individual can independently perform an on-farm, field specific inventory and evaluation of the landscape which recognizes the existing resource concerns. Based on the resource needs and their understanding of this practice the employee can recommend its use as part of a conservation plan. Individual understands how the practice functions and can communicate the conservation benefits of the practice to the landowner. Individual can train others to plan the practice.

**Level B -** Individual can independently plan the practice unless unusual circumstances are encountered. If warranted planning limits or constraints may be listed in the “comments” section.

**Level C -** Individual needs training on this practice. Individual can plan the practice only with supervision.

**3/ Practice Design, Application and Compliance Approval Levels**

**Level A -** Individual can independently develop detailed practice designs, conduct practice layout, and supervise establishment to fully implement the practice. Individual can train others to plan and apply the practice.

**Level B -** Individual can independently develop practice designs, conduct practice layout and supervise establishment to fully implement the practice unless unusual circumstances are encountered. If warranted practice design limits or constraints may be listed in the “comments” section.

**Level C -** Individual needs training on this practice. Individual can develop practice designs only with supervision.

4/ Area Resource Conservationists will rate individuals and grant TAA levels, as appropriate, for both “Practice Planning” and “Practice Design, Application and Compliance” on Ecological Science practices. For the Nutrient Management practice the ARC will only grant TAA for Levels A and B after consulting with their Nutrient Management Specialist.

5/ For Engineering practices ARCs will only rate individuals for “Practice Planning”. Area Engineers rate individuals and grant TAA levels for designing and implementing Engineering Practices.

6/ This optional section allows the capability to recognize an employee’s ability to use specific equipment or planning tools. Employees must have TAA for GPS equipment if their use of GPS will include a determination of official USDA acreage measurements. Additional equipment and tools can be added to this section as necessary.

7/ TAA is assigned for the 595 practice on two separate levels. Level A requires employees to be fully capable of performing Integrated Pest Management. Level B requires employees to be capable of making technical recommendations for the establishment and maintenance components of conservation practices.

8/ TAA is assigned for the 528 practice based on the kind and/or type of grazing animals.

\*\* When implementation practice designs are included in a CNMP they must be done by a Certified CNMP specialist.

Conservation practices where approval ratings are left blank are 1) not commonly applied by this individual; 2) not requested by the individual; and/or 3) not commonly used in this field office location. When an individual requires or desires expertise for a conservation practice without a rating contact the Area Resource Conservationist for additional information to obtain a TAA rating.

## Appendix 4: List of SWCDs who completed the 2011 TAA Inventory

Aitkin	Jackson	Polk, West
Anoka	Kanabec	Pope
Becker	Kandiyohi	Ramsey
Beltrami	Kittson	Redwood
Benton	Koochiching	Renville
Big Stone	Lac Qui Parle	Rice
Blue Earth	Lake of the Woods	Rock
Carlton	Le Sueur	Root River
Carver	Lincoln	Roseau
Cass	Mahnomen	Scott
Chippewa	Marshall	Sherburne
Chisago	Martin	Sibley
Clay	McLeod	St. Louis, South
Clearwater	Meeker	Stearns
Cook	Mille Lacs	Steele
Cottonwood	Morrison	Stevens
Crow Wing	Mower	Swift
Dakota	Murray	Todd
Dodge	Nicollet	Wabasha
Douglas	Nobles	Wadena
Faribault	Norman	Waseca
Fillmore	Olmsted	Washington
Freeborn	Ottertail, East	Wilkin
Goodhue	Ottertail, West	Winona
Grant	Pennington	Wright
Hubbard	Pine	Yellow Medicine
Isanti	Pipestone	
Itasca	Polk, East	



## Appendix 5: TAA eLINK Guidance Document

# Technical Approval Authority Module

January 2012

A new module has been developed in eLINK for SWCDs to identify and report the current level of Technical Approval Authority (TAA) for their staff (both engineering and ecological sciences). This document provides directions for using the new module.

