State Conservation Commission Meeting

March 12, 2019

Susquehanna Room, Farm Show Complex

Agenda

<u>Briefing Session – 10:00am</u>

1. Review of Public Meeting Agenda items
2. Discussion on Lycoming UGWF concepts and Conservation District Multi-Program Budgeting Spreadsheet (Fred and Karen ??)
3. Proposed Misfeasance/Malfeasance Policy – Karl Brown, SCC/Susan Despot, DEP

<u>Business Session – 1:00PM – 3:00PM</u>

A. Opportunity for Public Comment

B. <u>Business and Information Items</u>

1. Approval of Minutes –
   a. January 30, 2019 Public Mtg.(A)
   b. February 19, 2019 Conference Call (A)
2. Nutrient and Odor Management Program
   a. Nutrient Management Plan, Burnell & Sharon Nolt, CAO in Northumberland County– Michael Walker, SCC (A)
   b. Proposed Phosphorous Banking (P-Banking) and Phosphorous Index (P-Index) Changes for Nutrient Balance Sheet (NBS) planning – Frank Schneider, SCC (A)
   c. Odor Management Program
      i. Best Management Practice Reference List, Version 3.0 – Frank Schneider, Karl Dymond, SCC (A)
      ii. Odor Management Program - Vegetative Buffer Standard - Frank Schneider, Karl Dymond, SCC (A)
   d. Appointment to the Nutrient Management Advisory Board- Mr. Fausto Solis De Los Santos– Larry Baum, SCC (A)
3. Dirt, Gravel and Low Volume Road Program – Policy and Planning Committee Recommendation for the Expenditure of Unspent Conservation District allocations (5-year contract - FY13 -FY17) – Roy Richardson, SCC (A)
4. Spotted Lanternfly Suppression Program and Pilot Program Update – Ruth Welliver, BPI; Johan Berger, SCC (NA)

5. Manure Management Planning for Youth Animal Projects – Jennifer Fetter, Watershed/Youth Development Educator, Penn State Extension

6. Pennsylvania Farm Bill and Restore Pennsylvania

C. Written Reports

1. Program Reports
   a. Act 38 Nutrient and Odor Management Programs Report
   b. Act 38 Nutrient Management Plan 2018 Calendar Year Report
   c. Chapter 91 Calendar Year 2018 Activities Report
   d. Act 38 Facility Odor Management Program - Status Report on Plan Reviews
   e. 2019 Odor Management Plan Self Certification Status Report
   f. REAP Program 2019 Accomplishment Report
2. Ombudsman Program Reports – Southern Allegheny Region (Blair County Conservation District and Lancaster County Conservation District.

D. Cooperating Agency Reports Adjournment

Next Public Meetings/Conference Calls:

April 9, 2019 - Conference Call

May 14, 2019 – PDA, Harrisburg PA

STATE CONSERVATION COMMISSION MEETING

Toftrees Golf Resort, State College, PA

Wednesday, January 30, 2019 1:45 p.m.

Draft Minutes

Members Present: Deputy Secretary Greg Hostetter for Secretary Russell Redding, PDA; Secretary Patrick McDonnell, DEP; Michael Flinchbaugh; Donald Koontz; Ross Orner; Ron Rohall; Ron Kopp; MaryAnn Warren; Denise Coleman, NRCS; Matthew Keefer, DCNR for Secretary Cindy Adams Dunn; Chuck Duritsa, PACD.

A. Public Input

There were no public comments presented.

B. Business and Information Items

1. a. Approval of Minutes – November 13, 2018 - Public Meeting.

   b. Approval of Minutes – December 11, 2018 – Conference Call.

   Michael Flinchbaugh moved to approve the November 13, 2018 and the December 11, 2018 public meeting minutes. Motion seconded by Don Koontz. Motion carried.

2. Nutrient and Odor Management Program. Four nutrient management plans and one notification of a nutrient management plan "transfer" were presented to the Commission, because the operations are located in a county without a Nutrient Management Program delegation agreement (Northumberland and Luzerne). An odor management plan is before the Commission since the Odor Site index for the operation exceeds 100 and requires full Commission approval.

   a. Odor Management Plan – Darren B. Martin, Union County. Karl Dymond, SCC, reported that this operation is an existing turkey operation. Special agricultural land-use designations for this operation include: Agricultural Security Area and Agricultural Zoning. The distance to the nearest property line is proposed to be 261 feet for the manure storage facility. No animal housing facilities are proposed. There are no Other Livestock Operations within the Evaluation Distance Area of this plan. The surrounding land use for this area is rural including the predominant terrain features of: open farm land and large forested land tracts. One or more specialized Level II Odor BMPs are required, in addition to the Level I Odor BMPs for a turkey operation.

   Michael Flinchbaugh moved to approve the Darren B. Martin Odor Management Plan. Motion seconded by Ross Orner. Motion carried.

   b. Nutrient Management Plan – Mervin Hostetler, Northumberland County. Larry Baum, SCC, reported that this dairy operation is rented from John Rishel. Mr. Rishel has his own nutrient management plan. The dairy operation consists of 50 milk cows, 5 dry cows, and 5 bred heifers. The combined animal equivalent units on the Mervin Hostetler operation is 84.75. There are 6.9 acres available for manure application associated to the Mervin Hostetler operation. The animal equivalent units per acre (AEU/AC) for the Mervin Hostetler operation is 12.28, classifying this operation as a concentrated animal operation (CAO) under Act 38 of 2005. The proposed NMP for Mervin Hostetler indicates no BMPs need to be implemented.

Don Koontz moved to approve the Mervin Hostetler Nutrient Management Plan. Motion seconded by Ross Orner. Motion carried.

c. Nutrient Management Plan – Hummel Farms – Kyle & Jon Hummel, Northumberland County. Michael Walker, SCC, reported that Jon Hummel and his brother, Kyle, operate an animal operation and grain farm composed of turkeys on contract, beef steers, beef cow/calf animals and 738.3 acres of cropland. There are animals located at two locations under Hummel's control – the Stetler Avenue and the Sunbury farm. The Stetler Avenue facility raises beef cow/calf pairs and other small groups of animals. The Sunbury farm houses beef finishing animals and turkey animals. Since the larger volume of manure is being generated on the Sunbury farm, this Act 38 NMP is classified as a Northumberland County operation. The combined animal equivalent units on Hummel Farms operation is 585.53. There are 738.3 acres of available crop land under Hummel's control. The animal equivalent units per acre (AEU/AC) for Hummel Farms operation is 0.79 AEUs/A, classifying this operation as a volunteer animal operation (VAO) under Act 38 of 2005. The proposed NMP for Hummel Farms indicates the following needed BMPs – Forage & Biomass Planting (pastures), Grading a Field Lane, Stream Crossing, and a Roofed Manure Stacking Facility (for the turkey litter).

Ron Kopp moved to approve the Hummel Farms Nutrient Management Plan. Motion seconded by MaryAnn Warren. Ross Orner abstained from voting due to being a friend of the family. Motion carried.

d. Nutrient Management Plan – Landis Farms – Tim Landis, Northumberland County. Michael Walker, SCC, reported that Landis Farms is an existing beef and swine finishing animal operation, as well as a grain crop farm. The operation grows approximately 857 acres of crops in 3 counties – Northumberland, Schuylkill, and Dauphin. Crops being produced include Corn silage (for the beef herd), Corn grain, Soybeans, Wheat, and 16 acres of Grass hay. The operation is proposing to construct an additional 2,400 head swine finishing barn with an under-barn manure storage. The additional animals will classify this operation as a CAFO. The existing animals consist of 24 head beef finishing animals which are totally confined and 900 head of finishing swine. The proposed 2,400 swine finishing barn is planned to be constructed with an 8-foot-deep under barn manure storage. The combined animal equivalent units on Landis Farms operation is 559.53. There are 857.2 available crop acres associated with this operation. The proposed Nutrient Management Plan for Landis Farms indicates the following needed BMPs: 300 acres of Rye Cover Crop, Contour Farming, No-Till, Animal Mortality Facility, Roof and Covers (for Mortality structure), Waste Storage Facility, Access Road and Diversion, as well as roof runoff management practices for the new swine barn.

Ross Orner moved to approve the Landis Farms Nutrient Management Plan. Motion seconded by Mike Flinchbaugh. Motion carried.

e. Nutrient Management Plan – Sandy Valley Training Center- James Matheos, Luzerne County. Michael Walker, SCC, reported that the Sandy Valley Training Center is a harness horse boarding and training center located near White Haven, PA in Luzerne County. This operation is owned and operated by James Matheos. The operation consists of approximately 26 acres of land. Manure is handled as a solid on the operation, and pine shaving is used for bedding. The combined animal equivalent units on Sandy Valley Training Center operation is 77.0. There are 3.8 acres of permanent pastureland associated with Sandy Valley Training Center. There is no other cropland associated with this operation or under management control of James Matheos. The proposed NMP for Sandy Valley Training Center indicates there are no needed BMPs on the animal operation at this time. Annual inspections will occur on this CAO operation to evaluate the implementation of this NMP.

Don Koontz moved to approve the Sandy Valley Training Center Nutrient Management Plan. Motion seconded by Ron Rohall. Motion carried.

f. Notification of Transfer of Nutrient Management Plan to Elam B. Stoltzfoos, Jr., Dalmatia, Northumberland County. Michael Walker, SCC, reported that the Curvin Martin animal operation is an existing duck animal operation located in the southern portion of Northumberland County near the borough of Pillow, PA. This animal operation consists of 37,600 finishing ducks in two existing barns. The combined animal equivalent units on the Curvin Martin agricultural operation are planned at 94.44. The Martin animal operation consists of 22.6 acres of cropland. All cropland acres are leased to a neighboring farmer who utilizes them to raise corn grain, soybeans, and hay. The duck manure is handled as a liquid and exported in the Spring, Summer, and Fall to a known manure broker for agriculture crop production and one known importer. A Nutrient Management Plan may be transferred to a subsequent landowner by written notification if there are no significant changes. A request of transfer of the Martin Act 38 NMP to Elam B. Stoltzfoos, Jr. was submitted to Mr. Walker, and reviewed and acknowledged by Mr. Walker on behalf of the Commission.

Action: Information only. No action required.

3. Annual Conservation District Audit Report. Karen Books, DEP, reported that each year, conservation districts are required to have a full financial audit conducted of all funds received, maintained, and expended by the district. The audit is to be conducted by or under the supervision of a Certified Public Accountant (CPA) and completed in accordance with generally accepted auditing standards and the standards applicable to "Financial Statement" audits contained in the latest revision of Government Auditing Standards issued by the Comptroller General of the United States. These audits must be independent and separate from any comprehensive countywide audit that they may be included in as part of the county structure. Karen reported that all sixty-six conservation district 2017 audit reports were independent of the County audit as required and were submitted by the December 31, 2018 deadline as stated in the Commission's audit policy. The 2017 audits show most districts are following the guidelines approved by the

Commission dealing with Custodial Credit Risk, for both bank deposits and investments. In 2017, there was one district with unsecured funds exposed to Custodial Credit Risk. Sixty-nine percent of the audit reports continue to site findings for the "lack of segregation of duties" and "improper reporting of 'Accounts Payable'".

Ron Rohall moved to accept the conservation district audit reports for calendar year 2017. Motion seconded by Mike Flinchbaugh. Motion carried.

4. 2019 Conservation District Director Appointment Update. Karl Brown, SCC, reported that as of January 11, 2019, 55 counties (83%) have submitted 2019 conservation district director nominations to the Commission. Reminder letters will be sent out in early February 2019 to the eleven counties that have not yet submitted 2019 director nominations.

   Action: Information only. No action required.

