Missouri Department of Natural Resources

AGENDA

Missouri Soil and Water Districts Commission
Bennett Springs/Roaring River Room
1730 East Elm Street
Jefferson City, Missouri
October 12, 2016
10:30 a.m.

A. CALL TO ORDER

B. MINUTES OF THE LAST MEETING

C. DEPARTMENT OF NATURAL RESOURCES

D. SOIL AND WATER CONSERVATION PROGRAM DIRECTOR'S COMMENTS

1. Fiscal Year 2017 Cost-Share Status
2. Agricultural Stewardship Assurance Program (David Baker)
3. Department of Natural Resources Periodic Rule Review
4. MU Agriculture Water Demand and Management Study (Action Item)

E. REQUEST

1. Tabled: Dade SWCD Remove Grazing School Requirement for Grazing System Practice
2. Oregon SWCD Remove N590 Nutrient Management Requirement from DSP 3.4 Grazing System Lime
3. Barry, Carter and Iron SWCDs Cost-Share on Comprehensive Nutrient Management Plan Associated with N312 Waste Management Practice
4. Carroll and Cooper SWCD Variance to Allow Tillage on N340 Cover Crop Practice

(If a supervisor request is received in advance of this meeting, it may be presented to the commission.)

5. Supervisor Requests
   a. Harrison SWCD

F. APPEALS

G. NEW BUSINESS

H. REPORTS

1. **University of Missouri**
2. **Department of Conservation**
3. **Department of Agriculture**
4. **NRCS**
5. **MASWCD**

I. PUBLIC COMMENTS

J. SUGGESTED DATE(S) OF NEXT MEETINGS

November 28, 2016, Tan-Tar-a, Osage Beach

K. ADJOURNMENT

Those wishing to address the commission on any of the above issues need to contact a program staff member, Theresa Mueller or sign up on the comment card at the commission meeting.

If you have any questions regarding this meeting, special accommodation needs, or would like a copy of any material provided at the commission meeting, please contact Theresa Mueller at 573-526-4662.

The Soil and Water Districts Commission may go into closed session at this meeting if such action is approved by a majority vote of the commission members who constitute a quorum to discuss legal, confidential, or privileged matters under § 610.021(1), RSMo 2000; personnel actions under §610.021(3); personnel records or applications under §610.021(13), records under § 610.021(14), or audit issues under § 610.021(17), which are otherwise protected from disclosure by law.

Missouri Department of Natural Resources

MINUTES
MISSOURI SOIL AND WATER DISTRICTS COMMISSION
Missouri State Fair Grounds
Lowell Mohler Assembly Hall/National Guard Armory
Sedalia, Missouri
August 17, 2016

COMMISSION MEMBERS PRESENT: Charles Ausfahl, Glen Cope, H. Ralph Gaw, Jeff Lance, Tim Martin and Gary Vandiver

EX-OFFICIO MEMBERS: **RICHARD FORDYCE, DEPT. OF AGRICULTURE:** Judy Grundler; **TOM DRAPER-INTERIM DIRECTOR, DEPT. OF CONSERVATION:** Lisa Potter, **SARA PARKER PAULEY, DEPT. OF NATURAL RESOURCES:** Sara Parker Pauley, Todd Sampsell; **DEAN THOMAS PAYNE, UNIV. OF MISSOURI:** Robert Kallenbach

ADVISORY MEMBERS PRESENT: **SOIL AND WATER CONSERVATION PROGRAM:** Colleen Meredith; **NATURAL RESOURCES CONSERVATION SERVICE (NRCS):** J.R. Flores; **MISSOURI ASSOCIATION OF SOIL AND WATER CONSERVATION DISTRICTS (MASWCD):** Kenny Lovelace; **ATTORNEY GENERAL'S OFFICE:** Shawna Bligh

STAFF MEMBERS PRESENT: Van Beydler, Jim Boschert, Jacob Cross, Theresa Mueller, Jim Plassmeyer, Cody Tebbenkamp, Colette Weckenborg, Bill Wilson

OTHERS PRESENT: **DISTRICTS: BATES:** Brad Powell; **FRANKLIN:** Lori Nowak; **LAWRENCE:** Paula Champion, Christian Wooldridge; **MILLER:** Bonnie Pryor; **MISSOURI DEPARTMENT OF AGRICULTURE:** Chris Klenklen; **MISSOURI DEPARTMENT OF NATURAL RESOURCES:** Andrea Balkenbush, Kurt Boeckmann, Bryan Hopkins, Robert Stout; **MISSOURI PRAIRIE FOUNDATION:** Carol Davit; **UNIVERSITY OF MISSOURI:** Randy Miles; **OTHER: MO CORN GROWERS**: Darrick Steen; **USGS**: John Schumacher; **FARM BUREAU:** Kelly Smith; **LANDOWNERS:** John Calhoun, Marianne Valencia, Barry Schmidt, Linda Schmidt

A. CALL TO ORDER

Chairman Gary Vandiver called the meeting to order in Sedalia, Missouri, at 9:10 a.m. Charles Ausfahl, Glen Cope, H. Ralph Gaw, Jeff Lance, Tim Martin and Gary Vandiver were present, which made a quorum.

B. MINUTES OF THE LAST MEETING

H. Ralph Gaw made a motion to approve the minutes of June 8, 2016, Commission meeting. Charles Ausfahl seconded the motion. When asked by the Chair, Charles Ausfahl, Glen Cope, H. Ralph Gaw, Jeff Lance, Tim Martin and Gary Vandiver voted in favor of the motion and the motion carried unanimously.

C. SOIL AND WATER CONSERVATION PROGRAM DIRECTOR'S COMMENTS

Colleen Meredith thanked everyone for attending the meeting.

1. Fiscal Year 2016 Financial Information

Colette Weckenborg presented an update on the fiscal year (FY) 2016 budget. The revenues for FY16 totaled $46,407,557 and of that amount, $46,171,508 was from the sales tax; $193,707 was interest and $42,341 from vendor refunds. Ms. Weckenborg pointed out that in FY16, $47,775,631 was expended of the $53,200,235 appropriation authority granted to the program. Of that amount, 70 percent, $33,425,231, was for Cost-Share; 24 percent, $11,447,864, was District Operations; 4 percent, $2,005,289, was Program Administration; and 2 percent, $897,248, was Other.

2. Fiscal Year 2016 and Fiscal Year 2017 Cost-Share/SALT Fund Status

Bill Wilson presented the FY16 Cost-Share/SALT Fund Status. To close out the fiscal year, $33,345,968 was obligated and paid to landowners. He stated that FY16 was a robust year for cost-share and was the second highest year in the program's history.

For FY16 SALT cost-share, $110,396 was allocated and of that amount, $53,766 was obligated and paid to landowners. He pointed out that FY16 was the last year for the SALT projects.

For FY17 cost-share, $34,107,776 has been allocated and of that amount, $9,153,665 obligated and $494,511 paid to landowners. He stated this amount does include the first Supplemental Allocation. As of August 10, 2016, the Supplemental Allocation amount was $3,960,000. There were 42 districts that received a supplemental. The next supplemental is scheduled for September 1.

3. Soil Health Assessment Center Update

Dr. Randy Miles presented an update on the Soil Health Assessment Center (SHAC). SHAC is committed to quality assurance and quality control and to be relevant in what they do. They are working on the assessment of the characteristics of the soil relative to chemical, physical and biologic aspects. They are working with NRCS and others in collecting data on native soils and be prescriptive in the understanding of the soil attributes so they can suggest

management options. He stated they have been looking at the baseline assessment of soils. They are looking at doing 11 different analyses. They have received 1,732 samples and are summarizing the data many ways, by state average, county average and by Major Land Resource Area (MLRA).

The final stage of the renovation of the SHAC Training Room has been completed so they are essentially ready for training. They are now in year two of receiving soil samples and are still looking for the same information from the soil survey mapping unit, position in the landscape, past cropping, etc. They are utilizing the same 11 analyses. He pointed out they are working with many partners as far as the Soil Health Consortium and updated the Commission on the recent and upcoming Field Day and education activities.

He reiterated they are trying to be adaptable, educating others, provide additional information as needed and they welcome input.

Director Pauley stated that she had the opportunity to see the SHAC and was amazed at how far along they have come with the information on the health of the soil. She thanked the Commission for their support of the center.

4. State Water Plan Research Funding

H. Ralph Gaw made a motion to have the tabled issue brought back for discussion. Charles Ausfahl seconded the motion. When asked by the chair, Charles Ausfahl, Glen Cope, H. Ralph Gaw, Jeff Lance, Tim Martin and Gary Vandiver voted in favor of the motion and the motion carried unanimously.

Bryan Hopkins presented on the State Water Plan for Sherri Stoner who will be the DNR coordinator for this effort and was unable to make today's meeting. Department staff that are contacts for the plan from the Water Resources Center are Sherri Stoner and Andrea Collier.

The previous water plan is over 10 years old and was a technical analysis. It was useful, but the value of the plan is an ongoing process to help the state look at its water priorities. In 2014 members of the different commissions were brought together for briefings on the state water plan and to start the process. He stated this is a stakeholder driven initiative to look at the state's water usage, priorities down the road and what should we be looking at in the future. The critical issue is stable and consistent drinking water sources. The budget is a mix of federal and state fiscal years.

Dr. Robert Kallenbach presented information stating that the goal of the plan is to develop reliable estimates of water demand for agriculture in Missouri through the year of 2060. Today, farmers can produce almost twice as much product with the same amount of water that was used in the past. Now, there are better hybrids, as well as better management, so the plan needs to reflect this science. Some of the products from the agriculture part of the plan will be water demand and use

plans in a HUC8 watershed. They will consider historic and planned uses for crops and livestock, enhance estimates of water needs based on satellite and infrared images, use of a time scale (water demands are not equal throughout the year), show ground vs. surface water needs and build an interactive online map to guide agricultural water users in planning. They also want to bring economic aspects into the plan. Agriculture is the largest industry in Missouri and it uses a lot of water, but its use helps to create jobs, food, etc. Historic analyses, satellite and infrared image analyses and interactive online water resources tool will be required to complete the work.

Bryan Hopkins reiterated that they are looking at large major patterns of prioritizations within the state, not in the individual farm scale. The information this plan produces could be used by the individual farmer from a practical standpoint, such how much water is needed for a crop. He pointed out this would not be a short term process, but long term.

Colleen Meredith stated the Soil and Water Conservation Program is proposing to fund a total of $300,000 for this plan over two years. The appropriation for research is $400,000 a year, so there is funding available for this effort. The $300,000 would be used toward the agriculture water use, not any other part of the plan, and would be through a contract with the University of Missouri.

After extensive discussion, the agenda item died due to the lack of a motion.

5. **U.S. Geological Survey Monitoring Network**

Jeff Lance made a motion to have the tabled issue brought back for discussion. Glen Cope seconded the motion. When asked by the chair, Charles Ausfahl, Glen Cope, H. Ralph Gaw, Jeff Lance, Tim Martin and Gary Vandiver voted in favor of the motion and the motion carried unanimously.

Colleen Meredith stated the SWCP is proposing to fund an amount of $313,000 for use over two or three fiscal years for as Phase II monitoring project.

John Schumacher from the United States Geological Survey (USGS) stated the Missouri Ambient Water Quality Monitoring Network has been around since the late 1960s. It is a premier water quality monitoring network and is a cooperative effort between the Department of Natural Resources and the USGS. Of the 71 sites, two are sites on major rivers and four are springs in the Ozarks. Samples are taken up to a dozen times a year, and there is no comprehensive report, but the data is used. The samples are tested for nutrients, bacteria, major and trace elements and pesticides.

Phase I of the project looked at selected sites similar to a pilot to determine if they were worth pursuing. In looking at six locations from 1993-2008, they saw upward trends in phosphorus and nitrogen at some of the sites. The Phase II benefits are: USGS is non-regulatory and focuses on the science, the project will

establish baseline conditions for watersheds, identify water quality trends, and look at the trends with respect to conservation practices at various scales.

John Schumacher demonstrated the value of this Phase II project by using monitoring data in the Elk River Basin in southwest Missouri as an example. This basin has a very large number of poultry facilities. He showed that there was a decreasing trend in phosphorus over a period of several years. Colleen Meredith provided information to show that this trend may possibly be attributed to a concerted effort in that watershed to implement conservation practices that focused on poultry litter management that were funded through 319 Nonpoint Source Grants, SWCP AgNPS SALT and regular cost-share and also federal programs, and a large information/education effort.

Colleen Meredith stated the example in the Elk River shows how the Phase II monitoring can show a relationship of water quality trends and implementation of conservation practices through the SWCP and partner efforts. She reminded the Commission that the amount being asked for was $313,000 over three years to fund the Phase II part of the USGS study.

Glen Cope made a motion to approve the funding of the project. The motion died due to a lack of a second.

6. **Fiscal Year 2017 State Average Cost on Roofing Component**
Bill Wilson presented information on the fiscal year (FY) 2017 State Average Cost on the Roofing Component. The issue is that the state average cost for the roofing component for animal waste facilities decreased from $7.18 to $5.38/square foot for FY17. Five districts sent letters requesting that the state average cost be changed back to $7.18/square foot for the current fiscal year. As in past years, component cost data can be entered into the actual cost database by NRCS, FSA and SWCD staff. The database is available year round so that information can be added at any time. In FY15, a spreadsheet was developed and made available to the SWCDs as an additional method to enter data if NRCS computer access was not convenient. The data entered helps establish the state average costs used in state and federal cost-share. He pointed out that it is important that districts enter accurate cost data, because it impacts the amount for determining cost-share payments. The districts were sent an email on May 23, 2016, reminding them to enter the information. In FY16 the roofing component was used on 48 animal waste practices in 14 districts; of those districts only three entered the roofing costs into the database (two entered state cost-share information and one entered EQIP cost). The costs entered ranged from $2.47 to $6.11.