The process requires six steps:

1. Confirm each staff person with TAA is listed as a “cooperator” in eLINK (and create a “technical staff” type entry for those that are not listed).
2. Enter into the TAA Module, open the 2011 calendar year data record.
3. Complete inventory with each staff’s 2011 TAA levels for **Engineering** Practices.
4. Complete inventory with each staff’s 2011 TAA levels for **Eco Science** Practices.
5. Fill out a survey of your office’s future TAA priorities.
6. Finalize and submit.

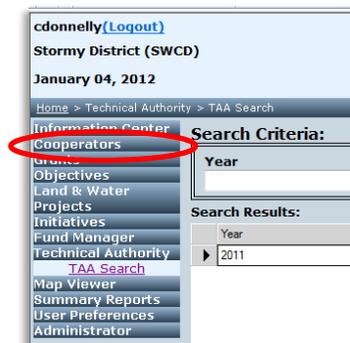
Only SWCD/TSA staff with TAA levels should enter in data. If you have Professional Engineers on staff that do not use the TAA system, they would not have data to enter.

### 1. Cooperators Module

A cooperator record needs to be created once for each of your technical staff before they can be listed in the TAA module. Therefore it is necessary to *search* the cooperators list to find out if any of your staff may have already been entered as cooperators, or create a new record for them if necessary.

### 2. Click the Cooperators module, then click the Cooperator Search link.

- ✓ In the search criteria, click the drop down list on the right labeled **Cooperator Type**. Select “Technical Staff” and then click the **Search** button.



A list of cooperators will be displayed that have been identified as “Technical Staff”. We attempted to match SWCD eLINK users in the system with existing cooperator records and assigned those the role of “Technical Staff” in order to avoid duplicate cooperator entries. If you don’t see any names in the search results list, or if the list of names is incomplete, you will need to **create a new cooperator record** for each of your technical staff in order to report TAA as described below. That task can be accomplished here in the

cooperators module by clicking **Add Cooperator** and selecting “Technical Staff” as the cooperator type, or it can be done later within the TAA module. The only required fields are first name, last name and cooperator type.

### 3. Technical Authority Module

In the main menu, there is a new item called “Technical Authority”. It contains a single function called “TAA Search”. TAA information is stored in eLINK by calendar year, so the first thing to do is to search for a TAA record reported by year.

- ✓ Click the **Technical Authority** module, then click the **TAA Search** link, finally click on the **Search** button.
- ✓ Select the 2011 year from the search results grid and click the **Edit** button to open a TAA record for your SWCD. You will be reporting TAA levels that are current through 2011.



Data is organized on three different tabs; Engineering Practices, Eco Science Practices, and General tab, which are described below.

### 4. Engineering Practices Tab



The Engineering Practices tab is used to record TAA levels for engineering practice types (BMPs).

**NOTE:** for a brief discussion of TAA levels for Engineering and Ecological Science practice job codes, please reference the bottom of this document.

- ✓ Add each SWCD staff person who has technical approval authority for at least one engineering practices.
- ✓ Click the **Add** button underneath the “**Employee**” header. A row will be inserted into the grid, and you will then click in the cell to get a dropdown list in order to select the appropriate staff person.
- ✓ If the dropdown list is empty, or incomplete you’ll need to create a new employee cooperator record(s) for your technical staff. You can do so by clicking the **New Cooperator** button on the right or following directions from item 1: Cooperators’ Module.
- ✓ Once you’ve completed adding staff names to the table, select the first technical staff person from the list and click the **Add** button underneath the “**Engineering**” header on the left. This will insert an indented BMP type row underneath their name.
- ✓ Click inside the BMP Type cell and select the appropriate practice from the drop down list.
- ✓ Click inside the **I & E, Design** and **Construction** cells and select the appropriate level of TAA (job class) for each project phase. The default level is “None”.
- ✓ Repeat and complete ALL PRACTICES where a staff has earned engineering TAA. This will create a complete record.