5. Leadership Development Program Update. Matthew Miller, Leadership Development Coordinator, reported that in 2018, the Commission entered into an agreement with PACD to fund a position to provide support to the Partnership's Leadership Development Training Program and the Leadership Development Committee. The Building for Tomorrow 2018 Management Summit was held at the Ramada Conference Center in State College on September 5 and 6, 2018. A total of 69 individuals representing 52 districts attended. This event provided Conservation District managers and team leaders opportunities to network and receive education on professional development and operational/management topics from presenters in the fields of accounting, law, and human resources, as well as SCC and DEP staff. The program featured sessions on:

   - Financial oversight and segregation of duties
   - Budget tracking and revenue account codes
   - Strategic planning grants
   - Time management strategies
   - Sexual harassment and respectful workplaces

   The Building for Tomorrow 2019 Staff Conference is scheduled for February 27 and 28, 2019 at the Genetti Hotel Conference Center in Williamsport, PA. Similar to the Management Summit, this event will provide Conservation District staff with educational sessions on both personal and professional development topics and operationally-focused subject matter, as well as providing networking opportunities. Sessions for this conference will include:

   - Values, mission, and workplace engagement
   - Sexual harassment and respectful workplaces
   - Public opinion on conservation work
   - Grant writing and the bidding process
   - Expanding your district's social media audience
   - Preparation and note-taking for public meetings
   - Worksite safety
   - Right to Know Law and public accessibility

   The 2019 Building for Tomorrow Director Training Workshop Series will have an emphasis on the role of the Board of Directors in modeling and communicating organizational culture. This workshop series will take place in March 2019 in the Wilkes-

Barre, State College, Titusville, Pittsburgh, and Ephrata areas.

Action: Information only. No action required.

6. Dirt, Gravel, and Low Volume Road Program Update. Roy Richardson, SCC and Steve Bloser, PSU Center for Dirt and Gravel Road Studies reported that the Dirt, Gravel, and Low Volume Road Program is entering into what will be a very hectic six months. Being the final year of the current funding agreement means that many projects will need to be completed to meet the Commission's 2-year funding expenditure. This funding cycle was further complicated by one of the wettest years on record in many parts of the Commonwealth, making construction projects even more difficult to schedule and complete. Roy and Steve gave an overview of the following:

- Assessment Update
- 2019 Training Events Summary
- Annual Report Sneak Peak
- Quarterly Reporting Update
- Previous 5-Year CD Funds
- Future SCC Action Items

Future SCC action items for March and May 2019 include: Administrative Manual Changes and the new Center for Dirt and Gravel Road Studies 5-year contract. The current contract ends on June 30, 2019. Action items for May and July 2019 include: Conservation District FY 2019-2020 Allocations.

Action: Information only. No action required.

7. PAOneStop Project Update. Jennifer Weld, PSU, reported that PAOneStop has been developed over the last 10 years as a natural resource mapping and planning tool for PA farmers, landowners, and land managers. Its use has grown significantly over the last three years, with more than 6,000 users entering data on more than 23,000 farms covering more than 169,000 fields in 2018. Those statistics are nearly double of what they were three years earlier in 2015. Jen Weld with the Department of Ecosystem Science and Management, Penn State University, was recently appointed "Director" of the PAOneStop Program Current funding for PAOneStop comes from the following sources:

- PA SCC supports salaries, workshops, operations/programming of PAOneStop, and development of Extension materials
- Sustainable Chesapeake/NFWF supports: manure management module, nutrient balance sheet, manure matching, and support workshops.
- Growing Greener supports Nutrient Balance Sheets
- Centers for Dairy and Beef Excellence support the Environmental Planning Workshop series
- USDA-CIG, Northeast CIG supports possible funding for P Index module development

There is a continued increase in the use of current farm mapping services and Ag E&S planning services. The collaborative expansion of PAOneStop will allow for: current products, farm mapping, and Ag E&S planning, to be improved; expansion to provide new services; and the ability to address College, Extension, State, and stakeholder needs. There are opportunities to explore BMP reporting and verification through PAOneStop.

Advisory groups will be key in prioritizing future expansion and collaborative work.

Action: Information only. No action required.

8. Soil Erosion and Sedimentation Control Manual for Agricultural Operations – Draft Technical Guidance Document. Jill Whitcomb, DEP, reported that DEP staff, in cooperation with partner agencies and other interested parties, are developing a Technical Guidance Document (TGD) to guide the writing of Agricultural Erosion and Sediment Control Plans required under DEP's Chapter 102 regulations. Work began in 2017, and a draft TGD was posted for comment in January 2019 with a goal of completion in the Summer/Fall of 2019. This has been a significant and important undertaking designed to provide, for the first time, detailed guidance for the development of these plans. Jill provided a detailed description of this Erosion and Sediment Technical Guidance Document to the Commission.

Action: Information only. No action required.

9. Chesapeake Bay Program WIP Update. Veronica Kasi, DEP, reported that DEP, in cooperation with local, state, and federal partners, is diligently working to finalize a draft of the Chesapeake Bay Watershed TMDL Phase III WIP for Pennsylvania. One of the primary focus of activities over the last several months has been a pilot program to develop county-based action plans or strategies for four different counties (Lancaster, York, Adams, and Franklin). In addition, DEP is actively working to finalize the overall Phase II WIP for Pennsylvania, which is due to EPA in 2019. Veronica discussed the following:

- Workgroup recommendations: Agriculture, Forestry, Stormwater, and Wastewater
- Countywide Action Plans: Lancaster and York
- Implementation

Action: Information only. No action required.

C. Written Reports – Self Explanatory

1. Program Reports
   a. Act 38 Nutrient and Odor Management Program Report
   b. Act 38 Nutrient and Manure Management Program Evaluations
   c. Act 38 Facility Odor Management Program & Status Report on Plan Reviews
   d. Certification and Education Program Accomplishment Report
   e. REAP Accomplishment Report

2. Ombudsman Program Reports – Southern Allegheny Region (Blair County Conservation District and Lancaster County Conservation District)

D. Cooperating Agency Reports – DCNR, PDA, Penn State, DCED, DEP, NRCS, PACD

DCNR – Matt Keefer reported that the Community Conservation Partnership Grants application period is now open, and applications are due in April 2019. The Riparian Forest Buffer Summit will be held on February 20 and 21, 2019. The Summit provides conservation professionals and decision makers with the latest information on forest buffer science, policy, outreach and implementation strategies, and funding options through a series of breakout and plenary sessions. DCNR is embarking on a Forest Action Plan, which is a ten year plan to be eligible for USDA funding.

PDA – Deputy Secretary Greg Hostetter reported that the PA Department of Agriculture has a new Executive Deputy Secretary, Mike Hanna. The PA State Veterinarian, David Wolfgang, is retiring. A budget binder is currently being prepared for use at the House and Senate appropriations meetings at the beginning of March 2019. Greg thanked all who helped with and attended the Farm Show at the beginning of January. The "PA In the Balance Conference" will be held in Hershey on February 6, 7, and 8, 2019. There have been 28 projects submitted under the PA Dairy Investment Program for research and development.

PSU – no report.

DCED – no report.

DEP – Secretary Patrick McDonnell reported that Tim Schaeffer took the position of Executive Director of the Fish and Boat Commission. The Acting Deputy Secretary of Water Programs is Aneca Atkinson. The Governor's budget address will be on February 5, 2019. The House hearings begin on February 14, 2019, and the Senate hearings begin on February 28, 2019.

NRCS – Denise Coleman provided a hard copy of the 2018 Annual Report to Commission members. In FY 2018, there were 21,363 conservation practices applied. $21.6 million were utilized for EQIP. The Regional Conservation Partnership Program (RCPP) encourages partners to join in efforts with producers to increase the restoration and sustainable use of soil, water, wildlife, and related natural resources on regional or watershed scales.

PACD – no report.

Prior to adjournment, Karl Brown noted, for the record, that an Executive Session was held at 11:30 a.m. today regarding compliance and enforcement issues.

Adjournment: Meeting adjourned at 3:44 p.m.

Next Public Meeting: February 19, 2019 – Conference Call
March 12, 2019 – Farm Show Complex, Susquehanna Room, Harrisburg, PA

STATE CONSERVATION COMMISSION CONFERENCE CALL
PA Department of Agriculture, Room 405
Tuesday, February 19, 2019 @ 8:30 am

DRAFT MINUTES

Members Present: Deputy Secretary Greg Hostetter for Secretary Russell Redding, PDA; Fred Fiscus and Karen Books for Secretary Patrick McDonnell, DEP; Drew Gilchrist for Secretary Cindy Adams-Dunn, DCNR; Chris Houser for Dr. Richard Roush, Penn State; Ross Orner; MaryAnn Warren; Ron Kopp; Ron Rohall; Don Koontz; Denise Coleman, NRCS; Adam Walters, DCED; and Brenda Shambaugh, PACD.

B. Agency/Organization Updates

1. DCNR – Drew Gilchrist

   Drew reported that the 2019 Buffer Summit was held on February 20 and 21, 2019 at the Best Western Premier in Harrisburg, PA. The Statewide Watershed Conference will be held on February 24 and 25, 2019 in Boalsburg, PA. Applications are now being accepted for the Community Conservation Partnership Program, which provides grant funding for Riparian Buffers, Green Infrastructure, trails, recreation development, and land preservation for municipalities and non-profits. The grant application period closes on April 10, 2019.

2. NRCS – Denise Coleman

   Denise reported that NRCS continued to operate, despite the government shutdown. They are working on EQIP and doing extensive rule writing updates for the Farm Bill. There are no new policies attached to it.

3. PACD – Brenda Shambaugh

   Brenda reported that the PACD region meetings will be held in March. The main discussion at these meetings will focus on the Governor's budget proposal, including moving the DEP "Transfer to the CD Fund" to the Environmental Stewardship Fund. PACD sent comments to DEP on Section 6 of the E&S and NPDES Administrative Manual. PACD is developing comments for the Soil Erosion and Sedimentation Control Manual for Agriculture. Conservation District Week will occur in early May 2019. Applications will be submitted soon for the NACD/NRCS Grant Program. Thank you to the SCC for supplying the funding for the Leadership Development Program. The Leadership Development staff conference will be on February 27 and 28 in Williamsport, PA.

4. Pennsylvania Department of Agriculture – Deputy Secretary Greg Hostetter

Deputy Secretary Hostetter reported that the Pennsylvania Farm Bill invests more than $24 million for agriculture in Pennsylvania. There are six priorities in the Farm Bill:

- Agricultural business development and succession planning
- Creating more processing capabilities to accommodate a growing animal agriculture sector
- Removing regulatory burdens and strengthening the state's business climate
- Strengthening Pennsylvania's workforce to ensure the next generation is prepared to lead
- Protecting agriculture infrastructure
- Increasing market opportunities and making Pennsylvania the nation's leading organic state

House and Senate appropriations hearings for the Department of Agriculture will be on March 5 and 6, 2019.

5. Penn State – Chris Houser

No report.

6. DCED – Adam Walters

No report.

7. DEP – Fred Fiscus and Karen Books

Fred Fiscus reported that DEP is working on a budgeting spreadsheet for district staffing. A draft was sent to Sandy at McKean County Conservation District for comments. This draft will also be sent to other smaller districts for comments. Eventually, it will be sent to all districts. DEP is also looking at the allocation concepts for CDFAP suggested by Lycoming County Conservation District. These concepts consider a 15-year average well count versus the current 5-year average on the allocation calculation. Another allocation option provided by Armstrong County Conservation District would revise the 50/50 split and special project allocation concept. Karen Books mentioned that Envirothon volunteers are needed for May 21 and 22, 2019. It will be held at the University of Pittsburgh, Johnston.