The Commission consideration: maintain the roofing rate at $5.38/square foot as determined by information entered into the cost-share database to establish the state average cost list, and remind districts about the importance of entering cost into the database.

No action was taken, so the roofing rate was maintained at $5.38/square foot.

D. APPEALS

1. Clay SWCD Landowner Appeal of Board Denying Payment on a Cover Crop Practice Contract Due to Tilling

Cody Tebbenkamp presented an appeal from a Clay County landowner appealing the board's denial of payment on three Cover Crop practice contracts totaling $8,882.50. The landowner is appealing due to the fact that he did not realize a harrow was considered a tillage tool.

All three contracts were started in September of 2015 following Commission policy. After the application of anhydrous, the landowner pulled a pasture harrow across the entire field to smooth the ruts. On April 17, 2016, the landowner planted corn after the cover crop. After the corn was planted the district staff reviewed the sites where the cover crops had been planted and the landowner explained that he had harrowed two of the three fields. Cody stated that the landowner sent the program office an email to this affect. The district sent a letter to the program office in support of the landowner. The board took responsibility for not explaining all of the necessary information regarding the rules and regulations pertaining to the cover crop practice. The board denied the payments due to Commission policy and guidance from NRCS staff. Commission policy states, "Production crop following the cover crops must be planted using a no-till system on the contracted acres. No-till is defined as per standard 329 for Residue and Tillage Management No-till." The NRCS Residue and Tillage Management standard 329 states, "There is no full-width tillage performed on the fields from the time of harvest or termination of one cash crop to the time of harvest or termination of the next cash crop in the rotation regardless of the depth of the tillage operation."

Commission consideration is to uphold the Commission's policy of requiring the production crop to be no-tilled into the cover crop and deny the landowner's appeal to receive payment on his three cover crop contracts totaling $8,882.50.

After discussion, H. Ralph Gaw made a motion to approve the landowner's request to pay the contracts in the amount of $8,882.50. Charles Ausfahl seconded the motion. When polled, Charles Ausfahl, Glen Cope, H. Ralph Gaw, Jeff Lance, Tim Martin and Gary Vandiver voted in favor of the motion and the motion carried unanimously.

E. REQUEST

1. Lawrence SWCD – Landowner Maintenance Violation on Grazing System Practice DSP 3.1 Water Development, DSP 3.2 Water Distribution and DSP 3.3 Fence

Jim Plassmeyer presented a request from the Lawrence SWCD for the Commission's assistance obtaining a prorated repayment on a grazing system practice in the amount of $8,427.10 due to the grazing system not being maintained as designed.

The system had water development, water distribution and fence practices implemented. The grazing system water development and distribution were paid in 2009 and the fence was paid in 2010. On February 4, 2016, the district discovered a maintenance issue when working with the current landowner. It was pointed out that the original landowner no longer owns the property. Commission policy states that the contract and maintenance remains with the original landowner that received payment for the practice, unless that maintenance is formally transferred to the new landowner. The transfer was not done in this instance. On April 25, 2016, the district sent the landowner a certified letter notifying him of the maintenance violation and offered him two options; either rebuild the fence or make repayment of $8,427.10 with 30 days. The program was informed by the district that they had not received payment nor was the fence rebuilt, so the program sent the landowner a letter reiterating the need for either repayment or the fence to be rebuilt or make an appeal to the Commission.

Commission policy on a maintenance violation states, "The district board has the responsibility to follow up on cost-share practices to see that they are maintained for the life of the practice. Practices not maintained cannot perform their intended function, and the landowner is not complying with the maintenance agreement as stated on the contract."

Code State of Regulations and the contract states, "if the practice is removed, altered or modified so as to lessen its effectiveness, without prior approval of the district, for a period of ten (10) years or the expected life span of the practice, whichever is the lesser, after the date of receiving payment, the landowner or his/her heirs, assignees or other transferees, shall refund to the Cost-Share Program the prorated amount of the state cost-share payment previously received for the practice or portion of the practice which has been removed, altered or modified." Mr. Plassmeyer stated that Lawrence SWCD was following both policy and regulations in asking for the full repayment, because of the modifications to the practice.

The Commission policy requires grazing systems to follow the NRCS 528 Prescribed Grazing Standard for a 10-year life span. The N528 standard provides guidance for two or more pastures system, as well as three or more pastures

system. The number of paddocks needed is determined by the length of the rest period needed for the recovery period of the forages.

Mr. Plassmeyer presented pictures of the grazing system showing the missing fence. Since the fence was removed, Lawrence SWCD was requesting the Commission's assistance obtaining the prorated repayment from the landowner in the amount of $8,427.10. Mr. Plassmeyer stated the landowner sent an email stating that he contacted the current owners about his intention to reinstall high tensile electric fence, but the current landowner will only accept 4-strand barbed wire. The estimated cost is over $7,800, which is beyond the previous landowner's financial ability. The Commission has the authority to grant an individual variance to any rule or regulation, as well as looking at it to see if there would be any arbitrary impact to a landowner participating in the program.

Commission consideration is to support the board's request for repayment by notifying the landowner of the maintenance violation and ask for repayment of $8,427.10 or reinstall the fence within 30 days of the notification. If neither of the options is met within 30 days, turn the issue over to the Attorney General's Office for collection.

After discussion which indicated that the current system, even with the fencing that was removed, still meets the NRCS N528 Standards and Specifications. H. Ralph Gaw made a motion to have the landowner pay the $2,677.32 for the fencing that was removed. Charles Ausfahl seconded the motion. After further discussion both withdrew their motion.

Jeff Lance made a motion to have the landowner repay the prorated amount of $2,677.32 for the fence that was removed, but still have the maintenance agreement on the tanks, piping and remaining fence. Glen Cope seconded the motion. When polled, Charles Ausfahl, Glen cope, H. Ralph Gaw, Jeff Lance, Tim Martin, and Gary Vandiver voted in favor of the motion and the motion carried unanimously.

F. SOIL AND WATER CONSERVATION PROGRAM DIRECTOR'S COMMENTS (CONTINUED)

1. Missouri Prairie Foundation

Carol Davit presented information on the Missouri Prairie Foundation which is a private nonprofit prairie conservation organization. Their mission is to protect and restore remaining prairie and other native grassland communities through acquisition, management, education and research. The Missouri Prairie Foundation also promotes the use of native plants for a variety of benefits through the 16-year-old Grow Native Program.

They are governed by a volunteer board of directors from across the state and have three staff members and many partners and collaborators. The organization began in 1966 to safeguard the remaining prairie land. She pointed out that at the time of statehood there was 15,000,000 acres of prairie, today there is less than 70,000 acres of original prairie land. Some of the reasons for the loss are conversion of native habitat to fescue, row crops and fire suppression. There is an incredible biodiversity in the prairies. The temperate grassland is the least conserved, most threatened. Missouri prairies support many species: 800 native plants, more than 450 pollinating insect species, other invertebrates and dozens of vertebrate animals. The remaining prairies have direct benefits to the soil due to continuous inputs of organic substances via the roots, drought tolerant forage, erosion control and water protection.

Ms. Davit stated that we need to save as much of the original prairie as we can and apply what we have learned from the remaining prairies. She stated they are happy to host tours, supply speakers on the benefits of natives and provide resource guides on native plants and services. She also encouraged the Commission to include incentives for natives in the cost-share programs.

2. Staff Updates

Jim Plassmeyer reported that the program had hired a district coordinator, Jacob Cross, to cover the north central part of the state.

G. REQUEST (CONTINUED)

1. Supervisor Requests

a. Callaway

Jim Boschert presented a request from the Callaway County Soil and Water Conservation District (SWCD) requesting the appointment of Mr. Noland Bartley to complete the unexpired term of Mr. Carson Humphreys due to his resignation. Mr. Bartley and the board chairman have signed the Verification of Supervisory Eligibility form, verifying the candidate meets the qualifications to serve on the board.

Glen Cope made a motion to approve the appointment of Mr. Noland Bartley to complete the unexpired term of Mr. Carson Humphreys. Tim Martin seconded the motion. When asked by the Chair, Charles Ausfahl, Glen Cope, H. Ralph Gaw, Jeff Lance, Tim Martin and Gary Vandiver voted in favor of the motion and the motion carried unanimously.

b. Miller

Jim Boschert presented a request from the Miller County Soil and Water Conservation District (SWCD) requesting the appointment of Mr. Phil Thompson to complete the unexpired term of Mr. Elias Otto due to his resignation. Mr. Thompson and the board chairman have signed the

Verification of Supervisory Eligibility form, verifying the candidate meets the qualifications to serve on the board.

H. Ralph Gaw made a motion to approve the appointment of Mr. Phil Thompson to complete the unexpired term of Mr. Alias Otto. Jeff Lance seconded the motion. When asked by the Chair, Charles Ausfahl, Glen Cope, H. Ralph Gaw, Jeff Lance, Tim Martin and Gary Vandiver voted in favor of the motion and the motion carried unanimously.

c. Reynolds

Jim Boschert presented a request from the Reynold SWCD requesting the appointment of Mr. Doug Fitzgerald to complete the unexpired term of Mr. Bob Roney due to his resignation. Mr. Fitzgerald and the board chairman have signed the Verification of Supervisory Eligibility form, verifying the candidate meets the qualifications to serve on the board.

Jeff Lance made a motion to approve the appointment of Mr. Doug Fitzgerald to complete the unexpired term of Mr. Bob Roney. H. Ralph Gaw seconded the motion. When asked by the Chair, Charles Ausfahl, Glen Cope, H. Ralph Gaw, Jeff Lance, Tim Martin and Gary Vandiver voted in favor of the motion and the motion carried unanimously.

NOTE: Charles Ausfahl and Glen Cope left the meeting prior to adjournment due to prior commitments.

H. REPORTS

1. Department of Agriculture

Judy Grundler welcomed everyone to the State Fair. The department has completed several of their surveys. The Emerald Ash Borer survey indicated 14 new county detections in the state. Since it is a federally regulated pest, they no longer have quarantine areas now that it is generally around the state. Two other surveys are the Gypsy Moth (nine found this year) and the Thousand Cankers Disease of Black Walnut (none found so far in the state).

Ms. Grundler informed the Commission about the issue of dicamba. She stated that they have received 125 complaints about this and is an unfortunate situation. Several producers used an old formulation of dicamba which is highly volatile and drifts which created damage to crops in the area.

2. Natural Resources Conservation Service (NRCS)

J.R. Flores informed the Commission that they had a very successful year in EQIP. They received approximately $29.5 million which was an increase from a few years ago. The Monarch Habitat Development Project received some special initiative funds in the amount of $560,000 and they received 150 requests from

across Missouri. The State Technical Committee meeting was held in June and he thanked everyone who attended. The Conservation Planning Training will be continued to certify soil and water conservation district employees as Conservation Planners. NRCS is finalizing with the SWCP 13 additional technician positions that are going to be located in the field; they will be hired and supervised by the local soil and water conservation districts.

3. **University of Missouri**
Dr. Robert Kallenbach stated they are working with NRCS and other partners on the issues that were brought up regarding the grazing school. He stated there are several field days scheduled across the state.

Dr. Kallenbach informed the Commission that they have a new curriculum coming out on Healthy Yards and Healthy Streams. It is focused on runoff from urban landscapes. They will work with homeowners on what they are doing in terms of their yards and how it impacts streams.

4. **Department of Conservation**
Lisa Potter stated that Missouri was the first state to finalize the State Monarch and Pollinator Conservation Plan. There were 25 partners that signed an MOU help to launch this in the state, and there are still other partners that want to be involved with this. One of the objectives of this plan was to hire a Pollinator Coordinator and they are working on that now and hope to have someone in place by the end of August. She stated they just opened up their new Missouri Outdoor Recreational Access Program. This program provides opportunities for private landowners to open their land to the public for wildlife recreation. The first statewide sign-up took place and they hope to have 6,000 acres of new land available for this program.

5. **Missouri Association of Soil and Water Conservation Districts**
Kenny Lovelace invited everyone to Tan-Tar-A for the Training Conference. He also thanked everyone who has been working on the tax renewal.

I. NEW BUSINESS

Ralph Gaw announced that Charles Ausfahl was resigning from the Commission effective immediately. Mr. Ausfahl was handing in his resignation to the Governor.

J. SUGGESTED DATE(S) OF THE NEXT MEETING(S)

The next meeting is scheduled for October 12, 2016, in Jefferson City.

K. ADJOURNMENT

Jeff Lance made a motion to adjourn the meeting at 12:50 p.m. H. Ralph Gaw seconded the motion. When asked by the Chair, H. Ralph Gaw, Jeff Lance, Tim Martin and Gary Vandiver voted in favor of the motion and the motion carried unanimously.