- ✓ If you do not have TAA for a practice, **do not add it** to the list.
- ✓ Once finished with the first staff, repeat steps for each staff that has TAA for any practice.

*Tip:* The TAA info is displayed in the web form as a “hierarchical grid”. This means that there should be a single row for each of your staff, and then several indented rows underneath that capture the TAA levels for various BMPs for that staff person. These BMP details for each employee can be expanded or collapsed by clicking on the + or the – symbol to the left of their names in the list.

*Create a new employee and add to the TAA list.*

*Add an existing employee to the TAA list.*

*Delete selected employee.*

*Add BMPs for the selected employee.*

*Delete the selected BMP.*

The screenshot shows the eLINK4Web interface for the Stormy District (SWCD) on January 10, 2012. The main content area is divided into three tabs: General, Engineering Practices, and Eco Science Practices. The Engineering Practices tab is active, displaying a grid of TAA levels for two employees: Sandy J. Technician and Johnny J. Technician. The grid has columns for BMP Type, I & E, Design, Construction, and Last Modified. The right-hand panel contains buttons for 'New Cooperator', 'Add', and 'Delete' under the 'Employee' section, and 'Add' and 'Delete' under the 'Engineering' section. A 'Finalize' button is located at the bottom of the main content area.

Employee	BMP Type	I & E	Design	Construction	Last Modified
Stormy SWCD - Sandy J. Technician -					
	Grade Stabilization Structure Box I	3	3	None	1/5/2012
Stormy SWCD - Johnny J. Technician -					
	Grassed Waterway (412)	4	4	4	1/10/2012
	Diversion (362)	4	4	4	1/10/2012

## 5. Eco Sciences Tab

The Eco Sciences tab is used to record TAA levels for ecological sciences practice types (BMPs). You’ll need to add a row into the grid for each of your SWCD staff who have approval authority for certain Eco Sciences practices. The procedure for adding employees and BMPs is identical to the steps for the Engineering Practices tab described above, with the exception that TAA levels are A, B or C within the categories of Practice Planning, and Practice Design, Application and Compliance.

- ✓ Click the **Add** button underneath the “Practice” header to add an indented eco sciences BMP to the grid.
- ✓ Select the Plan and Design levels for the selected BMP type for each staff.
- ✓ Select and complete ALL PRACTICES where a staff has earned eco sciences TAA. This will create a complete record. If you do not have TAA for a practice, do not add it to the list.
- ✓ Repeat for each staff who has TAA for any practice.



## 6. General Tab



The general tab contains several survey questions that must be answered by each SWCD annually prior to finalizing the TAA report. Instructions specific to each question can be found by holding the mouse pointer over the icon to the left of each question. Each office will complete only one survey per year, so please consult with the district manager / administrator on your top TAA priorities. These survey questions pertain to the entire SWCD, not any particular staff person.

## 7. The Finalize Button



Pressing the finalize button at the bottom of the TAA module screen is the last step in completing your report. By clicking the finalize button, you've stated that all TAA has been fully reported for your SWCD.

Only click finalize when you have all three tabs completed. Finalizing the 2011 report will lock the data making it read only, and will also copy forward all the info you provided into a new 2012 record. This will allow you to maintain and update the TAA info for your office each year without having to re-enter the details each time. TAA levels for your staff can be adjusted as necessary, but the historical record will remain with each finalized report.

There will be a print button added soon which will allow you to generate a printable summary sheet for the TAA levels reported each year. Look for that feature in the coming weeks.