C. Information and Discussion Items

1. Nutrient and Odor Management Program – Frank Schneider

Odor Management Program, Vegetated Buffer Standard – In March 2019, State Conservation Commission staff will be asking the Commission to consider a "Vegetated Buffer Standard" for use in the Odor Management Program. Since the inception of the program, the Commission has utilized the PA NRCS standards and specification for buffers as contained in PA Soil and Water Technical Guide (eFOTG). With a specific purpose and goal of reducing and mitigating agricultural odors, SCC and Penn State University staff are recommending a PA Odor Management Program specific standard to help ensure compatibility with PA Act 38 requirements.

Odor Management Program, Best Management Practice Reference List – The Commission maintains an Odor Management Best Management Practice Reference List in order to provide consistent program guidance for the development, review, and implementation of odor management plans in Pennsylvania. Version 2.0 of the Odor Management Best Management Practice Reference List was adopted by the Commission in August 2013. In March 2019, staff will be asking the Commission to consider Version 3.0 of the Odor Management Best Management Practice List.

Nutrient Management Program, Nutrient Balance Sheets, Phosphorous Planning – The Commission, in cooperation with Penn State University, is in the process of reviewing how phosphorous is planned and managed under Act 38 Nutrient Balance Sheets (NBS). Commission and University staff, in cooperation with the Nutrient Management Advisory Board (NMAB), have reviewed potential changes to technical guidance and are recommending two changes: removal of Phosphorous Banking in Option 1 and three changes to Option 3 regarding the use of the Phosphorous Index in NBS. In March 2019, staff will be asking the Commission to consider these changes.

2. FY 2019-20 State Budget Update – Karl Brown

Governor Wolf presented his 'proposed' FY 2019-20 Executive Budget to the General Assembly on February 6, 2019. The 'proposed' FY 2019-20 budget includes appropriations to the Departments of Agriculture and Environmental Protection for distribution to Commission programs and conservation districts. Commission staff reviewed elements of the Governor's 'Proposed' FY 2019-20 Executive Budget related to the Commission and conservation district programs with members. The Nutrient Management Fund increase of 3.486 million is proposed. Funding to conservation districts is proposed for a slight increase from the UGW Fund.

3. **SCC Strategic Planning Update – Karl Brown**

   Commission and staff are continuing to analyze the Strategic Planning results and responses, which were collected in Fall 2018. Karl Brown met with Kelly O'Donnell, the PDA LEAN Director, to discuss putting the results and responses into a final Strategic Planning draft form. More information will follow at subsequent Commission meetings.

4. **Chesapeake Bay Program, Phase III WIP, Agriculture and Forestry BMP Summaries – Karl Brown**

   Draft summary documents for both Agricultural and Forestry Best Management Practices as recommended by the respective sector workgroups were presented. These two documents summarize the recommended BMPs, levels of implementation believed to be feasible, estimated costs, and reductions in nitrogen, phosphorus, and sediment that are anticipated from the implementation of these BMPs at these levels. Veronica Kasi presented this information at the January 30, 2019 SCC meeting in State College.

5. **PA Farm Bill Overview- Deputy Secretary Greg Hostetter and Karl Brown**

   Governor Wolf recently released the Pennsylvania Farm Bill Concept. The Pennsylvania Farm Bill would invest more than $24 million into Pennsylvania's agriculture industry to grow opportunities and resources, remove regulatory barriers, and cultivate future generations of leaders within agriculture. The plan includes: agricultural business development and succession planning; creating more processing capabilities to accommodate a growing animal agriculture sector; removing regulatory burdens and strengthening the state's business climate; strengthening Pennsylvania's workforce to ensure the next generation is prepared to lead; protecting agriculture infrastructure; and increasing market opportunities and making Pennsylvania the nation's leading organic state. Greg Hostetter noted that there is support from the Agricultural Chairs on the Agriculture Committee for this Farm Bill.

6. **Restore Pennsylvania – Karl Brown**

   Governor Wolf recently released a concept package called Restore Pennsylvania. This is a comprehensive package addressing high-speed internet; storm preparedness and disaster recovery; downstream manufacturing, business development, and energy infrastructure; demolition, revitalization, and renewal; and transportation capital projects.
7. **Next Meeting** – March 12, 2019 at the Pennsylvania Farm Show Complex
8. **Adjournment** - The meeting was adjourned at 9:28 a.m.

COMMONWEALTH OF PENNSYLVANIA
STATE CONSERVATION COMMISSION

DATE: February 26, 2019

TO: Karl G. Brown, Executive Secretary
State Conservation Commission

FROM: Michael J. Walker, NM Regional Coordinator
State Conservation Commission

SUBJECT: Nutrient Management Plan Review (1)
Northumberland County, Pennsylvania

Action Requested

Action on a Nutrient Management Plan for the following operation in Northumberland County:

1. Burnell & Sharon Nolt, 197 Hunters Junction Road, Dornsife, PA 17823 (crop years 2020 - 2022)

Background

I have completed the required review of the subject nutrient management plan listed above. Final corrections to the plan were received at the PDA Region 2 office on January 28, 2019. As of that date, the plan was considered to be in its final form. The operation, located in Northumberland County, is considered to be a concentrated animal operation (CAO) under the PA Nutrient and Odor Management Act. The Commission is the proper authority to take action on this plan, because Northumberland County Conservation District has not been delegated plan review and action responsibilities under the PA Nutrient and Odor Management Act Program.

A brief description of the operation, concluding with the staff recommendation, is attached. Also attached is a copy of the complete nutrient management plan for the operation.

Thank you for considering this plan for Commission action.

Farm Descriptions

Burnell & Sharon Nolt NMP, Northumberland County – Burnell and Sharon Nolt are operating a broiler chicken operation in southern Northumberland County. The farm consists of 2.7 acres of cropland, 0 acres of hayland, 0 acres of pasture and 13.3 acres of farmstead. The cropland acres owned by Nolt are rented to a neighboring crop farmer, so no lands are under control of the Nolts. The broiler poultry operation average 70, 000 broiler chickens that are housed in two barns (35,000 per barn). The chickens are totally confined to the barn. Manure is handled as a solid and collected and removed after each flock. Manure is either exported directly from the barns or stacked in the 40 by 64 by 6 roofed manure storage facility. There is also a roofed mortality facility attached to the manure storage, which measures 40 by 8 by 6, with 5 bins for composting the mortality. The mortality compost is mixed with the manure when exported.

Approximately 730 tons of broiler manure is generated at Nolt's animal operation. All collected manure and mortality compost is exported to the neighboring crop farmer for land application to cropland. The proposed NMP includes Nutrient Balance Sheets (NBSs) for the neighboring operator to utilize the manure from Nolt animal operation.

The combined animal equivalent units on the Nolt's animal operation are planned at 183.82. The animal equivalent units per acre for Nolt's animal operation equals to 183.82, classifying the operation as a concentrated animal operation under Act 38 of 2005.

<u>Based on my review, the NMP developed for Burnell & Sharon Nolt animal operation meets the requirements of the PA Nutrient and Odor Management Act and Regulations, and I therefore recommend Commission approval.</u>

Nutrient Management Plan

For Crop Year(s)

2020 2021 2022

Prepared For

Operator's Name, Mailing Address, Telephone Number(s)

Burnell & Sharon Nolt, 197 Hunters Junction Road, Dornsife, PA 17823
717-821-0537

Operation's Location Address (if different than above)

Same

Site Name (CAFOs)

N/A

Prepared By

Nutrient Management Specialist's Name, Address, Telephone Number(s)

Todd C. Rush, TeamAg, Inc., 120 Lake Street, Ephrata, PA 17522
570-764-7003

Nutrient Management Specialist's Program Certification Number

#988-NMC

Administratively Complete Date

Plan Approval Date

Plan Update Submission Date(s)

(updates to the approved plan not requiring board action)

TeamAg Incorporated

Table of Contents

Nutrient Management Plan Summary

Total acres reported in NMP Summary: 0

Crop Year(s) 2020

Whole Farm Note: **See Appendix 8 for manure export details.**
If manure runs out for any field, consult Appendix 4 of the plan for that field. The fertilizer required on any part of the field that does not receive manure can be determined from the 'Net Nutrients Required' for that field.

Operation Acres:

Total Acres: 16 **Total Acres Available For Nutrient Application Under Operator's Control: Owned:** 0 **Rented:** 0

Animal Equivalent Units: 183.82 **Animal Equivalent Units Per Acre:** 183.82

CMU/Field ID	Acres	Crop	Manure Group	Application Season	Application Management	Planned Manure Rate[1]		Starter/Other Fertilizer (lb/A)			Supplemental Fertilizer (lb/A)			Nutrient Balance (lb/A)[2]		
								N	P_2O_5	K_2O	N	P_2O_5	K_2O	N	P_2O_5	K_2O
This Appendix is not relevant to the farm situation because no cropped fields are included in the plan.	0													0		

[1] See rate calibration table (Nutrient Management Plan Summary Notes).
[2] Positive numbers = nutrient deficit; Negative numbers = nutrient excess

NMP Summary Notes

Crop Years 2020

CMU/Field ID	Notes
This Appendix is not relevant to the farm situation because no cropped fields are included in the plan.	None

[1] See rate calibration table (Nutrient Management Plan Summary Notes).
[2] Positive numbers = nutrient deficit; Negative numbers = nutrient excess

Manure Spreader Calibration Notes

1

Crop Years 2020

Manure Application Rate	Manure Spreader Used	Spreader Settings	Tractor Used (if applicable)	Tractor Settings (speed, gear, rpm, pto, etc.)
This Appendix is not relevant to the farm situation because no cropped fields are included in the plan.	N/A	N/A	N/A	N/A

Nutrient Management Plan Summary

Total acres reported in NMP Summary: 0 **Crop Year(s)** 2021

Whole Farm Note: **See Appendix 8 for manure export details.**
If manure runs out for any field, consult Appendix 4 of the plan for that field. The fertilizer required on any part of the field that does not receive manure can be determined from the 'Net Nutrients Required' for that field.

Operation Acres:

Total Acres: 16 **Total Acres Available For Nutrient Application Under Operator's Control: Owned:** 0 **Rented:** 0

Animal Equivalent Units: 183.82 **Animal Equivalent Units Per Acre:** 183.82

								Starter/Other Fertilizer (lb/A)			Supplemental Fertilizer (lb/A)			Nutrient Balance (lb/A)[2]		
CMU/Field ID	Acres	Crop	Manure Group	Application Season	Application Management	Planned Manure Rate[1]		N	P_2O_5	K_2O	N	P_2O_5	K_2O	N	P_2O_5	K_2O
This Appendix is not relevant to the farm situation because no cropped fields are included in the plan.	0													0		

[1] See rate calibration table (Nutrient Management Plan Summary Notes).
[2] Positive numbers = nutrient deficit; Negative numbers = nutrient excess

NMP Summary Notes

Crop Years 2021

CMU/Field ID	Notes
This Appendix is not relevant to the farm situation because no cropped fields are included in the plan.	None

[1] See rate calibration table (Nutrient Management Plan Summary Notes).
[2] Positive numbers = nutrient deficit; Negative numbers = nutrient excess

Manure Spreader Calibration Notes

1

Crop Years 2021

Manure Application Rate	Manure Spreader Used	Spreader Settings	Tractor Used (if applicable)	Tractor Settings (speed, gear, rpm, pto, etc.)
This Appendix is not relevant to the farm situation because no cropped fields are included in the plan.	N/A	N/A	N/A	N/A

Nutrient Management Plan Summary

Total acres reported in NMP Summary: 0

Crop Year(s) 2022

Whole Farm Note: **See Appendix 8 for manure export details.**
If manure runs out for any field, consult Appendix 4 of the plan for that field. The fertilizer required on any part of the field that does not receive manure can be determined from the ‘Net Nutrients Required’ for that field.