Respectfully submitted,

Colleen Meredith, Director
Soil and Water Conservation Program

Approved by:

Gary Vandiver, Chairman
Missouri Soil and Water Districts Commission
/tm

Master Fund Status Summary

District	Allocated	Obligated	%Obligated	# Contracts	Contract Payment	% Contract Payment	# Contract Payments	Pending
FY: 2017 Fund Code:R Project:AWM - ANIMAL WASTE MANAGEMENT								
	$3,123,750.00	$887,410.76	28.41%	38	$49,223.73	1.58%	3	$88,607.16
FY: 2017 Fund Code:R Project:BDSP-31 - BUFFER SINKHOLE IMPROVEMENT								
	$22,500.00	$0.00	0.00%	0	$0.00	0.00%	0	$0.00
FY: 2017 Fund Code:R Project:GM - GRAZING MANAGEMENT								
	$5,040,736.70	$2,447,438.05	48.55%	731	$299,775.09	5.95%	96	$298,410.13
FY: 2017 Fund Code:R Project:IM - IRRIGATION MANAGEMENT								
	$1,240,251.00	$572,012.83	46.12%	100	$200,599.71	16.17%	31	$22,549.86
FY: 2017 Fund Code:R Project:NP - NUTRIENT & PEST MANAGEMENT								
	$1,227,021.00	$672,741.40	54.83%	794	$0.00	0.00%	0	-$1,329.00
FY: 2017 Fund Code:R Project:SA - SENSITIVE AREAS								
	$3,054,301.18	$1,025,176.19	33.56%	188	$131,360.83	4.30%	34	$100,588.98
FY: 2017 Fund Code:R Project:SGE - SHEET AND RILL / GULLY EROSION								
	$20,735,833.00	$12,385,269.01	59.73%	3115	$1,920,994.93	9.26%	316	$1,436,350.53
FY: 2017 Fund Code:R Project:WE - WOODLAND EROSION								
	$2,145,883.39	$595,950.00	27.77%	188	$95,115.75	4.43%	28	$68,709.60
Subtotal for R	$36,590,276.27	$18,585,998.24	50.79%	5154	$2,697,070.04	7.37%	508	$2,013,887.26
FY: 2017 Fund Code:SN Project:NRDSE - NRD SOUTHEAST								
	$15,056.52	$11,056.52	73.43%	1	$0.00	0.00%	0	$0.00
FY: 2017 Fund Code:SN Project:NRDSW - NRD SOUTHWEST								
	$52,032.89	$48,032.89	92.31%	2	$0.00	0.00%	0	$0.00

D.1

Master Fund Status Summary

District	Allocated	Obligated	%Obligated	# Contracts	Contract Payment	% Contract Payment	# Contract Payments	Pending
Subtotal for SN	$67,089.41	$59,089.41	88.08%	3	$0.00	0.00%	0	$0.00

Master Fund Status Summary

Master Fund Status Summary (2017)

Subtotal for R	$36,590,276.27	$18,585,998.24	50.79%	5154	$2,697,070.04	7.37%	508	$2,013,887.26
Subtotal for SN	$67,089.41	$59,089.41	88.08%	3	$0.00	0.00%	0	$0.00
Report Totals	$36,657,365.68	$18,645,087.65	50.86%	5157	$2,697,070.04	7.36%	508	$2,013,887.26

Scope of Work, State-wide Agricultural Water Demand Estimates

MU College of Agriculture, Food, and Natural Resources
& MO Department of Natural Resources

Goal: Develop reliable estimates of water demand through 2060 for Missouri agriculture.

Missouri Department of Natural Resources (MoDNR) requests collaboration with MU College of Agriculture, Food, and Natural Resources (CAFNR) to develop a comprehensive, statewide agricultural water plan. CAFNR is well positioned to contribute knowledge and expertise in agricultural production and merge that data with water supply/demand estimates to deliver a robust model that predicts water status under different scenarios in the future.

This project connects directly to the mission of the Missouri Soil and Water Conservation program. The Soil and Water Conservation program has a 30-year history of effectively reducing soil erosion and protecting water quality by helping landowners conserve more than 177 million tons of soil from eroding into Missouri's waterways. By reducing soil erosion and water runoff through practices such as conservation tillage, water impoundments and cover crops, much of this water is now available to Missourians for production agriculture. In order to continue promoting the saving of soil and water in the future, a thorough understanding of the demand for water in production agriculture is imperative.

Proposed Scope of Work

The MU CAFNR team will identify surface and ground water withdrawals for Missouri irrigated crop production and livestock water consumption. Withdrawals will be based on monthly crop (evapotranspiration) and livestock water demands. Livestock surface water estimates will include use from local reservoirs and from surface water resources that are annually renewable. Total average monthly precipitation will be included for each of the counties in which irrigated crops or livestock water sources exist.

The MU CAFNR team will project water use out to 2060, coordinate with the primary contractor, CDM Smith, and MoDNR so that product will integrate into the state water plan and align with sector projections, and analyze available MO water use data across applications to establish reliable water use estimates available. This includes evaluating data from Major Water Users, USGS data, and data from the USDA, Census of Agriculture. The most appropriate Hydrologic Unit Code (HUC) is still under discussion, but at the time of this proposal the HUC will be between 4- and 8-digit. The best available agricultural data is at the county level, which is a finer resolution than the 4-digit HUC can utilize.

Background

In the late '90s and early '00s, MoDNR conducted two Missouri Water Plans (MWP): Phase I and Phase II, respectively. Phase I was organized by water function: surface water, ground water,

quality, water use, etc.[1] Phase II was organized by five major geographical regions within the state: Southern, Central, Northwestern, Northeastern, and Eastern.[2]

The Phase I Water Use Report from 1996 differentiates between water use and consumption by illustrating that industries like hydroelectric power and river barge transportation use water without withdrawing it. In a similar context, rain-fed and irrigated crops require similar quantities of water, but irrigated crops are the only ones that withdraw water. Nearly 90% of Missouri's 2012 corn crop acres were not irrigated; only a small percentage of Missouri's total crop production is produced from water that is 'withdrawn.'

In 2010, the United States Geological Survey (USGS) conducted a Total Water Use study for the US.[3] Data is available from this report at a county level. At that time, Missouri withdrew 1,400 million gallons/day for irrigation of both crops and golf courses. The data was not differentiated. Missouri livestock withdrew 73 Million gallons/day.

Crop Water Demand

The 2012 Census of Agriculture reports 30,574,358 acres on farms in Missouri[4], with just 1,174,543 acres under irrigation. Figure 1 lists the harvested acreages by crop as a percentage of the total and the proportion of each that are irrigated (bars).

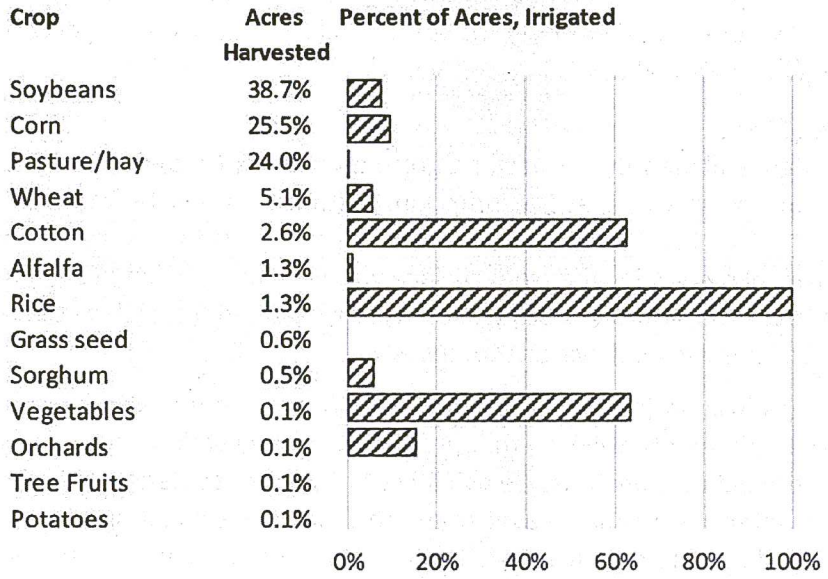

Figure 1 Irrigated Missouri crops and share of crop that is irrigated, 2012 Census of Agriculture

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[1] State Water Plan – Phase I, Missouri Department of Natural Resources http://dnr.mo.gov/geology/wrc/statewaterplanPhase1.htm

[2] State Water Plan – Phase II, Missouri Department of Natural Resources http://dnr.mo.gov/geology/wrc/statewaterplanPhase2.htm

[3] USGS, Total Water Use, 2010, http://water.usgs.gov/watuse/wuto.html

[4] USDA, 2012 Census of Agriculture, Missouri – https://www.agcensus.usda.gov/Publications/2012/Full_Report/Census_by_State/Missouri/

Beginning with the set of agricultural commodities that were used in the last agricultural water use plan, State Water Plan – Phase II, the crop commodities that will be included in the new water use plan are:

Corn	Sod	Cotton
Soybeans	Grass seed	Pasture/hay
Sorghum	Nursery	Alfalfa
Potatoes	Orchards	Grapes
Wheat	Small Fruits/nuts	Vegetables
Rice	Tree Fruits	

Two commodities, peanuts and tobacco, have such small levels of production, the data is not included with Census of Agriculture. These two commodities were omitted.

Surface and groundwater withdrawals will be estimated monthly at the county-level basis. Reservoirs used for irrigation within a watershed are likely a reflection of annual rainfall.

Once annual water use levels have been established, various scenarios will be identified for Missouri agricultural water use to 2060.

Data Sources

The 2012 Census of Agriculture provides the data framework for this project. Other credible datasets may be identified to provide information that this singular data set cannot.

- The most data is available for the principle agricultural commodities: corn, soybeans, grain sorghum, wheat, corn silage, hay, and pastures. The volume of water will be estimated for horticulture and nursery crops, but data constraints may be a limiting factor.
- The data anchor for this work will be the USDA 2012 Census of Agriculture. The dataset may not be the best source of information for every parameter, but it is consistent and trustworthy. The nature of multiple, similar but different datasets is discussed in Appendix A.
- Other data will come from the USDA, NASS survey Quick Stats data[5],
- USDA, FSA has excellent annual cropping data[6]
- Another key data source will be the DNR database of Major Water Users[7]
- When data gaps occur, they will be compared with local MU Extension, NRCS and SWCD personnel.
- Additional data sources, i.e. University of Missouri Bootheel Irrigation Survey, Mississippi Agricultural and Forestry Experiment Station (furrow irrigation)
- Estimates based on satellite imagery (infrared) and aerial photography as developed by the University of Missouri's Commercial Agriculture Program

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[5] USDA, NASS Quick Stats, 2.0., https://quickstats.nass.usda.gov/

[6] USDA, FSA, cropping acres. http://www.fsa.usda.gov/news-room/efoia/electronic-reading-room/frequently-requested-information/crop-acreage-data/index

[7] Missouri Department of Natural Resources, Major Water Users Data, http://dnr.mo.gov/geology/wrc/mwu/measure-surfacewater.htm

Define Methodology

- Considering only irrigation withdrawals, it is simple to quantify by mathematical calculations. There are several datasets available that contain different information about similar farms. These data will be identified from cross-analyzing different datasets. For example, Census of Agriculture reported acreage will be identified at the county level and water use requirements for a given crop will be compared with the rainfall data.
- Initial exploration indicates that FSA data is better ground-truthed than Census of Agriculture data. If a more complete picture emerges with a more robust data collection, the new data will be integrated into the 2016-2017 water use estimates.
- FSA enumeration is linked to NASS and reporting regulations in the farm program.
- MU CAFNR will work with MoDNR and the Commercial Agriculture Stakeholder Advisory Committee to assure that any new data sources are consistent with the sources currently included in the 2016 MWP Background Data and Methodology Document.

Livestock Water Demand

The 2012 Census of Agriculture is the most reliable source of data for livestock inventory and subsequent water use. As with the irrigated crop estimates, the Census of Agriculture will serve as a foundation for livestock water use.

The livestock commodities that will be included in the new water use plan are: beef, small ruminants, equine, hogs, dairy, and poultry. Surface and groundwater withdrawals will be estimated monthly at the county-level. Surface water sources will be identified to the extent possible. Reservoirs used for livestock water within a watershed are likely a reflection of annual rainfall.

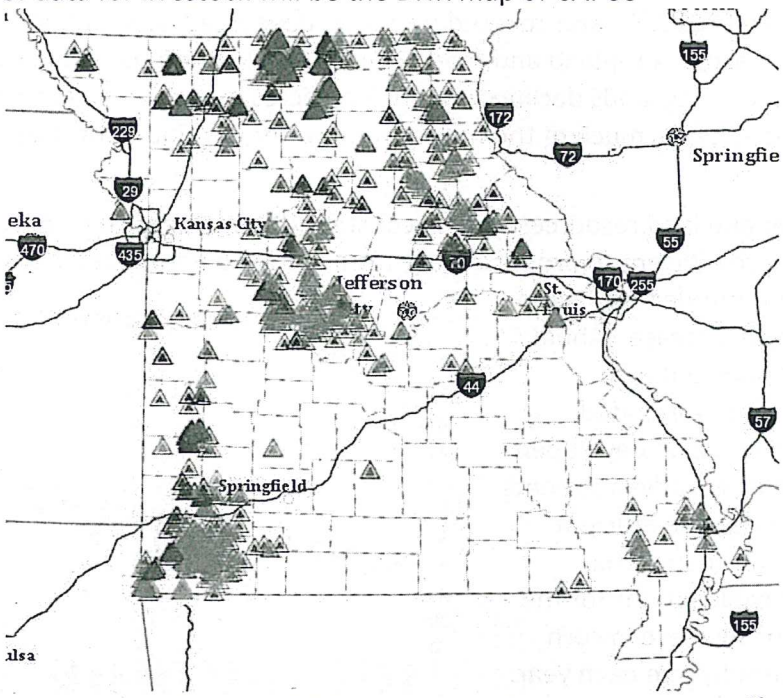
Once annual water use levels have been established, various scenarios will be identified for Missouri agricultural water use to 2060.