### **NOTE on TAA Practice Job Codes:**

**Engineering Practices** have TAA job classes of **I, II, III, IV, V** for: I&E, design, and/or construction, which are used to define TAA levels. The higher your job class number, the more authority you have. For example, TAA approval for an Animal Mortality Facility job class of **I** means you can design or construct a facility up to a 1250 cubic feet. A job class of **II** means you can design or construct a facility up to 2500 cubic feet. For the entire list of NRCS job classes, please visit: [http://www.mn.nrcs.usda.gov/technical/eng/MN-NEM-pdf/Revised\\_NEM\\_PDF/MN-ENG-013\\_TAA\\_Aug11.pdf](http://www.mn.nrcs.usda.gov/technical/eng/MN-NEM-pdf/Revised_NEM_PDF/MN-ENG-013_TAA_Aug11.pdf)

NAME:			DATE:								
Practice Code	Practice Name	Limiting factors	Units	Job Class					Maximum Approval Authority		
				I	II	III	IV	V	I & E	Design	Construction
580	Access Road	Use	Type	Private	Private	Private	Private	Public*			
298	Anaerobic Digester (10)	Size	cu ft	150*	300*	500*	1000*	All*			
316	Animal Mortality Facility	Capacity, dead animals	cu ft	1250*	2500*	5000*	All*	All*			
304	Channel Bed Stabilization	Design capacity	cfs	30	100	200*	300*	500*			
		Design velocity	fps	2	4*	6*	8*	10*			
326	Clearing & Snagging	Drainage area	sq mi	0	0	1	4	All			
380	Closure of Waste Impoundments	Storage Volume	cu ft	25	50	100*	200*	All*			

**Eco Science Practices and Engineering Planning Practices** have TAA approval levels **A, B, C** for planning and practice design. NRCS also uses the A,B,C approval system for the VEGETATION PLANNING of engineering practices, so you'll see the engineering practices repeated in the Eco Science Tab.

So, if you have any Engineering TAA with A, B, C - -that means it is PLANNING TAA (and not design or construction TAA) – and you record it in the **Eco Sciences and Planning tab** in eLINK. Level A is the highest approval where individuals can independently develop detailed practice designs. Level C individual can develop practice designs only with supervision.

Eco Sciences and Planning Practices Tab continued.

USDA-NRCS		MN-MGT-008 4/08		
Practice Code	Practice Name /1	Practice Planning	Practice Design, Application and Compliance	Comments
391	Riparian Forest Buffer			
ECS Prac./4 (cont)		Approval Level /2	Approval Level /3	
390	Riparian Herbaceous Cover			
612	Tree Planting	B	B	
660A	Tree/Shrub Pruning	B	B	
645	Upland Wildlife Habitat Mgt.	B	B	
472	Use Exclusion	B	B	
633	Waste Utilization			
644	Wildlife Wetland Habitat Mgt.	B	B	
380	Windbreak / Shelterbelt Estab.	A	A	
650	Windbreak / Shelterbelt Renov.	A	A	
797 – Interim	Terrestrial Invasive Plant Species Pest Management	B	C	
Engineering Practices /5				
560	Access Road			
366	Anaerobic Digester – Controlled Temperature			
316	Animal Mortality Facility			
575	Animal Trails and Walkway			
326	Clearing and Snagging			
360	Closure of Waste Impoundments	C		
317	Composting Facility			
402	Dam			

Record Eco Planning for Engineering practices (that use A,B,C) in the **Eco Sciences and Planning Tab**.

For any TAA related data entry questions, please contact Conor Donnelly in the BWSR St. Paul central office at 651-282-3815 or by email at [conor.donnelly@state.mn.us](mailto:conor.donnelly@state.mn.us)