Operation Acres:

Total Acres: 16 **Total Acres Available For Nutrient Application Under Operator’s Control:** **Owned:** 0 **Rented:** 0

Animal Equivalent Units: 183.82 **Animal Equivalent Units Per Acre:** 183.82

								Starter/Other Fertilizer (lb/A)			Supplemental Fertilizer (lb/A)			Nutrient Balance (lb/A)[2]		
CMU/Field ID	Acres	Crop	Manure Group	Application Season	Application Management	Planned Manure Rate[1]		N	P_2O_5	K_2O	N	P_2O_5	K_2O	N	P_2O_5	K_2O
This Appendix is not relevant to the farm situation because no cropped fields are included in the plan.	0													0		

[1] See rate calibration table (Nutrient Management Plan Summary Notes).
[2] Positive numbers = nutrient deficit; Negative numbers = nutrient excess

NMP Summary Notes

Crop Years 2022

CMU/Field ID	Notes
This Appendix is not relevant to the farm situation because no cropped fields are included in the plan.	None

[1] See rate calibration table (Nutrient Management Plan Summary Notes).
[2] Positive numbers = nutrient deficit; Negative numbers = nutrient excess

Manure Spreader Calibration Notes

1

Crop Years 2022

Manure Application Rate	Manure Spreader Used	Spreader Settings	Tractor Used (if applicable)	Tractor Settings (speed, gear, rpm, pto, etc.)
This Appendix is not relevant to the farm situation because no cropped fields are included in the plan.	N/A	N/A	N/A	N/A

Additional Nutrient Management Plan Requirements

Manure Management and Stormwater BMP Implementation Summary

Best Management Practice	NRCS Practice Code [1]	BMP Location	Implementation Season & Year
None	N/A	N/A	N/A

1 If applicable, enter USDA-NRCS Practice Code. For other non-technical BMPs, leave blank.

In-Field Manure Stacking Procedures

Manure must be applied to the field within 120 days of stacking or the stacks must be covered. Stacks must be implemented and maintained according to sound BMPs, addressing concerns such as soil type, soil slope, shape of the pile, setbacks, and rotation of piles.

This operation does not field stack manure.

Additional CAFO Requirements

In-field stacking criteria, winter storage requirements, and other issues identified by DEP's review of the nutrient management plan.

This operation is not a CAFO.

Proposed Manure Storage Description

Type, dimensions, volume, freeboard and location on map.

There are no manure storage structures proposed for this operation.

Description of Planned Alternative Manure Technology Practices

Type of practice, volume of manure addressed, and result of practice.

There are no alternative manure technology practices planned for this operation.

Exported Manure Summary

Summarize in a short paragraph the arrangements proposed for the manure to be exported from the operation. This information is described in more detail in Appendix 8 of this plan.

All poultry manure is exported to known manure importers for application on cropland. See Appendix 8 for details.

Operator Management Map

Three types of maps are required for an Act 38 Nutrient Management Plan: 1) Topographic Map, 2) Soils Map, and 3) Operator Management Map. The **Operator Management Map** is to be included here in the Nutrient Management Plan Summary and must include field identification, acreage and boundaries, manure application setback areas and buffers and associated landscape features (streams and other water bodies, sinkholes and active water wells), location of existing and proposed structural BMPs (including manure storage facilities), location of existing or proposed emergency manure stacking areas and in-field manure stacking areas, and road names adjacent to and within the operation. All features on the map must be clearly identified and include a legend for setback areas and other features. The Topographic Map and Soils Map must be included in Appendix 9.

Burnell & Sharon Nolt Operator Management Map

TeamAg Incorporated

Field verification of application setbacks and buffers is required prior to land application of manure.

Appendix 1

Nutrient Management Plan Agreement & Responsibilities

Plan Implementation Requirements

This nutrient management plan has been developed to meet the requirements of the following programs:

X	Pennsylvania Act 38 of 2005	X	CAO		VAO (check one)
	Pennsylvania CAFO (Concentrated Animal Feeding Operation) program				
	Other program: ______________________				

Plans developed under these programs are required to be implemented as approved in order to maintain compliance with the specific law or program. Implementation includes adherence to manure and fertilizer application rates, timing, setbacks and conditions; installation of listed BMPs within implementation timeframes; and record keeping obligations of the program.

The nutrient management plan has been developed as a: (check one)

	1-Year Plan for Crop Year		(annual updates will be completed)	
X	3-Year Plan for Crop Years	2020	2021	2022

Records required to be maintained include the following:

1) Annual crop yields
2) Manure and fertilizer application rates, locations and date of application
3) Manure production figures for the various manure groups listed in your plan
4) Soil test reports (testing required every 3 years per crop management unit)
5) Manure test reports (testing required once a year for each manure group)
6) Number of animals on pasture, number of days on pasture, and hours per day on pasture
7) For operations exporting manure, Manure Export Sheets
8) BMP designs and certification for new liquid and semi-solid manure storage facilities

The following has been confirmed:

X	Verification of Ag E&S Plan
X	Verification of Existing Site Specific Emergency Response Plan

Verification that owners of rented/leased lands have been notified that a nutrient management plan has been developed which calls for manure to be applied to their lands and that they have no objections to the plan requirements.

	Owners Notified	X	No Rented/Leased Lands

Specialist Signature

I affirm that the information contained in this nutrient management plan is true, accurate and complete to the best of my knowledge and belief, based on information provided by the operator; that this plan has been developed in accordance with the criteria established for the program(s) indicated above; and that I have presented the final complete plan to the operator and discussed the content and implementation of this plan with the operator, subject to the penalties of 18 Pa.C.S.A. § 4904, relating to unsworn falsification to authorities.

Specialist Signature ______________________

Date 01/21/19

Operator Signature

I understand and agree that I will implement the practices, procedures and record keeping obligations as outlined in this plan in order to protect water quality and address the nutrient needs of the crops associated with the operation. I agree that if I use a commercial hauler or broker for the application or export of manure, that only haulers or brokers that hold a valid certification issued by the Pa Department of Agriculture, under Act 49 of 2004, will be used. I affirm that all information provided in this nutrient management plan is true, accurate and complete to the best of my knowledge and belief, and reflects the current and planned activities of the operation; and that, if this plan was completed by a nutrient management specialist, I have reviewed the final completed plan and the specialist has discussed the content and implementation of this plan with me, subject to the penalties of 18 Pa.C.S.A. § 4904, relating to unsworn falsification to authorities.

Operator Signature	Russell Nolt
Operator Title	Owner
Date	1-22-19

Appendix 2
Operation Information

Operation Description

Animal types and numbers; cropland, hayland and pastureland acreage; farmstead acreage; crop rotation (crops, sequence of crops, and number of years for each crop); manure group management, including atypical manure (contributing animal groups, collection, storage and handling procedures); mortality composting management.

Burnell and Sharon Nolt raise broiler chickens at their farm in Northumberland County, PA. The farm consists of 2.7 acres of cropland, 0 acres of hayland, 0 acres of pasture and 13.3 acres of farmstead. All cropland acres are rented to another farmer who utilizes them to raise corn grain and soybeans. All crops are established using no-till planting methods. The poultry operation averages a total of 70,000 broiler chickens housed in two barns (35,000 broilers per barn). Broiler chickens are 100% confined to the barns and do not have access to pasture. Collected poultry manure is handled as a solid and removed from the barns between each flock of chickens. Stacking areas for sawdust bedding are located outside the east end of each building. Depending on the time of year, when manure is removed from the barns it is either immediately exported off of the operation or stored in an existing roofed concrete manure stacking structure located north of the poultry barns. Manure export typically takes place in the spring, fall and winter. Exported manure generated by this operation is imported by the farmer currently renting and operating the Nolt's owned cropland. These fields are included in the Nutrient Balance Sheets in Appendix 8. Poultry moralities are composted on the operation in a roofed bin composter attached to the north end of the roofed concrete manure stacking structure. Mortality compost is mixed in with the collected poultry manure as needed during manure export off the operation. A rabbit barn built by the previous owner of the farm exists on the operation; however the Nolt's do not have any rabbits housed in the barn at this time and are not planning on raising rabbits in the future.

County(s)

Northumberland County / Washington Township

Name of Receiving Stream(s)/Watershed(s)

Middle Creek – TSF

Notation of Special Protection Waters

None

Operation Acres

Total Acres: 16.0 acres

Total Acres Available for Nutrient Application Under Operator's Control

Owned: 0 acres

Rented: 0 acres

Names & Addresses of Owners of Rented or Leased Land

None

Existing Manure Storages & Capacity

Type of storage, dimensions, useable capacity, freeboard, top or bottom loaded, dimensions and description of contributing runoff area, description of wastewater additions, types and amounts of bedding. Briefly describe, for each manure group, manure storage management during removal (degree of agitation, method of manure removal, extent the storage is emptied, type of unremoved manure, etc.) and manure sampling procedures.

A 40’ x 64’ x 6’ roofed concrete manure stacking structure is located on the operation. This structure is used to store solid poultry manure. With manure stacked to a height of 10 feet in the center of the structure, the storage holds approximately 22,437 cubic feet of manure with sawdust bedding. No runoff or waste water is added to this structure. Manure is added to the storage by being hauled from the barns with a loader tractor and dump truck and then dumped into the structure. The majority, if not all of, the manure is removed from the storage during clean out. A representative manure sample was taken directly from the manure storage in the structure. A 40’ x 8’ x 6’ – 5 bin mortality composter is attached to the north end of the structure. Mortality compost is mixed in with the collected poultry manure as needed during manure export off the operation.

Manure Application Equipment Capacity & Practical Application Rates

Description of application equipment, practical application rates based on calibration and calibration method used, the data recorded during equipment calibration is to be retained on the farm. If applicable, name and Act 49 certification number of custom applicator.

This section is not relevant to this farm situation because no cropped fields are included in this plan.

Appendix 3 Manure Group Information Crop Yrs. 2020	Broiler Manure	
Manure Report Date (note if averaging several reports)	December 26, 2018	
Laboratory Name	Spectrum Analytic, Inc.	
Manure Type	Poultry	
Manure Unit (lbs/ton or 1000 gal)	lb/ton	
Total Nitrogen (N) (lbs/ton or 1000 gal)	43.37	
Ammonium N (NH_4-N) (lbs/ton or 1000 gal)	10.46	
Total Organic N (lbs/ton or 1000 gal)	32.91	Go to NMP Index
Total Phosphate (P_2O_5) (lbs/ton or 1000 gal)	28.84	Go to Appendix 3 Input
Total Potash (K_2O) (lbs/ton or 1000 gal)	29.06	Go to Manure Avg Input
Percent Solids	59.87	Grazing Calculator
PSC Value (analytical or book value)	0.62	
Percent Moisture	40.13	
Manure Group AEU's	183.82	
Description: Site & Season Applied	Roofed Manure Stacking Structure	Spring, Fall, Winter Export
Inventory Method	Records	
	Collected Calc.	Uncollected Calc.
Manure Group Identification	Broiler Manure	
CALCULATED: Total Manure Collected Per Manure Group Units		
RECORDS: Total Manure Collected Per Manure Group Unit	730.0 tons	
Manure Used On-Farm Units	Collected 0.0 Tons	Uncollected 0.0
Manure Exported Units	730.0 tons	
Manure Allocation Balance Units	0.0 Tons	0.0
Manure Balance as a Percent of Total Manure Collected	0.0%	
Total Rainfall and Runoff	0 tons	