Data Sources

- The most data is available for the principle agricultural commodities: beef cows, steers and heifers, and calves; dairy cows and heifers; hogs; sheep and goats; and turkeys, chickens, and eggs. To the extent the data is available equine, aquaculture, and other small livestock will also be included in water use estimates.
- As with the crop water use estimates, the data anchor for this work will be the USDA 2012 Census of Agriculture. As datasets are identified with estimates that are more consistent with the goals of this project, they will be used in place of the Census.
- Other data will come from the USDA, NASS survey Quick Stats data[8],

[8] USDA, NASS Quick Stats, 2.0., https://quickstats.nass.usda.gov/

- A key source of data for livestock will be the DNR map of CAFOs[9]



- Another key data source will be the DNR database of Major Water Users[10]

Define Methodology

- Typically, follows the methodology outlined for crops. We will rely foremost on the 2012 Census of agriculture and this data will be supplemented with other data. County level data can be partitioned into watershed data. Through the Major Water Users data and the Animal Feeding Operation map, concentrations of livestock can be identified within a county and be allocated accordingly. Other cattle numbers can be allocated based on a proportion of grazing land available within each county.
- MU CAFNR will work with MoDNR to assure that any new data sources are consistent with the sources currently included in the 2016 MWP Background Data and Methodology Document

Missouri Agricultural Water Demand Projected Forward to 2060

Often, the best way to look into the future is to study the conditions leading up to the present. Over the past 50 years, the population of Missouri has increased from 4.3 million to 6 million, or about 32,000 people per year.[11] If this continues at the same rate, by 2060, Missouri's population will reach 7.7 million.

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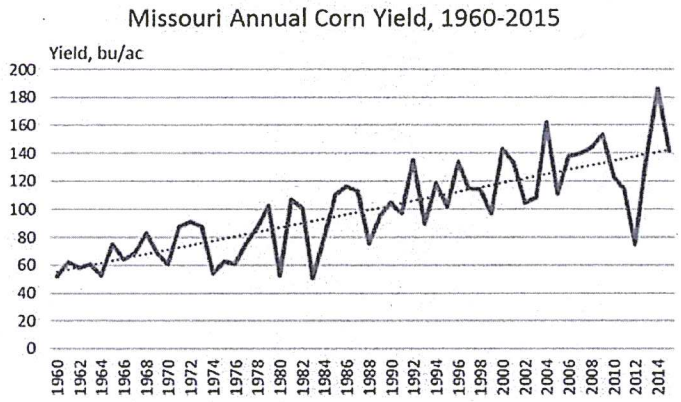
[9] Missouri Department of Natural Resources, Animal Feeding Operation Map, http://www.dnr.mo.gov/mapviewer/npdes_afo.html

[10] Missouri Department of Natural Resources, Major Water Users Data, http://dnr.mo.gov/geology/wrc/mwu/measure-surfacewater.htm

[11] Missouri Census Data Center, http://mcdc.missouri.edu/trends/historical.shtml

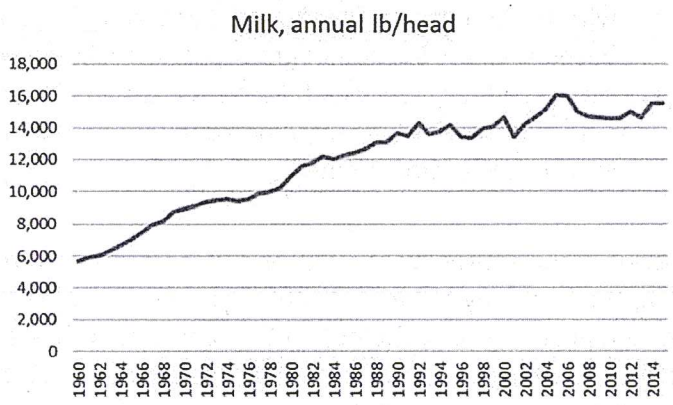
The NRCS, Natural Resource Inventory report shows significant land use change in Missouri between 1982 and 2012.[12] Land covered by water, developed land, and forests increased by a total of 2 million acres. Cropland and federal land in Missouri remained fairly constant over those 30 years. Grazing lands declined by 2 million acres in that time. It is a little more complicated than that as much of the housing and water development takes place on the best cropland.

Assuming water and land resources remain constant, Missouri agriculture will need to be substantially more efficient to produce more from our fixed natural resource assets. While crop acreage has not declined, crop yields continue to increase. About 10 percent of harvested corn acreage in Missouri is irrigated. While irrigation could be developed further, technological advancements such as more water-use efficient hybrids and better managerial decisions offer explanations for the steady trend line increase in corn yields of 1.6 bushels/acre each year.



Soybeans yield fewer bushels per acre than corn, but soybean yields have also been increasing about a third of a bushel per year on average. Evident in the corn yield chart above, there are low yielding years, such as 2012, but statewide average yields continue to increase. These 50-year trends in increasing yields for Missouri corn and soybeans indicate that without increasing our land base or water access, water use efficiency in crop production has been improving.

Similar kinds of efficiency gains can be seen in the livestock sector. This is illustrated by the annual milk produced per Missouri dairy cow. Currently Missouri dairy cows produce 15,000 lbs/cow.[13] Although dairy cow numbers are declining in Missouri and beef cow numbers have been steady to slowly declining, both of these livestock species convert rainfed forage and grains into high valued products composed largely of Missouri water.



[12] USDA, Natural Resource Conservation Service (NRCS), Natural Resource Inventory, 2012 http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/technical/nra/nri/

[13] USDA, National Agricultural Statistics Service, Quick Stats, https://quickstats.nass.usda.gov/

Long-term trends in crop and livestock production technologies lead to increases in intensive management. This likely indicates there will be greater withdrawals for crop irrigation and livestock water by 2060. However, the greatest potential to maintain vibrant crop and livestock economies in Missouri is to continue to make gains in production efficiency – particularly in the area of rain-fed crops.

Identification of Available Missouri Water Sources

Assumptions or methods to identify available and used precipitation, evaporation, and transpiration, surface water and groundwater sources.

- MU CAFNR will delineate annual estimates by crop and area of the state of net rainfall available for use on the ground. This is not intended to be an in-depth watershed runoff analysis, but rather an estimate of precipitation that is available for crop and livestock consumption on an annual basis.
- MoDNR will take the lead on identifying the best surface and ground water sources availability, though initial investigation indicates that these data are available through USGS and MSDIS and other sources.
- MU CAFNR will work with MoDNR to assure that any new data sources are consistent with the sources currently included in the 2016 MWP Background Data and Methodology Document

Methodology of Satellite Imagery to Detect Surface Water

Satellites owned by public and private entities orbit the earth and contain sensors that measure the reflectance of radiation (sunlight) from earth's surface. Objects on earth's surface absorb and reflect light at different wavelengths. Humans understand this absorption and reflection as color; i.e. green plants are green because they reflect light in the range of 495–570 nanometer wavelength. We can exploit these differences in absorption and reflection with remote sensing to determine land use and land cover from satellite imagery data. Water bodies are detected by use of different indices such as the Normalized Difference Vegetation Index (NDVI) or spectral band ratios such as NIR/Red and Red/Green. These ratios permitted clear distinction between water bodies and different types of ground cover. More recent technological advances in the capabilities of satellites offer improved imaging with greater resolution in scale and greater segmentation in multi-spectral wavelength bands. These advances allow development of other customized indices (such as Normalized Difference Water Index (NDWI)) tuned to the subject being studied. As well, they improve estimation of turbidity and depth of water bodies and expand the possibility of differentiating between surface cover characteristics/objects. Decision trees with thresholding can classify objects on earth's surface into a multitude of categories based on the digital counts of the reflectance at certain wavelengths.[14]

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[14] http://www.nconemap.com/Portals/7/documents/Using_Color_Infrared_Imagery_20110810.pdf
Lacaux, J.P., Tourre, Y.M., Vignolles, Cecile, Ndione, J.A., and Lafaye, M., 2007, Classification of ponds from high-spatial resolution remote sensing—Application to Rift Valley Fever epidemics in Senegal: Remote Sensing of Environment v. 106, p. 66–74.
McFeeters, S.K., 1996, The use of the Normalized Difference Water Index (NDWI) in the delineation of open water features: International Journal of Remote Sensing, v. 17, no.7, p.1425–1432, http://dx.doi.org/10.1080/01431169608948714

Communication

MU CAFNR is in the position of providing the best data foundation of agricultural water use to MoDNR. Strong two-way communication is imperative. A routine conference call or meeting schedule must be established for discussion of status and direction of the project (minimum bi-weekly). Additional interaction must be established with the Agricultural Technical Workgroup and the Commercial Agriculture Stakeholder Advisory Committee as the project evolves to assist in the preparation of presentations of study and analysis results.

Deliverables

The primary deliverable is an exhaustive, forward thinking, plan for agricultural water use in Missouri that includes...

- Demand and use plans at the watershed level
- Considers historic and planned uses for crops and livestock
- Includes enhanced estimates of water needs based on satellite and infrared images combined with on-the-ground verification
- Compares with-in year (monthly) demands against water resources
- Shows ground vs. surface water needs
- Builds an interactive, online map to guide agricultural water users in planning

All deliverables will be made available to the Corps' contractor for incorporation into Missouri Water Plan. We will coordinate with MoDNR and the contractor on format of the final product.

Zhiqiang Du, Wenbo Li, Dongbo Zhou, Liqiao Tian, Feng Ling, Hailei Wang, Yuanmiao Gui & Bingyu Sun, Analysis of Landsat-8 OLI imagery for land surface water mapping, Remote Sensing Letters, Volume 5, 2014, Issue 7, Pages 672-681 | Received 30 Nov 2013, Accepted 26 Aug 2014, Published online: 29 Sep 2014. http://dx.doi.org/10.1080/2150704X.2014.960606

Puech, C. 1994. Thresholds of homogeneity in targets in the landscape: Relationship with remote sensing. Inter. J. Remote Sensing, 15:2421-2435. dx.doi.org/10.1080/01431169408954255

Dade County Soil and Water
Conservation District
124 S. Hwy 39
Greenfield, MO 65661
417-637-5993 Ext. 3

February 1, 2016

Soil & Water Conservation Commission
P.O. Box 176
Jefferson City, MO 65102-0176

Dear Commissioners,

This letter is to clarify the intent of the Dade County SWCD Board of Supervisors letter to the Commission on September 10th 2015.

The Dade County SWCD Board of Supervisors, along with other SWCD's, are concerned with the rising cost of grazing schools due to the University Of Missouri Extension charging the $50.00 Educational Fee to each participant. We feel it is an unfair practice for one agency to charge for a coordinated effort to put on these grazing schools. We strive to keep the price per participant to a minimum, which makes it impossible by charging the landowner this additional fee.

In addition the curriculum has gotten way out of line or too advanced for the needs of the basic grazing school needed to participate in the cost share programs. This in turn needs to be removed from the requirement for cost share benefits, or overhauled to the point it is just a basic course addressing only the needs for cost share.

If the requirement to attend a grazing school remains, the school should he concise and focus on the program and at no cost to the participants. Advance schools could be offered by the University at their and participant's election. We feel that there is still a need for the education and that it can be conducted solely by the University through extension offices.

Sincerely,
Linda L Medley
Dade County Soil and Water District Board of Supervisors.

Jeremiah W. (Jay) Nixon, Governor • Sara Parker Pauley, Director

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES

www.dnr.mo.gov

December 17, 2015

Board of Supervisors
Dade County Soil and Water
Conservation District
124 S. State Highway 39
Greenfield, MO 65661

Dear Supervisors:

The Soil and Water Districts Commission at their December 1, 2015, meeting reviewed the board's request to change policy and remove the requirement that the grazing system operator attend a grazing school prior to developing a contract for the DSP-3 grazing practices.

The Commission tabled the request and asked the Plan for the Future's Current Practices Committee to review the request and make a recommendation to the Commission at a future meeting. A meeting will be scheduled with the committee as soon as possible.

If you have any questions or further information on the request, please contact me at the Department of Natural Resources, Soil and Water Conservation Program, P.O. Box 176, Jefferson City, MO 65102-0176 or by phone at (573) 751-1741. Thank you.

Sincerely,

SOIL AND WATER CONSERVATION PROGRAM

Jim Plassmeyer for
District Assistance Section

JP:djs

c: Cedar County Soil and Water Conservation District
Hickory County Soil and Water Conservation District

BOARD OF SUPERVISORS

Carole Witt, Chairman
Danny Engelage, Vice-Chairman
Linda Medley, Treasurer
Steve Richter, Member
Stacey Hamilton, Secretary

Dade County Soil and Water
Conservation District
124 S. Hwy 39
Greenfield, MO 65661
417-637-5993

ASSISTING PERSONNEL

Drexel Atkisson, Dist. Consv.
Gereon Brownsberger, SCT
Becky Lundy, Rec. Con.
Dee Glenn, District Tech II
Kenneth Ball, District Tech I

October 8, 2015

Soil & Water Conservation Commission
P.O. Box 176
Jefferson City, MO 65102-0176

Subject: Grazing School Requirement

Dear Commissioners,

The Dade County SWCD would like the Commission to reconsider the requirement to attend a grazing school as a prerequisite to participate in the DSP-3 grazing system program.

The Board recognizes that a participant in the school does receive good information, however, no other practice has such a requirement and we feel with the vast knowledge of grazing that has been established it is no longer needed as a requirement.
It is felt that the removal of such would allow the local SWCDs, NRCS and Extension to work together to provide local workshops and field days that would provide more pertinent and beneficial information to producers in the county.

Furthermore the current curriculum does not address any of the program policies. If in deed we continuing forcing people to attend a school prior to participating in our DSP-3 program we should at least formulate the school around the requirements of the program.