## Appendix 6: TAA Practice List

PRACTICE	# of Staff	# of Districts
Windbreak / Shelterbelt Estab. (380)	113	63
Tree Planting (612)	113	62
Critical Area Planting (342)	112	59
Upland Wildlife Habitat Mgt. (645)	107	58
Conservation Cover (327)	104	56
Filter Strip (393)	101	56
Windbreak / Shelterbelt Renov. (650)	96	59
Wildlife Wetland Habitat Mgt. (644)	93	54
Conservation Crop Rotation (328)	89	51
Restoration of Rare & Decl. Habt. (643)	82	45
Mulching (484)	80	45
Residue Mgt., NoTill & Strip Till (329)	78	47
Residue Mgt. Mulch Till (345)	78	46
Cover Crop (340)	73	43
Use Exclusion (472)	72	41
Residue Mgt., Seasonal (344)	69	45
Pasture & Hay Planting (512)	67	40
Riparian Forest Buffer (391)	65	43
Nutrient Mgt. (590)	64	36
Wetland Restoration (657)	62	37
Fence (382)	61	38
Tree/Shrub Pruning. (660A)	60	38
Residue Mgt. Ridge Till (346)	60	38
Early Successional Habitat Dev./ Mgt. (647)	57	35
Field border (386)	55	34
Contour Farming (330)	55	34
Forest Stand Improvement (666)	54	33
Grassed Waterway (412)	54	28

PRACTICE	# of Staff	# of Districts
Forest Site Preparation (490)	49	32
Waste Utilization (633)	47	30
Prescribed Grazing: Dairy/Beef Cow/Calf/Ewe/Lamb/Horses/Other (528 /8)	43	28
Stripcropping (585)	43	27
Contour Buffer Strips (332)	43	25
Water & Sediment Control Basin (638)	42	22
Prescribed Burning (338)	39	26
Subsurface Drain (606)	39	22
Grade Stabilization Structure (410)	38	24
Diversion (362)	38	23
Underground Outlet (620)	38	22
Streambank Protection (580)	38	17
Firebreak (394)	36	29
Wetland Enhancement (659)	36	20
Riparian Herbaceous Cover (390)	36	20
Wetland Creation (658)	35	19
Integrated Pest Mgt (595 /7 Level A )	33	20
Well Decommissioning (351)	33	17
Brush Management (314)	31	21
Terrace (600)	30	18
Terrestrial Invasive Plant Species Pest Management (797 - Interim)	27	14
Hedgerow Planting (422)	27	12
Forage Harvest Management (511)	25	19
Stream Habitat Improvement and Management (395)	24	13
Heavy Use Area Protection (561)	21	15
Stream Channel Stabilization (584)	20	12
Runoff Mgmt System (570)	18	11
Sediment Basin Embankment (350)	18	9
Closure of Waste Impoundments (360)	17	13
Channel Bank Vegetation (322)	17	12

PRACTICE	# of Staff	# of Districts
Roof Runoff Mgmt (558)	16	12
Waste Storage Facility (313)	16	10
Herbaceous Wind Barriers (603)	14	9
Recreation Area Improvement (562)	14	8
Cross Wind Trap Strips (589C)	13	12
Structure for Water Control (587)	13	8
Cross Wind Ridges (589A)	11	10
Grazing Land Mech. Treatment (548)	11	9
Watering Facility (614)	11	8
Composting Facility (317)	11	8
Dike (356)	11	7
Surface Drain, Field Ditch (607)	10	9
Access Road (560)	10	7
Water Well (642)	9	8
Pond Embankment (378)	9	7
Surface Drain, Main or Lateral (608)	9	7
Animal Trails and Walkway (575)	9	6
Stream Crossing (578)	9	5
Spoil Spreading (572)	8	7
Pond Excavated (378)	8	7
Practice Establishment and Maintenance (595 Level B )	8	7
Shoreline Protection (580)	7	4
Wastewater Treatment Strip (635)	6	5
Range Planting (550)	6	4
Clearing & Snagging (326)	6	4
Pipeline (516)	6	4
Open Channel (582)	5	4
Dam (402)	4	4
Pond Sealing or Lining, Bentonite Sealing (521C)	4	4
Spring Development (574)	4	4