Appendix 3 Manure Group Information Crop Yrs. 2020	Broiler Manure	
	Manure Generation per Animal Group	Uncollected Manure: Nutrient Analysis Book Values
Animal Group 1	Broilers	
Animal Type	Broiler, large: 0–53 days	
Animal Number	70,000	
Animal Weight	3.55	
Animal Group AUs	248.50	
Animal Group AEUs	183.82	
Daily Manure Production per AU	20.0	
Total Days Manure Produced	270	
Total Manure Produced		
Days On Pasture	0	
Hours Per Day On Pasture	0	
Total Bedding		
Total Washwater		
CALCULATED - Total Uncollected Manure Per Animal Group		
CALCULATED-Total Manure Collected Per Animal Group		App 3 Input

Appendix 3 Manure Group Information Crop Yrs. 2021	Broiler Manure	
Manure Report Date (note if averaging several reports)	December 26, 2018	
Laboratory Name	Spectrum Analytic, Inc.	
Manure Type	Poultry	
Manure Unit (lbs/ton or 1000 gal)	lb/ton	
Total Nitrogen (N) (lbs/ton or 1000 gal)	43.37	
Ammonium N (NH_4-N) (lbs/ton or 1000 gal)	10.46	
Total Organic N (lbs/ton or 1000 gal)	32.91	Go to NMP Index
Total Phosphate (P_2O_5) (lbs/ton or 1000 gal)	28.84	Go to Appendix 3 Input
Total Potash (K_2O) (lbs/ton or 1000 gal)	29.06	Go to Manure Avg Input
Percent Solids	59.87	Grazing Calculator
PSC Value (analytical or book value)	0.62	
Percent Moisture	40.13	
Manure Group AEU's	183.82	
Description: Site & Season Applied	Roofed Manure Stacking Structure	Spring, Fall, Winter Export
Inventory Method	Records	
	Collected Calc.	Uncollected Calc.
Manure Group Identification	Broiler Manure	
CALCULATED: Total Manure Collected Per Manure Group Units		
RECORDS: Total Manure Collected Per Manure Group Unit	730.0 tons	
	Collected	Uncollected
Manure Used On-Farm Units	0.0 Tons	0.0
Manure Exported Units	730.0 tons	
Manure Allocation Balance Units	0.0 Tons	0.0
Manure Balance as a Percent of Total Manure Collected	0.0%	
Total Rainfall and Runoff	0 tons	

Appendix 3 Manure Group Information Crop Yrs. 2022	Broiler Manure	
Manure Report Date (note if averaging several reports)	December 26, 2018	
Laboratory Name	Spectrum Analytic, Inc.	
Manure Type	Poultry	
Manure Unit (lbs/ton or 1000 gal)	lb/ton	
Total Nitrogen (N) (lbs/ton or 1000 gal)	43.37	
Ammonium N (NH_4-N) (lbs/ton or 1000 gal)	10.46	
Total Organic N (lbs/ton or 1000 gal)	32.91	Go to NMP Index
Total Phosphate (P_2O_5) (lbs/ton or 1000 gal)	28.84	Go to Appendix 3 Input
Total Potash (K_2O) (lbs/ton or 1000 gal)	29.06	Go to Manure Avg Input
Percent Solids	59.87	Grazing Calculator
PSC Value (analytical or book value)	0.62	
Percent Moisture	40.13	
Manure Group AEU's	183.82	
Description: Site & Season Applied	Roofed Manure Stacking Structure	Spring, Fall, Winter Export
Inventory Method	Records	
	Collected Calc.	Uncollected Calc.
Manure Group Identification	Broiler Manure	
CALCULATED: Total Manure Collected Per Manure Group Units		
RECORDS: Total Manure Collected Per Manure Group Unit	730.0 tons	
	Collected	Uncollected
Manure Used On-Farm Units	0.0 Tons	0.0
Manure Exported Units	730.0 tons	
Manure Allocation Balance Units	0.0 Tons	0.0
Manure Balance as a Percent of Total Manure Collected	0.0%	
Total Rainfall and Runoff	0 tons	

Manure Analysis 5 Year Running Average						
Manure Average for Crop Years. 2020	**Broiler Manure**					
	Average	1 year ago	2 years ago	3 years ago	4 years ago	5 years ago
Manure Report Date	**Dec 26 2018**	Dec 26 2018	Mar 07 2016	Oct 24 2013	Mar 22 2011	
Laboratory Name	**Spectrum Analytic, Inc.**	Spectrum Analytic, Inc.	Penn State	CVAS	Penn State	
Manure Type	**Poultry**	Poultry	Poultry	Poultry	Poultry	
Manure Unit (lbs/ton or 1000 gal)	**lb/ton**	lb/ton	lb/ton	lb/ton	lb/ton	
Total Nitrogen (N) (lbs/ton or 1000 gal)	**43.37**	45.20	47.46	41.80	39.00	
Ammonium N (NH_4-N) (lbs/ton or 1000 gal)	**10.46**	13.60	7.52	9.70	11.02	
Total Organic N (lbs/ton or 1000 gal)	**32.91**	31.60	39.94	32.10	27.98	
Total Phosphate (P_2O_5) (lbs/ton or 1000 gal)	**28.84**	36.00	33.03	33.52	12.82	
Total Potash (K_2O) (lbs/ton or 1000 gal)	**29.06**	41.00	30.99	28.70	15.53	
Percent Solids	**59.87**	52.51	66.30	67.16	53.50	
PSC Value (Enter analytical or book value)	**0.62**	0.61	0.80	0.26	0.80	

App. 4: Crop Yrs. 2020	This Appendix is not relevant to the farm situation because no cropped fields are included in the plan.		
CMU/Field ID			
Acres	0.0		
Soil Test Report Date			
Laboratory Name			
Soil Test Levels (Mehlich-3 P & K) (Show conversions to ppm in Appendix 10)	ppm P	ppm K	pH
P Index Part A Evaluation			
Part A Result			
Crop			
Planned Yield			
PSU Soil Test Recommendation (lb/A)	**N**	**P2O5**	**K2O**
User Soil Test Recommendation (lb/A)			
Other Nutrients Applied (lb/A) (Nutrients applied regardless of manure)			
P Index Application Method			
Double Crop CarryOver N (lb/A)	0		
Manure History Description Residual Manure N (lb/A)			
Legume History Description Residual Legume N (lb/A)	0		
Net Nutrients Required (lb/A)			
Manure Group			
Application Season: Management (Incorporation, cover crops, etc.)			
Availability Factors (Total N or NH4-N & Organic N)	**Total N**	**NH4-N**	**Org. N**
P Index Application Method			
N Balanced Manure Rate (ton; gal/A)			
P Removal Balance Manure Rate (ton or gal/A; If required by P Index)			
	Crop P Removal (lb/A)		
P Index Value	#VALUE!		
Planned Manure Rate (ton or gal/A)	**No Manure Applied**		
Nutrients Applied at Planned Manure Rate (lb/A)	0	0	0
Nutrient Balance after Manure			
Supplemental Fertilizer (lb/A)	0	0	0
P Index Application Method			
Final Nutrient Balance (lb/A)	**0**		
Multiple Application			
Manure Utilized on CMU			

App. 4: Crop Yrs. 2021	This Appendix is not relevant to the farm situation because no cropped fields are included in the plan.		
CMU/Field ID			
Acres	0.0		
Soil Test Report Date			
Laboratory Name			
Soil Test Levels (Mehlich-3 P & K) (Show conversions to ppm in Appendix 10)	ppm P	ppm K	pH
P Index Part A Evaluation			
Part A Result			
Crop			
Planned Yield			
PSU Soil Test Recommendation (lb/A)	**N**	**P2O5**	**K2O**
User Soil Test Recommendation (lb/A)			
Other Nutrients Applied (lb/A) (Nutrients applied regardless of manure)			
P Index Application Method			
Double Crop CarryOver N (lb/A)	0		
Manure History Description Residual Manure N (lb/A)			
Legume History Description Residual Legume N (lb/A)	0		
Net Nutrients Required (lb/A)			
Manure Group			
Application Season: Management (Incorporation, cover crops, etc.)			
Availability Factors (Total N or NH4-N & Organic N)	**Total N**	**NH4-N**	**Org. N**
P Index Application Method			
N Balanced Manure Rate (ton; gal/A)			
P Removal Balance Manure Rate (ton or gal/A; If required by P Index)			
	Crop P Removal (lb/A)		
P Index Value	#VALUE!		
Planned Manure Rate (ton or gal/A)	**No Manure Applied**		
Nutrients Applied at Planned Manure Rate (lb/A)	0	0	0
Nutrient Balance after Manure			
Supplemental Fertilizer (lb/A)	0	0	0
P Index Application Method			
Final Nutrient Balance (lb/A)	**0**		
Multiple Application			
Manure Utilized on CMU			

App. 4: Crop Yrs. 2022	This Appendix is not relevant to the farm situation because no cropped fields are included in the plan.		
CMU/Field ID			
Acres	0.0		
Soil Test Report Date			
Laboratory Name			
Soil Test Levels (Mehlich-3 P & K) (Show conversions to ppm in Appendix 10)	ppm P	ppm K	pH
P Index Part A Evaluation			
Part A Result			
Crop			
Planned Yield			
PSU Soil Test Recommendation (lb/A)	**N**	**P2O5**	**K2O**
User Soil Test Recommendation (lb/A)			
Other Nutrients Applied (lb/A) (Nutrients applied regardless of manure)			
P Index Application Method			
Double Crop CarryOver N (lb/A)	0		
Manure History Description Residual Manure N (lb/A)			
Legume History Description Residual Legume N (lb/A)	0		
Net Nutrients Required (lb/A)			
Manure Group			
Application Season: Management (Incorporation, cover crops, etc.)			
Availability Factors (Total N or NH4-N & Organic N)	**Total N**	**NH4-N**	**Org. N**
P Index Application Method			
N Balanced Manure Rate (ton; gal/A)			
P Removal Balance Manure Rate (ton or gal/A; If required by P Index)			
	Crop P Removal (lb/A)		
P Index Value	#VALUE!		
Planned Manure Rate (ton or gal/A)	**No Manure Applied**		
Nutrients Applied at Planned Manure Rate (lb/A)	0	0	0
Nutrient Balance after Manure			
Supplemental Fertilizer (lb/A)	0	0	0
P Index Application Method			
Final Nutrient Balance (lb/A)	**0**		
Multiple Application			
Manure Utilized on CMU			

Appendix 5 - P Index

No P Index Part B fields in this Plan

Go to NMP Index

Crop Yrs. 2020

Pennsylvania P Index Version 2

Go to App 4 Input

PART A: SCREENING TOOL CMU/Field ID		PART A: SCREENING TOOL	CMU/Field ID
Is the CMU in a Special Protection watershed?		Is the CMU in a Special Protection watershed?	If the answer is Yes to any of these questions, Part B must be used.
A significant farm management change as defined by Act 38?		Is there a significant farm management change as defined by Act 38?	
Soil Test Mehlich 3 P greater than 200 ppm P?		Is the Soil Test Mehlich 3 P greater than 200 ppm P? (enter soil test value in ppm P)	
Contributing Distance from CMU to receiving water <150 ft.?		Is the Contributing Distance from this CMU to receiving water less than 150 ft.?	
Is winter manure application planned for this field ?		Is winter manure application planned for this field ?	
Run P Index Part B voluntarily? (No to all Part A questions.)		Run P Index Part B voluntarily? (Answers are No to all Part A questions.)	