Our technical staff have all attended grazing schools and spend hours with participants explaining program requirements, grazing management requirements and system requirements we feel this is more than adequate for participants.

Lastly, regardless of the efforts of local SWCD's donating many items needed for the schools, the cost to attend a school has simply gotten too high. The cost has become an undue burden on our customers that we feel is not just.

Thank you for listening to our local concerns.
Dade County SWCD Board,

Steve Richter

Steve Richter
Vice-Chair

OUR SOIL ★ OUR STRENGTH

An Equal Opportunity Provider and Employer

HICKORY COUNTY SOIL AND WATER CONSERVATION DISTRICT

P. O. BOX 146 HERMITAGE, MISSOURI 65668 417 745 6613

November 13, 2015

Soil & Water Conservation Commission
P.O. Box 176
Jefferson City, MO 65102-0176

Subject: Grazing School Requirement

Dear Commissioners,

The Hickory County SWCD would like the Commission to reconsider the requirement to attend a grazing school as a prerequisite to participate in the DSP-3 grazing system program.

The Board recognizes that a participant in the school does receive good information, however, no other practice has such a requirement and we feel with the vast knowledge of grazing that has been established it is no longer needed as a requirement.
It is felt that the removal of such would allow the local SWCDs, NRCS and Extension to work together to provide local workshops and field days that would provide more pertinent and beneficial information to producers in the county.

Furthermore the current curriculum does not address any of the program policies. If in deed we continuing forcing people to attend a school prior to participating in our DSP-3 program we should at least formulate the school around the requirements of the program.

Our technical staff have all attended grazing schools and spend hours with participants explaining program requirements, grazing management requirements and system requirements we feel this is more than adequate for participants.

Lastly, regardless of the efforts of local SWCD's donating many items needed for the schools, the cost to attend a school has simply gotten too high. The cost has become an undue burden on our customers that we feel is not just.

Thank you for listening to our local concerns.

Hickory County SWCD Board,

Carl Button

Carl Button, Chairman

Cedar County Soil and Water Conservation District

208 West Street
Stockton, Missouri 65785
417-276-3388, Ext. 3

November 13, 2015

Soil and Water Conservation Commission
P.O. Box 176
Jefferson City, MO 65102-0176

Subject: Grazing School Requirement

Dear Commissioners,

The Cedar County SWCD Board of Supervisors discussed the letter sent to you from the Dade County SWCD Board of Supervisors requesting the requirement of State Cost-Share participants to attend a grazing school to receive funds.

We support their request and hope this requirement changes so landowners aren't forced to attend a school prior to participating in the Grazing Management programs.

Sincerely,

Dean Pate

Dean Pate, Chairman
Cedar SWCD Board of Supervisors

Cc: Dade County SWCD
files:

DP:saa

3. Harrison SWCD – Variance on DSP-02 Permanent Vegetative Cover Enhancement Reseeding Policy for Two Landowners

Jeremy Redden presented a request from the Harrison SWCD for a variance on a DSP-02 Permanent Vegetative Cover Enhancement Practice (DSP-02) for two landowners. Harrison SWCD requested a variance to the one-year time limit on the reseeding policy on contracts for DSP-02, as well as a variance to the 80-acre reseeding limit for the DSP-02 for the two landowners. The district received letters from both landowners on September 30, 2015, requesting to reseed. On October 4, 2015, Harrison SWCD submitted letters to the Commission requesting a variance to reseed the DSP-02 practices due to excessive spring and summer rains.

The DSP-02 policy states this is a demonstration practice for no-tilling and inter-seeding legumes into a current grass stand; the pre-install erosion rates must be below or at tolerable soil loss ("T"); cost-share is authorized for seed, lime, phosphorous, potassium and no-tilling; there is a life-time maximum of 160 acres with reseeding limited to 80 acres; and the maintenance life of the practice is five years.

Contracts GM 001-14-0073 and -0074 were paid on May 21, 2014, in the amount of $13,242.31 for 160 acres, as well as contract -0077 was paid an amount of $12,139.08 for 160 acres. Due to the heavy rains in spring and summer the landowners were not able to mow, therefore did not know the seeding failed. On September 25, 2015, the landowner went into the district office to request cost-share to reseed the pastures. On October 1, 2015, NRCS staff checked the pastures and found less than 10 percent of the legumes in each field.

Commission policy indicates that cost-share funds are available for reseeding when the conditions are beyond the cooperator's control and the seeding did not establish as to perform its conservation function of controlling erosion; practices are considered established within one year of the original practice completion date, therefore the documentation of the failed seeding must be contained in the district board meeting minutes within that timeframe; assistance cannot be approved for lime and fertilizer components; reseeding on DSP-02 practices has a maximum of 80 acres per landowner due to the practice being a demonstration.

H. Ralph Gaw made a motion to approve the Harrison County SWCD Board's request by granting a variance to the one-year reseeding policy for DSP-02 Permanent Vegetative Cover Enhancement practices on contracts GM 001-14-0073, GM 001-14-0074 and GM 001-14-0077 but maintain the 80-acre reseeding maximum limit due to the practice being for demonstration purposes. When polled, H. Ralph Gaw, Jeff Lance, Tim Martin, Charles Ausfahl and Gary Vandiver voted in favor of the motion and the motion carried unanimously.

***4. Dade SWCD - Remove Grazing School Requirement for Grazing System Practice**

Josh Poynor presented a request from the Dade SWCD to remove the Grazing School Requirement for a Grazing System. Commission policy states, "The

system operator must attend an approved grazing school provided by the University of Missouri, in conjunction with Natural Resources Conservation Service (NRCS), prior to the district's submittal of a contract for review." The letter from Dade SWCD states that no other practice has a similar requirement and with the vast knowledge of grazing it is no longer needed; the removal would allow districts, NRCS and University Extension to work together providing workshops and field days; the cost to attend is high and an undue burden on the landowner; and the curriculum does not include program policies.

Mr. Poynor reviewed Grazing School information. University of Missouri (MU) Extension representatives and NRCS staff teach the grazing schools; it educates producers in the art and science of grazing management; and it transfers new technology in grassland management to producers. The curriculum for Grazing School includes an introduction to management-intensive grazing; resource evaluation; plant growth and forage quality; livestock nutrition on pasture; soil fertility and landscape ecology; layout and design of a system; fence and water technologies; and the economics of grazing. The cost for Grazing School changed on February 11, 2015, when MU Extension staff informed the Commission that an additional fee of $50 per person was necessary to cover Extension costs for materials, food and venue. The total estimated cost is $120 per person. It was pointed out that since 1991, 15,621 have attended grazing schools.

After extensive discussion regarding the cost, H. Ralph Gaw made a motion to table the issue and refer it to the Plan for the Future Conservation Practices Committee for review and the cost would be looked at in-house. Charles Ausfahl seconded the motion. When asked by the Chair, Charles Ausfahl, H. Ralph Gaw, Jeff Lance, Tim Martin and Gary Vandiver voted in favor of the motion and the motion carried unanimously.

NOTE: Charles Ausfahl had to leave the meeting, but the Commission still had a quorum.

E. SOIL AND WATER CONSERVATION PROGRAM DIRECTOR'S COMMENTS (CONTINUED)

1. FY16 Cost-Share/AgNPS SALT Fund Status

April Brandt presented the Fiscal Year (FY) 2016 Regular Cost-Share and Agricultural Nonpoint Source (AgNPS) Special Area Land Treatment (SALT) Fund Status report. She stated that as of November 23, 2015, $39.5 million had been allocated and of that amount, $25.6 million had been obligated. The total amount paid as of that date was approximately $8 million. As of November 23, 2015, $110,396 of the SALT Cost-Share had been allocated for six projects and 45 percent or almost $50,000 had been obligated. The total amount paid was 28 percent or approximately $31,000. She pointed out that the SALT projects have been mostly completed; the districts are wrapping up practices that had been started last year.

DSP 3.1 Grazing System Water Development

Purpose

1. Improve or maintain desired species composition and vigor of plant community.
2. Improve or maintain surface and/or subsurface water quality and quantity.
3. Improve or maintain riparian and watershed function.
4. Reduce accelerated soil erosion and maintain or improve soil condition.

Applicability

Applies to pastureland where permanent vegetative cover is established and can be enhanced through the use of a planned grazing system. The system operator must follow an approved grazing system plan. The system operator must attend an approved grazing school provided by University of Missouri, in conjunction with NRCS, prior to the district's submittal of a contract for review.

Erosion Requirements

Practice has no erosion requirements.

Specifications

The completed practice must meet the NRCS Standards and Specifications for Critical Area Planting (342), Vegetation Establishment, Herbaceous Seeding (723), Pond (378), Fence (382), livestock exclusion under Access Control (472), Prescribed Grazing (528), and Water Well (642) contained in the Field Office Technical Guide.

Policies

1. Cooperators must have an approved grazing plan prior to contract board approval.
   a. A system may be approved for land where livestock do not currently graze; however, the district must verify that the system has livestock within the first year after meeting the Prescribed Grazing (528) standard and specifications.
   b. After a grazing plan is developed, grazing practices may be installed independently of one another to work towards its implementation.
      1) Cost-share payments will be authorized as each practice is completed, according to NRCS standards and specifications within the grazing plan.
   c. The entire grazing system must meet the standard and specifications for Prescribed Grazing (528) within three years after payment of the first contract or the entire amount of cost-share received must be repaid. The district should give funding priority to cooperators working toward the Prescribed Grazing (528) standard and specifications.
   d. The size and number of paddocks will be determined by the grazing system plan, which must be designed for appropriate grazing height and rest periods as listed in the NRCS "Grazing Management Guidelines." The planner and district should encourage the cooperator to develop an effective system that meets the program's and cooperator's objectives, and enables the cooperator to stay in compliance. There is no time limit for adding to existing systems.

E. 2

Oregon County Soil and Water Conservation District
RR 72 Box 2924, Alton, MO 65606
417-778-7561 Ext. 3

Missouri Department of Natural Resources
Lewis and Clark State Office Building
1101 Riverside Drive
Jefferson City 65101

July 29, 2016

Dear Colleen,

The Oregon County Soil and Water Conservation District met during the regular monthly board meeting last night, July 28, 2016. During the meeting, we discussed the requirements for the DSP-3.4 Grazing System Lime practice. According to the Soil and Water Cost-Share Handbook, the DSP-3.4 practice "must meet the NRCS Standards and Specifications for Prescribed Grazing (528), and Nutrient Management (590) contained in the Field Office Technical Guide.

The Oregon County SWCD and NRCS promote the attendance of the grazing schools in order to help reduce soil erosion rates and improve water quality. Our sales pitch to our producers, is that through proper grazing distribution, their commercial fertility rate requirements should be reduced, if not disappear completely. That is not only a cost savings for the producer, but also reduces the potential for higher amounts of commercial fertilizer runoff. The overload of fertility into our water system contributes to the hypoxia/dead zone issues.

The NRCS 590 spec itself, specifically lists that "this standard does not apply to one-time nutrient applications to establish perennial crops". Nitrogen fertilizer application reduces pH levels. We are attempting to raise the pH through the application of lime (DSP-3.4), yet by forcing the district to following the 590 spec we may be demanding the landowner to apply commercial Nitrogen if required.

The Oregon County SWCD is requesting that the Soil and Water Conservation Program office review the DSP-3.4 Grazing System Lime policy and amend it by removing the Nutrient Management (590) requirement from the current policy specifications.

We want to thank you for taking this request into consideration. If you have any questions please feel free to contact our staff at 417-778-7561 Ext. 3.

Sincerely,

Oregon County Soil and Water
Conservation District
Board of Supervisors

DSP 3.4 Grazing System Lime

Purpose

1. Improve or maintain desired species composition and vigor of plant community.
2. Improve or maintain surface and/or subsurface water quality and quantity.
3. Improve or maintain riparian and watershed function.
4. Reduce accelerated soil erosion and maintain or improve soil condition.

Applicability

Applies to pastureland where permanent vegetative cover is established and can be enhanced through the use of a planned grazing system. The system operator must follow an approved grazing system plan. The system operator must attend an approved grazing school provided by University of Missouri, in conjunction with NRCS, prior to the district's submittal of a contract for review.

Erosion Requirements

Practice has no erosion requirements.

Specifications

The completed practice must meet the NRCS Standards and Specifications for Prescribed Grazing (528), and Nutrient Management (590) contained in the Field Office Technical Guide.

Policies

1. Cooperators must have an approved grazing plan prior to contract board approval.
2. ***Cost-share is authorized for:***
   a. Lime application on existing systems that meet NRCS standard and specifications for Prescribed Grazing (528).
   b. One time application of lime in accordance with minimum cover improvement needed, as determined by a soil test.
      1) If determination is made that requires application of greater than 1,500 lbs. of ENM per acre, the cooperator is required to apply a minimum of 1,500 lbs. of ENM per acre. Cost-share may be provided for more than 1,500 lbs. of ENM, not to exceed the maximum of $50 per acre.
      2) If lime is applied in split application when large amounts of ENM are required, the contract must remain unpaid until all lime is applied.
3. ***Cost-share is not authorized for:***
   a. Lime, if N590 Nutrient Management was previously completed.

Maximum State Cost-Share

1. Assistance is limited to 75% of the established county cost, not to exceed the state average cost.
2. Maximum of $50 per acre for a one time application of limestone and in accordance to the soil test recommendations for a planned grazing system.