PRACTICE	# of Staff	# of Districts
<b>Pond Sealing or Lining, flexible membrane lining membrane (521A)</b>	4	4
<b>Pumping Plant (533)</b>	4	3
<b>Animal Mortality Facility (316)</b>	4	2
<b>Biofilter (795 Interim)</b>	4	2
<b>Sinkhole Treatment (725 Interim)</b>	4	2
<b>Anaerobic Digester - Controlled Temperature (366)</b>	3	3
<b>Water Harvesting Catchment (636)</b>	3	3
<b>Waste Treatment (629)</b>	3	3
<b>Irrigation Water Mgmt (449)</b>	3	1
<b>Drainage Water Mgmt (554)</b>	3	1
<b>Grade Stabilization Structure Embankment (410)</b>	2	2
<b>Lined Waterway/Outlet (468)</b>	2	2
<b>Obstruction Removal (500)</b>	2	2
<b>Alley Cropping (311)</b>	2	2
<b>Constructed Wetland (656)</b>	2	2
<b>Stabilization (584)</b>	2	2
<b>Dry Hydrant (432)</b>	2	2
<b>Waste Facility Cover (367)</b>	2	1
<b>Seasonal High Tunnel System for Crops</b>	1	1
<b>Irrigation System, Sprinkler (442)</b>	1	1
<b>Vegetated Treatment Area (635)</b>	1	1
<b>Grade Stabilization Structure Box Inlet (410)</b>	1	1
<b>Sinkhole and Sinkhole Area Treatment (527)</b>	1	1

## Appendix 7: 2011 Survey Questions

### I. Estimate the Current amount of Technical Assistance Source(s) for your organization's 2011 Engineering projects:

YEAR: 2011

In-house (SWCD)	%
NRCS	%
TSA	%
Private Consultant	%
Other	%
Total:	100 %

### Eco Science projects:

YEAR: 2011

In-house (SWCD)	%
NRCS	%
TSA	%
Private Consultant	%
Other	%
Total:	100 %

### II. TAA Interest and Commitment Goals

Overall Technical Skills goal for your SWCD office (check one):

Increase or Expand TAA amongst our technical staff;
  Maintain Current TAA levels of our technical staff;
  Contract-out Project Work (Decrease our staff need for TAA)

**III. Top Conservation Practices**

Choose 1-3 (up to 3) practices that your SWCD would commit to send staff to training to help **begin or increase TAA levels this year**, or in the near future:

- 1 Drop down list
- 2 Drop down list
- 3 Drop down list

Choose 1-3 (up to 3) practices that your SWCD would commit to send staff to training to help **maintain technical skills and current TAA** certification.

- 1 Drop down list
- 2 Drop down list
- 3 Drop down list

**IV. Construction Inspection**

We also would like to learn about interest in construction inspection. Regardless of your SWCD's design TAA, is your organization interested in providing construction inspection work and willing to attend construction inspection training if provided?

Yes

No

Not Sure

**V. Comments** (Comments Section)

## Appendix 8: eLINK Practice Counts

Practice	SWCDs with this Practice in their top 3 Priorities	SWCDs with TAA for this Practice	Staff with TAA for this Practice
Water & Sediment Control Basin (638)	23	50	88
Wetland Restoration (657)	19	49	91
Grade Stabilization Structure (410)	18	24	38
Streambank Protection (580)	17	25	50
Shoreline Protection (580)	15	12	16
Grassed Waterway (412)	14	54	102
Bioretention Basin (712) *	10	3	7
Terrace (600)	8	45	67
Critical Area Planting (342)	7	59	112
Filter Strip (393)	7	55	100

Most of the top installed practices as reported in eLINK from 2006-1010 are not included in the list of most popular practices to increase TAA for. The reasons for this are unclear, but it could indicate a need to expand the list of practices for which staff have TAA. It could also be a reflection of a shift in the need for particular practices. Finally, it should be noted that the practices for which TAA is available has shifted over time or may be lumped for reporting purposes as in the case of Streambank & Shoreland Protection.