PART B: SOURCE FACTORS: Mehlich 3 Soil Test P (ppm P)	Mehlich 3 Soil Test P (ppm P)				
Soil Test Rating = 0.20* Mehlich 3 Soil Test P (ppm P)					
FERTILIZER P APPLIED REGARDLESS OF MANURE (Starter or other)					Fertilizer P (lb P2O5/acre)
P INDEX APPLICATION METHOD OF FERTILIZER P APPLIED REGARGLESS OF MANURE[3]	0.2 Placed or injected 2" or more deep	0.4 Incorporated <1 week following application	0.6 Incorporated > 1 week or not incorporated following application in April - October	0.8 Incorporated >1 week or not incorporated following application in Nov. - March	1.0 Surface applied to frozen or snow covered soil
SUPPLEMENTAL P FERTILIZER					Fertilizer P (lb P2O5/acre)
P INDEX APPLICATION METHOD OF SUPPLEMENTAL P FERTILIZER[3]	0.2 Placed or injected 2" or more deep	0.4 Incorporated <1 week following application	0.6 Incorporated > 1 week or not incorporated following application in April - October	0.8 Incorporated >1 week or not incorporated following application in Nov. - March	1.0 Surface applied to frozen or snow covered soil
Fertilizer Rating = Fertilizer Rate x Fertilizer Application Method					
MANURE P RATE					Manure P (lb P2O5/acre)
MANURE APPLICATION METHOD[3]	0.2 Placed or injected 2" or more deep	0.4 Incorporated <1 week following application	0.6 Incorporated > 1 week or not incorporated following application in April - October	0.8 Incorporated >1 week or not incorporated following application in Nov. - March	1.0 Surface applied to frozen or snow covered soil
P SOURCE COEFFICIENT[3]	Refer to: Test results for P Source Coefficient OR Book values from P Index Fact Sheet Table 1				
Manure Rating = Manure Rate x Manure Application Method x P Source Coefficient					
Source Factor Sum					
PART B: TRANSPORT FACTORS EROSION	Soil Loss (ton/acre/yr)				
RUNOFF POTENTIAL	0 *Drainage Class is* Excessively	2 *Drainage Class is* Somewhat Excessively	4 *Drainage Class is* Well/Moderately Well	6 *Drainage Class is* Somewhat Poorly	8 *Drainage Class is* Poorly/Very Poorly
SUBSURFACE DRAINAGE	0 None		1 Random		2[1] Patterned
CONTRIBUTING DISTANCE	0 > 500 ft.	2 350 to 500 ft.	4 200 to 349 ft.	6 100 to 199 ft. OR < 100 ft. with 35 ft. buffer	9[2] < 100 ft.
Transport Sum = Erosion + Runoff Potential + Subsurface Drainage + Contributing Distance					
MODIFIED CONNECTIVITY	0.85 50 ft. Riparian Buffer APPLIES TO DIST < 100 FT		1.0 Grassed Waterway or None	1.1 Direct Connection APPLIES TO DIST > 100 FT	
Transport Sum x Modified Connectivity / 24					
P Index Value = 2 x Source x Transport					
Low: 59 or less Nitrogen based management	Medium: 60 to 79 Nitrogen based management	High: 80 to 99 Phosphorus limited to crop removal		Very High: 100 or greater No Phosphorus applied	

1 OR rapidly permeable soil near a stream
2 "9" factor does not apply to fields receiving manure with a 35 ft. buffer.
3 Error Note: if there is a manure or fertilizer rate and there is no corresponding method factor or PSC, it will display an “E”.

Appendix 5 - P Index **No P Index Part B fields in this Plan** Go to NMP Index

Crop Yrs. 2021 Pennsylvania P Index Version 2 Go to App 4 Input

PART A: SCREENING TOOL CMU/Field ID		PART A: SCREENING TOOL	CMU/Field ID
Is the CMU in a Special Protection watershed?		Is the CMU in a Special Protection watershed?	If the answer is Yes to <u>any</u> of these questions, Part B must be used.
A significant farm management change as defined by Act 38?		Is there a significant farm management change as defined by Act 38?	
Soil Test Mehlich 3 P greater than 200 ppm P?		Is the Soil Test Mehlich 3 P greater than 200 ppm P? (enter soil test value in ppm P)	
Contributing Distance from CMU to receiving water <150 ft.?		Is the Contributing Distance from this CMU to receiving water less than 150 ft.?	
Is winter manure application planned for this field ?		Is winter manure application planned for this field ?	
Run P Index Part B voluntarily? (No to all Part A questions.)		Run P Index Part B voluntarily? (Answers are No to all Part A questions.)	

PART B: SOURCE FACTORS: Mehlich 3 Soil Test P (ppm P)	Mehlich 3 Soil Test P (ppm P)				
Soil Test Rating = 0.20* Mehlich 3 Soil Test P (ppm P)					
FERTILIZER P APPLIED REGARDLESS OF MANURE (Starter or other)					Fertilizer P (lb P2O5/acre)
P INDEX APPLICATION METHOD OF FERTILIZER P APPLIED REGARGLESS OF MANURE[3]	0.2 Placed or injected 2" or more deep	0.4 Incorporated <1 week following application	0.6 Incorporated > 1 week or not incorporated following application in April - October	0.8 Incorporated >1 week or not incorporated following application in Nov. - March	1.0 Surface applied to frozen or snow covered soil
SUPPLEMENTAL P FERTILIZER					Fertilizer P (lb P2O5/acre)
P INDEX APPLICATION METHOD OF SUPPLEMENTAL P FERTILIZER[3]	0.2 Placed or injected 2" or more deep	0.4 Incorporated <1 week following application	0.6 Incorporated > 1 week or not incorporated following application in April - October	0.8 Incorporated >1 week or not incorporated following application in Nov. - March	1.0 Surface applied to frozen or snow covered soil
Fertilizer Rating = Fertilizer Rate x Fertilizer Application Method					
MANURE P RATE					Manure P (lb P2O5/acre)
MANURE APPLICATION METHOD[3]	0.2 Placed or injected 2" or more deep	0.4 Incorporated <1 week following application	0.6 Incorporated > 1 week or not incorporated following application in April - October	0.8 Incorporated >1 week or not incorporated following application in Nov. - March	1.0 Surface applied to frozen or snow covered soil
P SOURCE COEFFICIENT[3]	Refer to: Test results for P Source Coefficient OR Book values from P Index Fact Sheet Table 1				
Manure Rating = Manure Rate x Manure Application Method x P Source Coefficient					
Source Factor Sum					
PART B: TRANSPORT FACTORS EROSION	Soil Loss (ton/acre/yr)				
RUNOFF POTENTIAL	0 *Drainage Class is* Excessively	2 *Drainage Class is* Somewhat Excessively	4 *Drainage Class is* Well/Moderately Well	6 *Drainage Class is* Somewhat Poorly	8 *Drainage Class is* Poorly/Very Poorly
SUBSURFACE DRAINAGE	0 None		1 Random		2 [1] Patterned
CONTRIBUTING DISTANCE	0 > 500 ft.	2 350 to 500 ft.	4 200 to 349 ft.	6 100 to 199 ft. OR < 100 ft. with 35 ft. buffer	9 [2] < 100 ft.
Transport Sum = Erosion + Runoff Potential + Subsurface Drainage + Contributing Distance					
MODIFIED CONNECTIVITY	0.85 50 ft. Riparian Buffer APPLIES TO DIST < 100 FT		1.0 Grassed Waterway or None	1.1 Direct Connection APPLIES TO DIST > 100 FT	
Transport Sum x Modified Connectivity / 24					
P Index Value = 2 x Source x Transport					
Low: 59 or less Nitrogen based management	Medium: 60 to 79 Nitrogen based management	High: 80 to 99 Phosphorus limited to crop removal		Very High: 100 or greater No Phosphorus applied	

1 OR rapidly permeable soil near a stream
2 "9" factor does not apply to fields receiving manure with a 35 ft. buffer.
3 Error Note: if there is a manure or fertilizer rate and there is no corresponding method factor or PSC, it will display an "E".

Appendix 5 - P Index

No P Index Part B fields in this Plan

[Go to NMP Index]

Crop Yrs. 2022

Pennsylvania P Index Version 2

[Go to App 4 Input]

PART A: SCREENING TOOL CMU/Field ID		PART A: SCREENING TOOL				CMU/Field ID
Is the CMU in a Special Protection watershed?		Is the CMU in a Special Protection watershed?				If the answer is Yes to any of these questions, Part B must be used.
A significant farm management change as defined by Act 38?		Is there a significant farm management change as defined by Act 38?				
Soil Test Mehlich 3 P greater than 200 ppm P?		Is the Soil Test Mehlich 3 P greater than 200 ppm P? (enter soil test value in ppm P)				
Contributing Distance from CMU to receiving water <150 ft.?		Is the Contributing Distance from this CMU to receiving water less than 150 ft.?				
Is winter manure application planned for this field ?		Is winter manure application planned for this field ?				
Run P Index Part B voluntarily? (No to all Part A questions.)		Run P Index Part B voluntarily? (Answers are No to all Part A questions.)				
PART B: SOURCE FACTORS: Mehlich 3 Soil Test P (ppm P)	Mehlich 3 Soil Test P (ppm P)					
Soil Test Rating = 0.20* Mehlich 3 Soil Test P (ppm P)						
FERTILIZER P APPLIED REGARDLESS OF MANURE (Starter or other)						Fertilizer P (lb P2O5/acre)
P INDEX APPLICATION METHOD OF FERTILIZER P APPLIED REGARGLESS OF MANURE[3]	0.2 Placed or injected 2" or more deep	0.4 Incorporated <1 week following application	0.6 Incorporated > 1 week or not incorporated following application in April - October		0.8 Incorporated >1 week or not incorporated following application in Nov. - March	1.0 Surface applied to frozen or snow covered soil
SUPPLEMENTAL P FERTILIZER						Fertilizer P (lb P2O5/acre)
P INDEX APPLICATION METHOD OF SUPPLEMENTAL P FERTILIZER[3]	0.2 Placed or injected 2" or more deep	0.4 Incorporated <1 week following application	0.6 Incorporated > 1 week or not incorporated following application in April - October		0.8 Incorporated >1 week or not incorporated following application in Nov. - March	1.0 Surface applied to frozen or snow covered soil
Fertilizer Rating = Fertilizer Rate x Fertilizer Application Method						
MANURE P RATE						Manure P (lb P2O5/acre)
MANURE APPLICATION METHOD[3]	0.2 Placed or injected 2" or more deep	0.4 Incorporated <1 week following application	0.6 Incorporated > 1 week or not incorporated following application in April - October		0.8 Incorporated >1 week or not incorporated following application in Nov. - March	1.0 Surface applied to frozen or snow covered soil
P SOURCE COEFFICIENT[3]	Refer to: Test results for P Source Coefficient OR Book values from P Index Fact Sheet Table 1					
Manure Rating = Manure Rate x Manure Application Method x P Source Coefficient						
Source Factor Sum						
PART B: TRANSPORT FACTORS EROSION	Soil Loss (ton/acre/yr)					
RUNOFF POTENTIAL	0 *Drainage Class is* Excessively	2 *Drainage Class is* Somewhat Excessively	4 *Drainage Class is* Well/Moderately Well		6 *Drainage Class is* Somewhat Poorly	8 *Drainage Class is* Poorly/Very Poorly
SUBSURFACE DRAINAGE	0 None		1 Random			2[1] Patterned
CONTRIBUTING DISTANCE	0 > 500 ft.	2 350 to 500 ft.	4 200 to 349 ft.		6 100 to 199 ft. OR < 100 ft. with 35 ft. buffer	9[2] < 100 ft.
Transport Sum = Erosion + Runoff Potential + Subsurface Drainage + Contributing Distance						
MODIFIED CONNECTIVITY	0.85 50 ft. Riparian Buffer APPLIES TO DIST < 100 FT		1.0 Grassed Waterway or None		1.1 Direct Connection APPLIES TO DIST > 100 FT	
Transport Sum x Modified Connectivity / 24						
P Index Value = 2 x Source x Transport						
Low: 59 or less Nitrogen based management	Medium: 60 to 79 Nitrogen based management	High: 80 to 99 Phosphorus limited to crop removal			Very High: 100 or greater No Phosphorus applied	

1 OR rapidly permeable soil near a stream

2 "9" factor does not apply to fields receiving manure with a 35 ft. buffer.