BARRY COUNTY
SOIL AND WATER CONSERVATION DISTRICT

74 S. Main
Cassville, MO 65625

Phone: 417-847-4309 Ext. 3
Fax: 417-847-3096

RECEIVED
APR 26 2016

April 20th, 2016

Soil and Water Conservation Program

As many of you are aware, Barry County Missouri is among the top poultry producing counties in the nation. As such, our office has been working with poultry producers and providing waste management assistance for many years. We have a list of cooperators that are seeking cost share assistance for the construction of stacking sheds and composters for poultry operations each year.

As stated in memo 2016-014, a cooperator must have a comprehensive nutrient management plan before they can be approved for any animal waste management contract. At this time, there is no state cost share to assist in paying for a CNMP. The plans can vary in cost from around six hundred to several thousand dollars. Our cooperators will have to pay for this out of pocket before they can proceed with a contract. For some landowners, the cost of this plan may keep them from being able to complete a waste management program, which will have a negative effect on soil and water quality in the county.

In addition to the financial burden for the landowner, we may experience delays in getting contracts approved due to the amount of time it takes for these plans to be completed. Landowners can sign up for cost share to help with the cost of the plans through NRCS, however, that is a lengthy process and could take more than a year to be finalized. If we could offer cost share for these plans, it would help us get our cost share dollars on the ground in Barry County without substantial delay.

The board would like to request that the commission consider adding a component for the CNMP to the animal waste resource concern.

Thank you for your consideration,

Voyd Brown

Dr.Voyd Brown

Chariman-Barry County SWCD

Carter County Soil & Water Conservation District
PO Box 154 3 E Cleveland, Ste. A
Ellsinore, MO 63937
Phone: 573-322-0233

DNR Soil & Water Conservation Program
P.O. Box 176
Jefferson City, MO 65102

ATTN: Soil & Water Commission

It has been pointed out to our board of supervisors that the NRCS will not be funding as many CNMPs. A CNMP is one of the qualifying criteria set forth by the DNR to obtain a beef waste facility. These facilities have become one of our most requested practices for the cost share program. Unfortunately, once the land-owner is told about the CNMP requirement and the cost to get one, often the landowner is unable to pursue the practice.

We are requesting the commission to consider and explore the idea of including the CNMP cost as one of the covered components for the beef waste facilities. We are thinking that by including it in the components, the landowner will understand the reimbursement for it comes *after* the building is completed and passes inspection.

We believe that if this component is included, the beef waste facilities that so greatly benefit both our conservation efforts and the landowner's production will continue to be requested and will be utilized even more by cooperators through-out the state.

Sincerely, Michael S. Kelley

Mike Kelley, Board Chair
Carter County SWCD Board of Supervisors

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JUN 21 2016

National Association of Conservation Districts
conserving natural resources
for our future

Iron County Soil & Water Conservation District
250 S. Main St., Ironton, MO 63650
Phone: 573-546-6518 Fax: 573-546-0403

ken.wooten@swcd.mo.gov terri.matthews@swcd.mo.gov

June 16, 2016

Soil & Water Districts Commission
PO Box 176
Jefferson City, MO 65102-0176

Dear Commission;

With the increased interest in the animal waste facilities, we are asking you to please consider approving cost-share for the comprehensive nutrient management plan (CNMP). Since this is a prerequisite for land owners wishing to sign up for the buildings, we feel that this extra expense has caused hesitation with our land owners.

It is our understanding that engineers will not draw the plans for the buildings without having the costly CNMP plan in-hand first.

Thank you for your consideration in this matter.

Respectfully Submitted,

Tony Harbison, Chairman

N312 Beef and Small Ruminant Waste Management

Purpose
Manage waste from agricultural production in a manner that prevents or minimizes degradation of soil and water resources. Such systems are planned to preclude discharge of pollutants to surface or ground water and to recycle waste through correct soil application to agricultural land.

Applicability
Practice applies on farms where:
1. Wastes are generated by agricultural production.
2. Soil, water and plant resources are adequate to properly manage the waste.

Erosion Requirements
Practice has no erosion requirements.

Specifications
The completed practice must meet the NRCS Standards and Specifications for Waste Storage Facility (313), Critical Area Planting (342), Vegetation Establishment, Herbaceous Seeding (723), Roofs and Covers (367), Nutrient Management (590), and Heavy Use Area Protection (561) contained in the Field Office Technical Guide.

Policies
1. The intent of this practice is to store animal waste. Therefore, a signed "N312 Operation and Maintenance Statement" (which can be found in the Appendix) must be completed prior to the contract's board approval. Only contracts for lagoons are exempt from the form requirement.
2. All nutrients applied must be in accordance to the Nutrient Management (590) standard. A Comprehensive Nutrient Management Plan (CMNP) must be completed and signed by the producer prior to developing a contract for a N312 practice.
3. Design plans must be scanned into MoSWIMS as a document type of "Design Plans" prior to submission for contract approval.
4. ***Cost-share is authorized for:***
   a. 75% cost-share for:
      1) Floor space utilized to store dry waste from paved feedlot.
      2) Roof to cover dry storage area. The square footage of the roofing must equal the square footage of floor space, as specified above.
      3) Wall necessary to enclose dry storage area.
      4) Collection gutter or basin from feedlot to storage area.
   b. 50% cost-share for:
      1) Area of the floor utilized for collection of waste in feeding and travel areas.
   c. Critical Area Seeding. Permanent vegetative cover based on the Critical Area Seeding component.
5. ***Cost-share is not authorized for:***
   a. Permitted animal waste systems, under the conditions listed in Section V, subsection J.

b. Any components of the animal waste system above the minimum and necessary for the number of animals at the time of application.
c. Isolated structures not considered a component of a waste management system.
d. Bedding and bunk feeding areas, including roof.
[e. Costs incurred to develop or implement a comprehensive nutrient management plan.]
f. Mobile agitation, pumping, and related equipment.

Maximum State Cost-Share

1. Assistance is limited to 75% of the county average cost, not to exceed the state average cost.
2. Not to exceed $50,000 per cooperator.

Map Requirements

A legible, aerial photography map that shows the completed practice must be scanned and attached as document type "Map" in MoSWIMS prior to contract payment submission. The map must have the following:

- Landowner name and locational data (section/township/range or coordinates)
- Farm perimeter
- Field numbers, field boundaries, and field acres
- Any other features that may affect the contract payment
- If multiples of the same practice are shown on the map, clearly identify which practice is associated with the contract payment

Technical Responsibilities

Technical staff has the responsibility for determining the need for the practice, for design of the practice based upon the minimum extent necessary, and to certify that the completed practice meets NRCS standards and specifications within commission policy.

Acres Served

Acreage is equal to zero.

Extent Installed

Animal Units.

Maintenance Life

10 years.

Natural Resources Conservation Service
Parkade Center, Suite 250
601 Business Loop 70 West
Columbia, Missouri 65203

Missouri Bulletin: 190-16-1 January 4, 2016

Subject: ECS – Comprehensive Nutrient Management Plan Requirements

Purpose. To remind staff of policy requirements that a current Natural Resources Conservation Service (NRCS)-approved comprehensive nutrient management plan (CNMP) is provided by the producer before providing technical or financial assistance for an agricultural waste management system (AWMS).

Expiration Date. September 30, 2016.

Background. In 1999, the Department of Agriculture (USDA) was directed to work with the U.S. Environmental Protection Agency (EPA) to address environmental and public health issues associated with animal feeding operations (AFOs). USDA's goal is for AFO operators to take voluntary actions to minimize potential water and air pollutants from storage facilities, livestock confinement areas, and land application areas by employing an AWMS as identified in National Engineering Handbook (NEH) Part 651 Agricultural Waste Management Field Handbook (AWMFH). USDA developed the comprehensive nutrient management plan (CNMP) process based on the planning process contained in AWMFH to assist producers to plan and implement these voluntary actions.

Explanation. Title 190 – General Manual, Part 405, Subpart B states "Prepare a CNMP when NRCS or NRCS-designated agents are providing technical or financial assistance to an AFO/CAFO to address manure or wastewater handling and storage, treatment, and nutrient management that involves the application of manure and wastewater associated with the AFO/CAFO." And Title 180- General Manual, Part 409, 409.1 Conservation Planning Overview states "Conservation plans are the basis for all assistance NRCS provides to clients and the basic tool for clients to manage their natural resources." These policies identify the need for planning whenever NRCS provides technical or financial assistance. The CNMP provides an appropriate level of planning for an AWMS on an AFO or for a livestock operation that collects and stores manure.

Staff should ensure that a current NRCS-approved CNMP is provided by the producer in all cases before providing technical assistance regardless of the source of funding for an AWMS.

Contact. Questions regarding the policy cited in this bulletin should be directed to Glenn Davis, Conservation Agronomist (Nutrient Management), 573-876-9371, or Troy Chockley, Environmental Engineer, 573-876-9394.

J.R. Flores
State Conservationist

DIST: E

Carroll County Soil and Water Conservation District
Located in the USDA Service Center
1405 Hwy 65 North Suite C - Carrollton, MO 64633
Phone: 660-542-3361
Fax: 660-542-2709

September 15, 2016

Soil and Water Conservation Commission
P.O. Box 176
Jefferson City, Mo. 65102-0176

Soil and Water Conservation Commission,

Carroll County has had several areas with August rainfall amounts of over twenty inches and September totals already over five inches. Corn harvest has begun and ruts in the fields will prevent adequate seeding of a cover crop according to the N 340 standard.

Stalk and grain quality prevents tenants or landowners from waiting on the ground to dry and weather forecasts are calling for more rain. If fields dry enough to work in ruts this fall we feel like they will still benefit from a cover crop verses no cover crop.

The Carroll County Soil and Water Conservation District Board of Supervisors requests a variance be given to allow working in ruts as necessary for the seeding of a cover crop N 340 practice.

Sincerely,
Carroll County Soil and Water
Conservation District

Larry Kemble, Chairman

Cooper Soil and Water Conservation District
17066 Highway 87 – Boonville, MO 65233 – Phone (660) 882-6347

August 14, 2016

Dear Commission:

The Cooper Co. SWCD would like to review the N340 Cover Crop program and the guidelines that pertain to this resource concern. At the August 14, 2016 Cooper Co. SWCD Board Meeting, the Cooper Board of Supervisors unanimously agreed to support the following changes to the specifications.

When operators choose the Aerial/Broadcast seeding of a cover crop into corn residue, the board would like the change so that the seed bed has to be prepared for a better seed to soil contact. By prepared, a minimal tillage piece of equipment is run over the corn stalks to provide a better seed to soil contact. The board does not support only broadcasting directly onto the residue when seed to soil contact be a minimum, resulting in poor to no stands. This change is for the cover crop being planted into the corn cash crop after the corn is harvested. This would not apply to soybean ground.

When moisture is an issue during harvest, and ruts are left behind, the Cooper Board of Supervisors ask that operators would be allowed to use a minimum tillage piece of equipment to fill in the ruts. When ruts have not been filled in, next year's cash crop that will be no-tilled will see poor results in the areas of interest due to the uneven ground.

Thank you for taking the time to consider the changes that the Cooper Board of Supervisors has asked. Numerous landowners and operators have voiced their concern with in the county for some changes to be made to the specifications.

Thank You,

Cooper County Board of Supervisors

Todd Obrenz

N340 Cover Crop

Purpose

Provide operators an incentive to encourage the adoption of cover crops for reducing soil erosion, improving water quality and soil health.

The definition of operator for the purpose of this practice is any individual farming the land, who has incurred the expenses for the cover crops. The operator's name should also be listed on file with FSA as the operator of such land.

Applicability

Applies to cropland acres where row crops are grown and soil erosion needs to be prevented or water quality and soil health improved.

Erosion Requirements

Practice has no erosion requirements to qualify. However, pre- and post-erosion rates need to be recorded in MoSWIMS to capture the erosion benefits of the practice.

Specifications

The completed components of the practice must meet the NRCS Standards and Specifications for Conservation Crop Rotation (328) and Cover Crop (340) contained in the Field Office Technical Guide.

Policies

1. The contract must contain the name of the legal owner. If an operator is participating, the landowner must complete an "Operator Authorization" form.
2. Contracted acres must currently be in a minimum of a 2 species production crop rotation.
3. Cover crops must be no-tilled or broadcast seeded with either ground equipment or aerial.
4. Production crop following the cover crops must be planted using a no-till system on the contracted acres. No-till is defined as per standard 329 for Residue and Tillage Management No-Till.
5. Payment can be issued after no-till planting of the production crops into the (terminated) cover crops or after May 25 if the production crop has not yet been planted.
6. Cooperators must adopt cover crops in compliance with the **Cover Crop (340)** standard as part of this practice. In addition:
   a. All cover crop seedings must be planned with a minimum of 25% cool-season annual grass, small grain component or warm season grass. (Caution should be taken when selecting Annual Ryegrass for a cover crops mix.)
   b. Spring planted cover crops must have been planted at least 60 days prior to being terminated.
   c. Cover crops will be terminated as late as practical to maximize plant biomass production and nutrient uptake. Landowners need to take into consideration timing for next crop and crop insurance requirements.
   d. Cover crops will not be harvested for grain, seed or hayed.

USDA
United States Department of Agriculture

NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE STANDARD

COVER CROP

(Ac.)

CODE 340

DEFINITION

Grasses, legumes, and forbs planted for seasonal vegetative cover.

PURPOSE

This practice is applied to support one or more of the following purposes:

- Reduce erosion from wind and water.
- Maintain or increase soil health and organic matter content.
- Reduce water quality degradation by utilizing excessive soil nutrients.
- Suppress excessive weed pressures and break pest cycles.
- Improve soil moisture use efficiency.
- Minimize soil compaction.

CONDITIONS WHERE PRACTICE APPLIES

All lands requiring seasonal vegetative cover for natural resource protection or improvement.