3 Error Note: if there is a manure or fertilizer rate and there is no corresponding method factor or PSC, it will display an “E”.

Appendix 6

Manure Management

Date of Site Evaluation: December 18, 2018

Statement Documenting Areas Evaluated During Site Evaluation

List and clearly identify each of the specific areas evaluated.

The following areas were evaluated: poultry barns, sawdust bedding stacking areas at the east end of each barn, roofed concrete manure stacking structure, roofed bin mortality composter, former rabbit barn, farmstead areas

Identification of Inadequate Manure Management Practices and Conditions

List of each specific inadequate manure management practice or condition identified.

No inadequate manure management practices or conditions were identified at the time of the site visit.

BMPs to Address Manure Management Problem Areas

List of specific BMPs (including PA Technical Guide standard name and number) and management changes that will be implemented to address each of the inadequate practices listed above.

None

Appendix 7

Stormwater Control

Date of Site Evaluation: December 18, 2018

Statement Documenting Areas Evaluated During Site Evaluation

List and clearly identify each of the specific areas evaluated.

This appendix is not relevant to this farm situation because no cropped fields or pasture are included in this plan.

Identification of Critical Runoff Problem Areas

List of each specific critical runoff problem area identified.

N/A

BMPs to Address Critical Runoff Problem Areas

List of BMPs (including PA Technical Guide standard name and number) and specific management changes that will be implemented to address each of the critical runoff problem areas listed above.

N/A

Appendix 8

Importer/Broker Agreements & NBSs

Nutrient Balance Sheets are not required for importers that have an approved Nutrient Management Plan.

Exporter/Importer Agreement
Manure Used For Agricultural Land Application

Developed consistent with the PA Nutrient and Odor Management Act Program

1) This agreement is entered into on December 18, 2018, by Burnell Nolt (the "exporter") who will supply manure, and Paul Billow (the "importer"), who will receive the manure from the exporter.

2) The purpose of this agreement is to set forth the mutual responsibilities and understanding of the parties with respect to the export of manure from the exporter to the importer.

3) The exporter is located at (county, twp, and address): Northumberland County, Washington Township 197 Hunters Junction Road, Dornsife, PA 17823

4) The exporter will, as the supply of manure allows, provide the following amounts of manure during the seasons outlined below:

Tons of Poultry manure, per season:
Spring 244 tons or Summer 0 tons or Fall 244 tons or Winter 244 tons

Gallons of N/A manure, per season:
Spring 0 gallons or Summer 0 gallons or Fall 0 gallons or Winter 0 gallons

Total planned manure exported: (supply of manure may be less than what is planned)
Tons of Poultry manure: up to a total of 730 tons per year
Gallons of N/A manure: 0 gallons

If multi-species are planned, please add additional lines:

5) The importer's location and other relevant information as it relates to this manure export, is as follows (maps indicating the location of importing fields must be attached to the supporting Nutrient Balance Sheets if manure is to be land applied at the importing site):

a) **Phone number**: 570-850-9512
b) **County(s)**: Northumberland
c) **Address:** 667 Spring Road, Dornsife, PA 17823
d) **Township(s)**: Washington
d) **Owner(s) of the property receiving manure**: Paul Billow, Dennis Kieffer, Kathy Paul
e) **Total cropland acres managed by the importer**: 325 acres
f) **Number and type of animals raised by the importer**: None
g) **Number of acres available for this imported manure**: 303.1 acres
h) **Other manures (type, amount) imported to the site AND/OR utilized on the site**: (Note- this would include manure that is generated on the site by the importers animals, etc.) None
   - **If other manure is generated, imported and/or utilized, is it applied to the same acres as indicated in item "g" above (relating to "acres available")**: N/A
   - **If other manure is generated, imported and/or utilized, is it applied during the same season as the imported manure:** N/A

6) The exporter will use a Manure Export Sheet to record all manure exported to the importer. These Manure Export Sheets are available from the county conservation district or the State Conservation Commission. Computer generated forms other than the manure export sheet may be used if they contain the same information as, and are reasonably similar in format to, the forms available from the State Conservation Commission or the conservation district.

7) Records relating to the export of manure shall be prepared by the exporter in accordance with the following requirements of the Nutrient and Odor Management Act regulations:
   a) A Manure Export Sheet shall be used to document all manure exports for their records
      - A copy of the Manure Export Sheet shall be provided to the importer
      - A copy of the Manure Export Sheet shall be retained on site by the exporter

   b) When the exporter (or someone working for, or contracted by the exporter) applies the exported manure, the exporter shall maintain the following exported manure records:
      - Application dates, areas, rates and methods

   c) Records shall be maintained by the exporter for a minimum of 3 years

   d) A manure export informational packet (as supplied by the conservation district or State Conservation Commission) shall be provided to the importer by the time of the manure export. This information only needs to be provided once to the importer.
      The manure export informational packet must include the following:
      i. Exported Manure Informational Packet Guidance Sheet
      ii. Nutrient Management Planning an Overview (Agronomy Facts 60)
      iii. Manure Management for Environmental Protection
      iv. Land Application of Manure- A supplement to the Manure Management Manual Plan Guidance
      v. Manure Export Sheet
      vi. Manure Transfer Summary Sheets
      vii. Manure Field Stacking Requirements Fact Sheet

8) Where applicable, the importer shall properly store manure received from the exporter in accordance with the provisions of the Manure Management Manual and the Pa Technical Guide and shall not cause contamination of surface or ground water. This shall include manure stacked in application fields which may not be retained in fields for > 120 days unless covered or otherwise protected .

9) Manure received by the importer shall be applied to the land at the rate(s) and method(s) provided in the attached "Nutrient Balance Sheet(s)", or in accordance with a Nutrient Management Plan approved for the importing operation. If the importer wishes to change the lands used for imported manure, the nutrient balance sheet must be revised to reflect the changes and be submitted to the conservation district or State Conservation Commission (and DEP if the exporter is a CAFO) prior to implementing the changes.

10) The importer shall comply with applicable manure application setbacks for the imported manure, as outlined in the Nutrient Balance Sheet map(s).

11) For any lands not owned by the importer where the manure will be applied (i.e., rented lands), the importer hereby confirms that the importer has the authority to apply manure on those lands.

12) This agreement shall remain in full effect unless terminated by either party upon thirty days prior written notice to the other party. If this agreement is terminated, the exporter shall notify the county conservation district office that approved their nutrient management plan, of the termination.

Exporter Signature, Name and Date

[signature] (signature)

Burnell Nolt (name)

12-18-18 (date)

Importer Signature, Name and Date

[signature] (signature)

Paul W. Billow (name)

12-18-18 (date)

Nutrient Balance Sheet

Prepared for

Paul Billow
667 Spring Road
Dornsife, PA 17823
570-850-9512

Prepared by

Todd C. Rush
#988-NMC
120 Lake Street, Ephrata PA 17522
570-764-7003

TeamAg Incorporated

Nutrient Management Specialist or Broker 2 Signature

Date of Development January 18, 2019

Exporter Information

Burnell Nolt
197 Hunters Junction Road, Dornsife, PA 17823
717-821-0537

County of Origin Northumberland County

Nutrient Balance Worksheet Appendices

The following appendices need to accompany the Nutrient Balance Worksheets if applicable:

- Maps of fields where manure is to applied including required manure application setbacks.
- Completed P-Index spreadsheet and Winter Matrix for each crop management unit (if using Manure Plan Basis: Option 3)

Nutrient Balance Sheet Summary

Importing Farm: Paul Billow

Whole Farm Note: None

Crop Group	Fields	Acres	Crop	Manure Group	Application Season	Application Management	Planned Manure Rate[1]		Starter/Other Fertilizer (lb/A)			Supplemental Fertilizer (lb/A)			Nutrient Balance (lb/A)[2]		
									N	P_2O_5	K_2O	N	P_2O_5	K_2O	N	P_2O_5	K_2O
N Balance Corn Grain Spring	See Attached List	261.2	Corn for Grain (No-till)	Broiler Manure	Spring	Spring: Spring or summer utilization-Incorporation after 7 days or none	3	tons/A	0	0	0	45	0	0	0	-27	-42
N Balance Corn Grain Fall	See Attached List	261.2	Corn for Grain (No-till)	Broiler Manure	Late Fall	Late Fall: Summer Utilization. Single crop corn or annuals-Green manure cover crop	3	tons/A	0	0	0	0	0	0	0	-27	-42
N Balance Soybeans Spring	See Attached List	261.2	Soybeans with Manure	Broiler Manure	Spring	Spring: Spring or summer utilization-Incorporation after 7 days or none	2	tons/A	0	0	0	0	0	12	0	-8	0
N Balance Soybeans Fall	See Attached List	261.2	Soybeans with Manure	Broiler Manure	Late Fall	Late Fall: Summer Utilization. Single crop corn or annuals-Green manure cover crop	2	tons/A	0	0	0	0	0	12	0	-8	0
BM1 Corn Grain Spring 35' Stbk	BM1	2.2	Corn for Grain (No-till)	Broiler Manure	Spring	Spring: Spring or summer utilization-Incorporation after 7 days or none	3	tons/A	0	0	0	45	0	0	0	-27	-42
BM1 Corn Grain Fall 35' Stbk	BM1	2.2	Corn for Grain (No-till)	Broiler Manure	Late Fall	Late Fall: Summer Utilization. Single crop corn or annuals-Green manure cover crop	3	tons/A	0	0	0	0	0	0	0	-27	-42
BM1 Soybeans Spring 35' Stbk	BM1	2.2	Soybeans with Manure	Broiler Manure	Spring	Spring: Spring or summer utilization-Incorporation after 7 days or none	2	tons/A	0	0	0	0	0	12	0	-8	0
BM1 Soybeans Fall 35' Stbk	BM1	2.2	Soybeans with Manure	Broiler Manure	Late Fall	Late Fall: Summer Utilization. Single crop corn or annuals-Green manure cover crop	2	tons/A	0	0	0	0	0	12	0	-8	0

[1] See Nutrient Management Plan Summary Notes
[2] Positive numbers = nutrient deficit; Negative numbers = nutrient excess