CRITERIA

General Criteria Applicable to All Purposes

Plant species, seedbed preparation, seeding rates, seeding dates, seeding depths, fertility requirements, and planting methods will be consistent with applicable local criteria and soil/site conditions. Select appropriate species from Cover Crop Tables in Appendix 1. This is located in eFOTG Section IV – Conservation Practices – Cover Crop (Code 340) folder. Locate the folder from the below link:
http://efotg.sc.egov.usda.gov/treemenuFS.aspx

Choose seeding methods that ensure best seed germination success. Seed to soil contact is always best method for successful plantings by using drills or planters.

Seed must be clean and relatively free of weed seed and other contaminants and must comply with the Federal Seed Act and the Missouri State Seed Law. Do not plant seed that has become wet, moldy, or otherwise damaged.

Select species that are compatible with other components of the cropping system.

Ensure herbicides used with crops in the rotation are compatible with cover crop selections and purpose(s). Some herbicides will carry over in the soil and restrict cover crop establishment, uses, and growth.

When a cover crop will be grazed, ensure that crop selection(s) complies with pesticide label rotational crop restrictions and that the planned management will not compromise the selected conservation purpose(s). To assist with this information please see "Herbicide Rotation Restrictions in Forage and Cover Cropping Systems". This is located in eFOTG Section IV – Conservation Practices – Cover Crop (Code 340) folder. Locate the folder from the below link: http://efotg.sc.egov.usda.gov/treemenuFS.aspx

Cover crops may be established between successive production crops, or companion planted or delayed planting into production crops. Select species and planting dates that will not compete with the production crop yield or harvest.

Cover crops may be established as single species monoculture or a mixture of two or more species. The type of cover crop shall be based on the desired purpose or purposes. Calculate the seeding rate of each species in a mixture based on the desired percentage of the single species rate shown in Appendix 1. Plant at a depth best suited to species selected in a diverse mixture for fast emergence.

The seeding window for a cover crop mixture may be fairly narrow. For example, a cover crop mixture to address erosion control should be dominated by a grass and other compatible species. An example mixture would be 60% cereal rye, 20% crimson clover, and 20% oilseed radish. In Zone 1 this mixture should be planted no later than September 15th. In Zone 2 plant mixture by September 25th, Zone 3 by October 5th, and Zone 4 by October 25th. When cool season legumes and broadleaves are in the mixture, choose the planting window for these species that take longer to establish and grow.

Annual, biennial, or perennial cover crops species **not listed** in Appendix 1 can be no more than 10% of the total cover crop mix. Any weed species listed on the seed tag cannot be counted toward the 10% of the seeding mix. Also, no species listed as part of Missouri's Noxious Weed list can be planted. Link to Missouri Noxious Weed List:

http://plants.usda.gov/java/noxious?rptType=State&statefips=29

Do not burn cover crop residue.

Cover crops will be terminated by frost, mowing, crimping, and/or herbicides in preparation for the following crop. Tilling of cover crops can be used, but is not encouraged due to the soil erosion susceptibility. Determine the method and timing of termination to meet the grower's objective and resource needs.

The terminated cover crop must provide adequate surface protection to meet the desired purpose or purposes such as erosion control and water quality protection.

Cover crop(s) will not be harvested for grain, seed production, or hayed.

Treat the seed with the appropriate inoculum(s) at the time of planting. See Missouri Agronomy Technical Note 36 titled "Legume Inoculation" in Section IV – Conservation Practices – Cover Crop (Code 340) folder. Locate the folder from the below link:
http://efotg.sc.egov.usda.gov/treemenuFS.aspx

Additional Criteria to Reduce Erosion from Wind and Water

Time the cover crop establishment in conjunction with other practices to adequately protect the soil during the critical erosion period(s) but prior to the final planting date set in Appendix 1 for the separate Missouri planting zones.

Select cover crops that will have the physical growth characteristics necessary to provide adequate erosion protection. Use Appendix 1 for planting zones and dates, winter hardiness, erosion protection, growth habit, and life span.

Use the current erosion prediction technology to determine the amount of surface and/or canopy cover needed from the cover crop to achieve the erosion objective.

To reduce erosion, best results are achieved when the combined canopy and surface residue cover attains 90% or greater during the period of potentially erosive wind or rainfall.

Additional Criteria to Maintain or Increase Soil Health and Organic Matter Content

Cover crop species will be selected on the basis of producing higher volumes of organic material and root mass to maintain or increase soil organic matter. Use Appendix 1 to select species rated excellent to very good for organic matter builder.

The planned crop rotation including the cover crop and associated management activities will score a Soil Conditioning Index (SCI) value > 0, as determined using the current approved Natural Resources Conservation Service Soil Conditioning Index (SCI) procedure, with appropriate adjustments for additions to or subtractions from plant biomass based on the anticipated cover crop growth and production.

The cover crop shall be planted as early as possible, but prior to the final planting date set in Appendix 1 for the separate Missouri planting zones. The cover crop will be terminated as late as practical for the producer's cropping system to maximize plant biomass production, considering crop insurance criteria, time needed to prepare the field for planting the next crop, and soil moisture depletion.

Increase the diversity of cover crops (e.g., mixtures of several plant species) to promote a wider diversity of soil organisms.

Plant legumes or mixtures of legumes with grasses, brassicas, and/or other forbs to provide nitrogen through biological nitrogen fixation.

Legumes add the most plant-available N if terminated when about 30% of the crop is in bloom.

Before cover crops are grazed, the cover crops will need to have enough biomass produced to justify grazing and to maintain the soil health benefits. In most cases, the cover crop will need to have been established for at least 3 months. Most cover crops planted later in the fall would not be established enough to graze in the winter, but if stands are adequate, cover crops can be grazed in the spring prior to termination. Cover crops should be a minimum of 6 to 8 inches in height before grazing begins. To insure adequate soil health benefits, livestock should graze no more than 40% of available cover crop forage.

Check previous chemicals used in rotation because some chemistries of pesticides or herbicides may have a grazing restriction. Some labels may say "do not graze".

Grazing will not take place during wet soil conditions. Severe damage could occur to the soil and stand of cover crops.

Different species have different tolerances to grazing. Grasses (cereal grains) are more tolerant than brassicas. There may be circumstances where monocultures of cereal grains could be lightly grazed during the winter.

Additional Criteria Reduce Water Quality Degradation by Utilizing Excessive Soil Nutrients

Establish cover crops as soon as practical prior to or after harvest of the production crop and prior to the final planting date set in Appendix 1 for the separate Missouri planting zones.

Select cover crop species for their ability to effectively utilize or scavenge nutrients. See Appendix 1 for plant information.

Terminate the cover crop as late as practical to maximize plant biomass production and nutrient uptake. Practical considerations for termination date may include crop insurance criteria, the amount of time needed to prepare the field for planting the next crop, weather conditions, and cover crop effects on soil moisture and nutrient availability to the following crop. Refer to "Carbon to Nitrogen Ratios in Cropping Systems" in Section IV – Conservation Practices – Cover Crop (Code 340) folder. Locate the folder from the below link:
http://efotg.sc.egov.usda.gov/treemenuFS.aspx

If the cover crop will be grazed, choose species that are suitable for the planned livestock. Be aware of the pesticides used in the rotation and the effect on livestock consumption and harvest of livestock. To assist with this information please see "Herbicide Rotation Restrictions in Forage and Cover Cropping Systems". This is located in eFOTG Section IV – Conservation Practices – Cover Crop (Code 340) folder. Locate the folder from the below link:
http://efotg.sc.egov.usda.gov/treemenuFS.aspx

Additional Criteria to Suppress Excessive Weed Pressures and Break Pest Cycles

Select cover crop species for their life cycles, growth habits, and other biological, chemical and physical characteristics to provide one or more of the following:

Suppress weeds or compete with weeds.

- Break pest life cycles or suppress plant pests or pathogens.
- Leave cover crop residues on the soil surface to maximize allelopathic (chemical) and mulching (physical) effects.
- Provide food or habitat for natural enemies of pests.
- Release compounds such as glucosinolates that suppress soil borne pathogens or pests.

Select cover crop species that do not harbor pests or diseases of subsequent crops in the rotation.

Seed a higher density cover crop stand to promote rapid canopy closure and greater weed suppression. Increased seeding rates (1.5 to 2 times normal) can improve weed-competitiveness.

Additional Criteria to Improve Soil Moisture Use Efficiency

In areas of limited soil moisture, terminate growth of the cover crop sufficiently early to conserve soil moisture for the subsequent crop. Cover crops established for moisture conservation shall be left on the soil surface.

In areas of potential excess soil moisture, allow the cover crop to grow as long as possible to maximize soil moisture removal.

Additional Criteria to Minimize Soil Compaction

Select and manage cover crop species that will produce deep roots and large amounts of surface or root biomass to penetrate or prevent compacted layers. Consider species that will increase soil organic matter and improve soil structure as additional benefits.

Use Appendix 1 to select species that "Break Compaction Layers" rated good to excellent.

CONSIDERATIONS

Beware of cover crop seeding dates in Missouri and possibility of Hessian Fly problems. Select resistant varieties for cover crops. Refer to MU Guide 7180 – "Hessian Fly Management on Wheat" written by Michael L. Boyd and Wayne C. Bailey Entomology Specialists. This is located in eFOTG Section IV – Conservation Practices – Cover Crop (340) folder. Locate the folder from the below link:
http://efotg.sc.egov.usda.gov/treemenuFS.aspx

Plant cover crops in a timely manner and when there is adequate soil moisture and growing days to establish a good stand.

When applicable, ensure cover crops are managed and are compatible with the client's crop insurance criteria. The current NRCS Cover Crop Termination Guidelines are located in Section IV – Conservation Practices – Cover Crop (Code 340) folder. Locate the folder from the below link:
http://efotg.sc.egov.usda.gov/treemenuFS.aspx

Maintain an actively growing cover crop as late as feasible to maximize plant growth, allowing time to prepare the field for the next crop and to optimize soil moisture.

Select cover crops that are compatible with the production system, well adapted to the region's climate and soils, and resistant to prevalent pests, weeds, and diseases. Avoid cover crop species that harbor or carry over potentially damaging diseases or insects in local crop production systems.

Cover crops may be used to improve site conditions for establishment of perennial species.

When cover crops are used for grazing, select species that will have desired forage traits, be palatable to livestock, compatible with pesticides/herbicides used in the rotation, and not interfere with the production of the subsequent crop.

Use plant species that enhance forage opportunities for pollinators by using diverse legumes and other flowering forbs. Refer to Appendix 1 Plant Information Tab for cover crops that are rated good to excellent for wildlife and pollinators. If wildlife habitat is a goal for use of cover crops, then it is recommended that cover crops be terminated before nesting season in Missouri which starts May 1st. This will help decreasing the probability of destroying nests. Planting width of commodity crops can also have an impact on wildlife. If considering protection of wildlife nests, then the desired planting width of 30 inches should be considered.

Cover crops may be selected to provide food or habitat for natural enemies of crop pests in local crop production systems.

Cover crops residues should be left on the soil surface to maximize allelopathic (chemical) and mulching (physical) effects.

Select a mixture of two or more cover crop species from different plant families to achieve one or more of the following: (1) species mix with different maturity dates, (2) attract beneficial insects, (3) attract pollinators, (4) increase soil biological diversity, (5) serve as a trap crop for insect pests, or (6) provide food and cover for wildlife habitat management.

Plant legumes or mixtures of legumes, grasses, or other forbs to achieve biological nitrogen fixation. Select cover crop species or mixture and timing and method of termination that will maximize efficiency of nitrogen utilization by the following crop. Consider soil type and conditions, season and weather conditions, cropping system, C:N ratio of the cover crop at termination, and anticipated nitrogen needs of the subsequent crop. Use University of Missouri - Columbia recommended nitrogen credits from the legume and reduce nitrogen applications to the subsequent crop accordingly. Treat the seed with the appropriate inoculum at the time of planting.

Time the termination of cover crops to meet nutrient release goals. Termination at early vegetative stages may cause a more rapid nutrient release compared to termination at a more mature stage.

Both residue decomposition rates and soil fertility can affect nutrient availability following termination of cover crops. Refer to "Carbon to Nitrogen Ratios in Cropping Systems" in Section IV – Conservation Practices – Cover Crop (Code 340) folder. Locate the folder from the below link:
http://efotg.sc.egov.usda.gov/treemenuFS.aspx

Allelopathic effects to the subsequent crop should be evaluated when selecting the appropriate cover crop. See Missouri information sheet "Allelopathy and Cover Crops" IS-MO-340 located in Section IV- Conservation Practices – Cover Crop (Code 340) folder. Locate the folder from the below link:
http://efotg.sc.egov.usda.gov/treemenuFS.aspx

PLANS AND SPECIFICATIONS

Prepare plans and specifications for each field or treatment unit according to the planning criteria and operation and maintenance requirements of this standard. Specifications shall describe the

requirements to apply the practice to achieve the intended purpose for the practice site. Plans for the establishment of cover crops shall, as a minimum, include the following specification components in an approved Cover Crop (Code 340) Implementation Requirements document:

- Field number and acres.
- Species of plant(s) to be established.
- Seeding rates.
- Seeding dates.
- Establishment procedure.
- Rates, timing, and forms of nutrient application (if needed).
- Dates and method to terminate the cover crop.
- Other information pertinent to establishing and managing the cover crop e.g., if grazing is planned specify the planned management for grazing.

Plans and specifications for the establishment, management, and certification of cover crops must be recorded in narrative form on the Cover Crop Design sheet JS-AGRON-340-CC located in Appendix 1 Section IV – Conservation Practices – Cover Crop (Code 340) folder. Locate the folder from the below link:
http://efotg.sc.egov.usda.gov/treemenuFS.aspx

OPERATION AND MAINTENANCE

Evaluate the cover crop to determine if the cover crop is meeting the planned purpose(s). If the cover crop is not meeting the purpose(s) adjust the management, change the species of cover crop, or choose a different technology.

Ensure that cover crops do not become invasive and that cover crops are compatible with planned crops/vegetation.

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Reeves, D.W. 1994. Cover crops and erosion. p. 125-172 *In* J.L. Hatfield and B.A. Stewart (eds.) Crops Residue Management. CRC Press, Boca Raton, FL.

NRCS Cover Crop Termination Guidelines:
http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/climatechange/?cid=stelprdb1077238

Revised Universal Soil Loss Equation Version 2 (RUSLE2) website:
http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/technical/tools/rusle2/

Wind Erosion Prediction System (WEPS) website:
http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/technical/tools/weps/

USDA, Natural Resources Conservation Service, National Agronomy Manual, 4th Edition, Feb. 2011. Website: http://directives.sc.egov.usda.gov/ Under Manuals and Title 190.

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http://www.nrcs.usda.gov/wps/portal/nrcs/detailfull/soils/health/mgnt/?cid=stelprdb1257753

University of Missouri Extension Publication G7180 Hessian Fly Management on Wheat January 2000. Website: http://extension.missouri.edu/publications

University of Wisconsin Extension Publication Herbicide Rotation Restrictions in Forage and Cover Cropping Systems June 2014. Website: http://wcws.cals.wisc.edu/documents

Missouri Agronomy Technical Note MO-36 Legume Inoculation August 2008. Website: http://www.nrcs.usda.gov/wps/portal/nrcs/detail/mo/technical/?cid=nrcs144p2_012565

USDA

United States Department of Agriculture

NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE STANDARD

RESIDUE AND TILLAGE MANAGEMENT

NO TILL

(Ac.)

CODE 329

DEFINITION

Limiting soil disturbance to manage the amount, orientation, and distribution of crop and plant residue on the soil surface year around.

PURPOSE

- Reduce sheet, rill and wind erosion.
  Resource Concern is SOIL EROSION - Sheet, Rill, and Wind erosion.
- Reduce tillage-induced particulate emissions.
  Resource Concern is AIR QUALITY IMPACTS - Emissions of Particulate Matter (PM) and PM Precursors.
- Maintain or increase soil quality and organic matter content.
  Resource Concern is SOIL QUALITY DEGRADATION – Organic matter depletion.
- Reduce energy use.
  Resource Concern is INEFFICIENT ENERGY USE – Farming/ranching practices and field operations.
- Increase plant-available moisture.
  Resource Concern is INSUFFICIENT WATER – Inefficient moisture management.
- Provide food and escape cover for wildlife.
  Resource Concern is INADEQUATE HABITAT FOR FISH AND WILDLIFE – Habitat degradation.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to all cropland.

This practice only involves an in-row soil tillage operation during the planting operation and a seed row/furrow closing device. There is no full-width tillage performed on the fields from the time of harvest or termination of one cash crop to the time of harvest or termination of the next cash crop in the rotation regardless of the depth of the tillage operation.

This practice includes planting methods commonly referred to as no till, never till, zero till, slot plant, zone till, strip till, or direct seed. Approved implements are: no till and strip till planters, certain drills and air seeders, strip-type fertilizer and manure injectors and applicators, and similar implements that only disturb narrow strips and slots.

CRITERIA

General Criteria Applicable to All Purposes

Residue shall not be burned.

All residues shall be uniformly distributed over the entire field. Removing residue from the row area prior to or as part of the planting operation is acceptable as long as 70% or more of width between rows is still covered by crop residue.

No full-width tillage is performed from the time of harvest or termination of one cash crop to the time of harvest or termination of the next cash crop in the rotation regardless of the depth of the tillage operation. No tillage of any type including vertical tillage is allowed in this practice standard. Planting of cover crops or similar activities will need to be planted with no till drills or broadcast or other options that do NOT include tillage.

The Soil Tillage Intensity Rating (STIR) value shall include all field operations that are performed during the crop interval between harvest and termination of the previous cash crop and harvest or termination of the current cash crop (includes fallow periods). The STIR value shall be no greater than 10 for No Till and no greater than 15 for Strip Till methods.

Additional Criteria to Reduce Sheet, Rill, and Wind Erosion and Tillage Induced Particulate Matter

Use the current approved water and/or wind erosion prediction technology to determine the:

- Amount of randomly distributed surface residue needed.
- Time of year the residue needs to be present in the field.
- The amount of surface soil disturbance allowed to reduce erosion to the desired level.
- Calculations shall account for the effects of other practices in the management system.

Additional Criteria to Maintain or Increase Soil Quality and Organic Matter Content

Ensure that an evaluation of the cropping system using the current approved soil conditioning index (SCI) procedure results in an SCI rating of zero or higher. The SCI results have to be a positive value.

Additional Criteria to Reduce Energy Use

Reduce the total energy consumption associated with field operations by at least 25% compared to the benchmark condition. Use the current approved NRCS tool for determining energy use to document energy use reductions. All field operations from harvest to harvest will be evaluated by the NRCS tool.

Energy Estimator: Tillage http://ecat.sc.egov.usda.gov/Default.aspx

Additional Criteria to Increase Plant Available Moisture

Maintain a minimum of 2000 pounds per acre or 60% residue cover on the soil surface throughout the year.

Crop stubble height during the time of expected evaporation losses shall be:

- At least 10 inches for crops with a row spacing of less than 15 inches.
- At least 15 inches for crops with a row spacing of 15 inches or greater.

These stubble heights shall be present on at least 60% of the field.

Trapping Snow. Crop stubble height during the time significant snowfall is expected to occur shall be:

- At least 10 inches for crops with a row spacing of less than 15 inches.
- At least 15 inches for crops with a row spacing of 15 inches or greater.

These heights shall be present over at least 50% of the field.

Additional Criteria to Provide Food and Escape Cover for Wildlife

Use an approved habitat evaluation procedure to determine when residue needs to be present, and the amount, orientation, and stubble height needed to provide adequate food and cover for target species.

Leaving rows of unharvested crop standing at intervals across the field or adjacent to permanent cover will enhance the value of residues for wildlife food and cover. Leaving unharvested crop rows for two growing seasons will further enhance the value of these areas for wildlife. Use the "Bobwhite Quail Habitat Appraisal Guide" or the "Cropland Community Model".

Wildlife habitat guides are located in eFOTG Section IV – Conservation Practices – Upland Wildlife Habitat Management (645) folder. Locate the folder from the below link:

http://efotg.sc.egov.usda.gov/treemenuFS.aspx

Leave crop residues undisturbed after harvest (do not shred or bale) to maximize the cover and food source benefits for wildlife.

Avoid disturbing standing stubble or heavy residue during the nesting season for ground nesting species.

CONSIDERATIONS

General Considerations - Removing crop residue, such as by baling or grazing, can have a negative impact on resources. These activities should not be performed without full evaluation of impacts on soil, water, animal, plant, and air resources. Effects on soil erosion and soil conditioning index (SCI) will be evaluated with the current approved erosion prediction technology.

Production of adequate crop residues to achieve the purpose of this practice can be enhanced through the use of high residue crops and crop varieties, the use of cover crops, and adjustment of plant populations through seeding rates and row spacing.

When providing technical assistance to organic producers, residue management and tillage activities should be consistent with the USDA-Agricultural Marketing Service National Organic Program standard.

Residue should not be shredded after harvest. Shredding residue makes it susceptible to movement by wind or water, and areas where residue accumulates may interfere with planting the next crop.

Using Residue and Tillage Management - No Till for all crops in the rotation or cropping system can enhance the positive effects of this practice by:

- Increasing the rate of soil organic matter accumulation.
- Keeping soil in a consolidated condition, which provides additional resistance to the erosive forces of water and wind.
- Sequestering additional carbon in the soil.
- Further reducing the amount of particulate matter generated by field operations.

- Reducing energy inputs to establish crops.
- Forming root channels and other near-surface macropores that increase infiltration.

Considerations for Improving Soil Quality and Organic Matter Content

Carbon loss is directly related to the volume of soil disturbed, the intensity of the disturbance and the soil moisture content and soil temperature at the time the disturbance occurs. The following guidelines can make this practice more effective:

- When deep soil disturbance is performed, such as by subsoiling, manure injection or fertilizer injection, make sure the vertical slot created by these implements is closed at the surface.
- Planting with a single disk opener no till drill will release less carbon dioxide (CO_2) and oxidize less organic matter than planting with a wide-point hoe/chisel opener seeder drill.
- Soil disturbance that occurs when soil temperatures are below 50° F will oxidize less organic matter and release less CO_2 than operations done when the soil is warmer
- Maximizing year around coverage of the soil with living vegetation and/or crop residues builds organic matter and reduces soil temperature, thereby slowing organic matter oxidation.

To achieve major improvements in soil health requires more than no till alone. The following activities/practices are needed to make significant changes in soil health:

- Use a diverse crop rotation, incorporating multiple crop types (cool-season grass, cool-season legume/forb, warm-season grass, and warm-season legume/forb) into the crop rotation.
- Plant a cover crop after every cash crop in the rotation. Multi-species cover crop mixes provide greater benefits than single-specie cover crops.

Considerations for Increasing Plant Available Moisture

The type, timing, and depth of soil-disturbing activities all influence moisture loss. Shallow operations (1-2 inches) or operations that do not invert the soil will reduce moisture loss compared to deeper operations.

Soil-disturbing operations performed when the soil surface is moist will result in greater moisture loss than operations done when the top two to three inches of soil have dried.

Cover crop residue will help retain soil moisture and is another effective agronomic management tool.

Leaving stubble taller than the minimum required will increase the relative humidity close to the soil surface, which reduces the rate of evaporative loss from the soil.

Leaving stubble taller than the 10 inch minimum will trap more snow and provide better protection to plants from freezing or desiccation.

Variable-height stubble patterns may be created to further increase snow storage.

Performing all field operations on the contour will slow overland flow and allow more opportunity for infiltration.

PLANS AND SPECIFICATIONS

Specifications for establishment and operation of this practice shall be prepared for each field or treatment unit. The specifications shall identify, as appropriate:

- The resource concern to be treated or the purpose for applying the practice.
- Planned crop(s).
- The amount of residue produced by each crop.
- All field operations or activities at planting, fertilizing, and harvesting that affect:
  - Residue cover
  - Residue orientation
  - Surface disturbance
- The amount of residue (pounds per acre or percent surface cover) required to accomplish the purpose, and the time of year it must be present.
- The maximum STIR value allowed to accomplish the purpose, and the time of year that soil disturbance is allowed.
- The minimum soil conditioning index (SCI) value required to accomplish the purpose.

Record the specifications using the Missouri Job Sheet 329/345 Practice Implementation Requirements document located in eFOTG Section IV – Conservation Practices – Residue and Tillage Management - No Till (329) folder. Locate the folder from the below link:

http://efotg.sc.egov.usda.gov/treemenuFS.aspx

OPERATION AND MAINTENANCE

Evaluate and measure the crop residues cover and orientation after each crop to ensure the planned amounts and orientation are being achieved. Adjust management as needed to either plan a new residue amount and orientation or adjust the planting and/or harvesting equipment.

Limited tillage is allowed to close or level ruts from harvesting equipment. No more than 25% of the field may be tilled for this purpose.

If there are areas of heavy residue accumulation because of movement by water or wind in the field, spread the residue prior to planting so it does not interfere with planter operation.

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Harrison County Soil and Water Conservation District
1400 N. 41st Street - Bethany, MO 64424-1776 - Phone (660) 425-7655 #3

September 27, 2016

Department of Natural Resources
Soil & Water Commission
PO Box 176
Jefferson City, MO

Dear Commission Members:

The Harrison County SWCD Board of Supervisors asks that you would appoint Michael Ward to the board to replace the unexpired term of Jeremy Eivins, who has recently resigned his position on the board.

We have attached the required Verification of Supervisor Eligibility form for Mr. Ward along with the resignation letter from Mr. Eivins.

Thank you for your time and consideration.

Charley Spillman

Charley Spillman, Vice Chairman
Harrison County Board of Supervisors

Attachments: Letter of Recognition – Jeremy Eivins
Verification of Supervisor Eligibility – Michael Ward

To the Harrison County Board of Supervisors:
As I am working out of state and probably will be for another three to five years, I will not be able to be an active member of the board. Therefore, I am submitting my resignation effective August 23, 2016.

Jeremy Eivins

Jeremy Eivins

VERIFICATION OF SUPERVISOR ELIGIBILITY

To qualify for office, according to Missouri's Code of State Regulations, 10 CSR 70-2.020, Conduct of Supervisor Elections, a candidate shall:

1) Be a land representative as defined by "The owner, or representative authorized by power of attorney, of any farm lying within the soil and water conservation district (SWCD); provided, however, that any land representative must be a taxpayer of the county within which the SWCD is located," and

2) Be a resident taxpaying citizen within that SWCD for two (2) years preceding the appointment to the District Board of Supervisors by the Commission, and

3) Be a cooperator of the SWCD defined as "A person who is actively involved in farming and practices conservation activities related to agriculture," and

4) Reside in or own a farm lying in the same territory where the board position is vacant.

The undersigned certify that the candidate meets all of the above stated eligibility requirements to serve as a supervisor for the Harrison County Soil and Water Conservation District.

Chairperson (or acting) Signature: Charles Spillman Date: 9-12-16

Candidate Signature: Michael Ward Date: 9-9-16