Crop Group	Fields	Acres	Crop	Manure Group	Application Season	Application Management	Planned Manure Rate[1]		Starter/Other Fertilizer (lb/A) N	Starter/Other Fertilizer (lb/A) P_2O_5	Starter/Other Fertilizer (lb/A) K_2O	Supplemental Fertilizer (lb/A) N	Supplemental Fertilizer (lb/A) P_2O_5	Supplemental Fertilizer (lb/A) K_2O	Nutrient Balance (lb/A)[2] N	Nutrient Balance (lb/A)[2] P_2O_5	Nutrient Balance (lb/A)[2] K_2O
BM2 Corn Grain Spring 35' Stbk	BM2	5.9	Corn for Grain (No-till)	Broiler Manure	Spring	Spring: Spring or summer utilization-Incorporation after 7 days or none	3	tons/A	0	0	0	45	0	0	0	-27	-42
BM2 Corn Grain Fall 35' Stbk	BM2	5.9	Corn for Grain (No-till)	Broiler Manure	Late Fall	Late Fall: Summer Utilization. Single crop corn or annuals-Green manure cover crop	3	tons/A	0	0	0	0	0	0	0	-27	-42
BM2 Soybeans Spring 35' Stbk	BM2	5.9	Soybeans with Manure	Broiler Manure	Spring	Spring: Spring or summer utilization-Incorporation after 7 days or none	2	tons/A	0	0	0	0	0	12	0	-8	0
BM2 Soybeans Fall 35' Stbk	BM2	5.9	Soybeans with Manure	Broiler Manure	Late Fall	Late Fall: Summer Utilization. Single crop corn or annuals-Green manure cover crop	2	tons/A	0	0	0	0	0	12	0	-8	0
BM3 Corn Grain Spring 35' Stbk	BM3	3.2	Corn for Grain (No-till)	Broiler Manure	Spring	Spring: Spring or summer utilization-Incorporation after 7 days or none	3	tons/A	0	0	0	45	0	0	0	-27	-42
BM3 Corn Grain Fall 35' Stbk	BM3	3.2	Corn for Grain (No-till)	Broiler Manure	Late Fall	Late Fall: Summer Utilization. Single crop corn or annuals-Green manure cover crop	3	tons/A	0	0	0	0	0	0	0	-27	-42
BM3 Soybeans Spring 35' Stbk	BM3	3.2	Soybeans with Manure	Broiler Manure	Spring	Spring: Spring or summer utilization-Incorporation after 7 days or none	2	tons/A	0	0	0	0	0	12	0	-8	0
BM3 Soybeans Fall 35' Stbk	BM3	3.2	Soybeans with Manure	Broiler Manure	Late Fall	Late Fall: Summer Utilization. Single crop corn or annuals-Green manure cover crop	2	tons/A	0	0	0	0	0	12	0	-8	0
MellsSE1 Corn Grain Spring 35' Stbk	MellsSE1	14.2	Corn for Grain (No-till)	Broiler Manure	Spring	Spring: Spring or summer utilization-Incorporation after 7 days or none	3	tons/A	0	0	0	45	0	0	0	-27	-42
MellsSE1 Corn Grain Fall 35' Stbk	MellsSE1	14.2	Corn for Grain (No-till)	Broiler Manure	Late Fall	Late Fall: Summer Utilization. Single crop corn or annuals-Green manure cover crop	3	tons/A	0	0	0	0	0	0	0	-27	-42

[1] See Nutrient Management Plan Summary Notes
[2] Positive numbers = nutrient deficit; Negative numbers = nutrient excess

Crop Group	Fields	Acres	Crop	Manure Group	Application Season	Application Management	Planned Manure Rate[1]		Starter/Other Fertilizer (lb/A)			Supplemental Fertilizer (lb/A)			Nutrient Balance (lb/A)[2]		
									N	P_2O_5	K_2O	N	P_2O_5	K_2O	N	P_2O_5	K_2O
MellsSE1 Soybeans Spring 35' Stbk	MellsSE1	14.2	Soybeans with Manure	Broiler Manure	Spring	Spring: Spring or summer utilization-Incorporation after 7 days or none	2	tons/A	0	0	0	0	0	12	0	-8	0
MellsSE1 Soybeans Fall 35' Stbk	MellsSE1	14.2	Soybeans with Manure	Broiler Manure	Late Fall	Late Fall: Summer Utilization. Single crop corn or annuals-Green manure cover crop	2	tons/A	0	0	0	0	0	12	0	-8	0
MellsSE2 Corn Grain Spring 35' Stbk	MellsSE2	2.7	Corn for Grain (No-till)	Broiler Manure	Spring	Spring: Spring or summer utilization-Incorporation after 7 days or none	3	tons/A	0	0	0	45	0	0	0	-27	-42
MellsSE2 Corn Grain Fall 35' Stbk	MellsSE2	2.7	Corn for Grain (No-till)	Broiler Manure	Late Fall	Late Fall: Summer Utilization. Single crop corn or annuals-Green manure cover crop	3	tons/A	0	0	0	0	0	0	0	-27	-42
MellsSE2 Soybeans Spring 35' Stbk	MellsSE2	2.7	Soybeans with Manure	Broiler Manure	Spring	Spring: Spring or summer utilization-Incorporation after 7 days or none	2	tons/A	0	0	0	0	0	12	0	-8	0
MellsSE2 Soybeans Fall 35' Stbk	MellsSE2	2.7	Soybeans with Manure	Broiler Manure	Late Fall	Late Fall: Summer Utilization. Single crop corn or annuals-Green manure cover crop	2	tons/A	0	0	0	0	0	12	0	-8	0
MellsNE Corn Grain Spring 35' Stbk	MellsNE	8.6	Corn for Grain (No-till)	Broiler Manure	Spring	Spring: Spring or summer utilization-Incorporation after 7 days or none	3	tons/A	0	0	0	45	0	0	0	-27	-42
MellsNE Corn Grain Fall 35' Stbk	MellsNE	8.6	Corn for Grain (No-till)	Broiler Manure	Late Fall	Late Fall: Summer Utilization. Single crop corn or annuals-Green manure cover crop	3	tons/A	0	0	0	0	0	0	0	-27	-42
MellsNE Soybeans Spring 35' Stbk	MellsNE	8.6	Soybeans with Manure	Broiler Manure	Spring	Spring: Spring or summer utilization-Incorporation after 7 days or none	2	tons/A	0	0	0	0	0	12	0	-8	0
MellsNE Soybeans Fall 35' Stbk	MellsNE	8.6	Soybeans with Manure	Broiler Manure	Late Fall	Late Fall: Summer Utilization. Single crop corn or annuals-Green manure cover crop	2	tons/A	0	0	0	0	0	12	0	-8	0

[1] See Nutrient Management Plan Summary Notes
[2] Positive numbers = nutrient deficit; Negative numbers = nutrient excess

Crop Group	Fields	Acres	Crop	Manure Group	Application Season	Application Management	Planned Manure Rate[1]		Starter/Other Fertilizer (lb/A)			Supplemental Fertilizer (lb/A)			Nutrient Balance (lb/A)[2]		
									N	P_2O_5	K_2O	N	P_2O_5	K_2O	N	P_2O_5	K_2O
SW3 Corn Grain Spring 35' Stbk	SW3	3.1	Corn for Grain (No-till)	Broiler Manure	Spring	Spring: Spring or summer utilization-Incorporation after 7 days or none	3	tons/A	0	0	0	45	0	0	0	-27	-42
SW3 Corn Grain Fall 35' Stbk	SW3	3.1	Corn for Grain (No-till)	Broiler Manure	Late Fall	Late Fall: Summer Utilization. Single crop corn or annuals-Green manure cover crop	3	tons/A	0	0	0	0	0	0	0	-27	-42
SW3 Soybeans Spring 35' Stbk	SW3	3.1	Soybeans with Manure	Broiler Manure	Spring	Spring: Spring or summer utilization-Incorporation after 7 days or none	2	tons/A	0	0	0	0	0	12	0	-8	0
SW3 Soybeans Fall 35' Stbk	SW3	3.1	Soybeans with Manure	Broiler Manure	Late Fall	Late Fall: Summer Utilization. Single crop corn or annuals-Green manure cover crop	2	tons/A	0	0	0	0	0	12	0	-8	0
SW4 Corn Grain Spring 35' Stbk	SW4	2	Corn for Grain (No-till)	Broiler Manure	Spring	Spring: Spring or summer utilization-Incorporation after 7 days or none	3	tons/A	0	0	0	45	0	0	0	-27	-42
SW4 Corn Grain Fall 35' Stbk	SW4	2	Corn for Grain (No-till)	Broiler Manure	Late Fall	Late Fall: Summer Utilization. Single crop corn or annuals-Green manure cover crop	3	tons/A	0	0	0	0	0	0	0	-27	-42
SW4 Soybeans Spring 35' Stbk	SW4	2	Soybeans with Manure	Broiler Manure	Spring	Spring: Spring or summer utilization-Incorporation after 7 days or none	2	tons/A	0	0	0	0	0	12	0	-8	0
SW4 Soybeans Fall 35' Stbk	SW4	2	Soybeans with Manure	Broiler Manure	Late Fall	Late Fall: Summer Utilization. Single crop corn or annuals-Green manure cover crop	2	tons/A	0	0	0	0	0	12	0	-8	0
BSun1 Corn Grain Winter	BSun1	23.7	Corn for Grain (No-till)	Broiler Manure	Winter	Winter: Summer Utilization. Single crop corn or annuals-Green manure cover crop	3	tons/A	0	0	0	0	0	0	0	-27	-42
BSun1 Soybeans Winter	BSun1	23.7	Soybeans with Manure	Broiler Manure	Winter	Winter: Summer Utilization. Single crop corn or annuals-Green manure cover crop	2	tons/A	0	0	0	0	0	12	0	-8	0

[1] See Nutrient Management Plan Summary Notes
[2] Positive numbers = nutrient deficit; Negative numbers = nutrient excess

Crop Group	Fields	Acres	Crop	Manure Group	Application Season	Application Management	Planned Manure Rate[1]		Starter/Other Fertilizer (lb/A) N	Starter/Other Fertilizer (lb/A) P_2O_5	Starter/Other Fertilizer (lb/A) K_2O	Supplemental Fertilizer (lb/A) N	Supplemental Fertilizer (lb/A) P_2O_5	Supplemental Fertilizer (lb/A) K_2O	Nutrient Balance (lb/A)[2] N	Nutrient Balance (lb/A)[2] P_2O_5	Nutrient Balance (lb/A)[2] K_2O
Butcher4 Corn Grain Winter	Butcher4	17.7	Corn for Grain (No-till)	Broiler Manure	Winter	Winter: Summer Utilization. Single crop corn or annuals-Green manure cover crop	3	tons/A	0	0	0	0	0	0	0	-27	-42
Butcher4 Soybeans Winter	Butcher4	17.7	Soybeans with Manure	Broiler Manure	Winter	Winter: Summer Utilization. Single crop corn or annuals-Green manure cover crop	2	tons/A	0	0	0	0	0	12	0	-8	0
Turkey1 Corn Grain Winter	Turkey1	9.7	Corn for Grain (No-till)	Broiler Manure	Winter	Winter: Summer Utilization. Single crop corn or annuals-Green manure cover crop	3	tons/A	0	0	0	0	0	0	0	-27	-42
Turkey1 Soybeans Winter	Turkey1	9.7	Soybeans with Manure	Broiler Manure	Winter	Winter: Summer Utilization. Single crop corn or annuals-Green manure cover crop	2	tons/A	0	0	0	0	0	12	0	-8	0

[1] See Nutrient Management Plan Summary Notes
[2] Positive numbers = nutrient deficit; Negative numbers = nutrient excess

NBS Summary Notes

Importing Farm: Paul Billow

CMU/Field ID	Crop	Manure Group	Planned Rate Notes	Nutrient Balance Notes	Notes
N Balance Corn Grain Spring	Corn for Grain (No-till)	Broiler Manure	Planned rate can be applied annually	Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs	Do not apply imported poultry manure within 100 feet of water wells or 150 feet of surface water. Imported poultry manure may only be applied at the planned rate per acre once per crop year. Do not apply other manures to the same fields as imported poultry manure in the same crop year.
N Balance Corn Grain Fall	Corn for Grain (No-till)	Broiler Manure	Planned rate can be applied annually	Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs	Do not apply imported poultry manure within 100 feet of water wells or 150 feet of surface water. Imported poultry manure may only be applied at the planned rate per acre once per crop year. Do not apply other manures to the same fields as imported poultry manure in the same crop year. Fields must have 25% cover from a growing crop, crop residue or cover crop at the time of fall poultry manure application.
N Balance Soybeans Spring	Soybeans with Manure	Broiler Manure	Planned rate can be applied annually	Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs	Do not apply imported poultry manure within 100 feet of water wells or 150 feet of surface water. Imported poultry manure may only be applied at the planned rate per acre once per crop year. Do not apply other manures to the same fields as imported poultry manure in the same crop year.
N Balance Soybeans Fall	Soybeans with Manure	Broiler Manure	Planned rate can be applied annually	Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs	Do not apply imported poultry manure within 100 feet of water wells or 150 feet of surface water. Imported poultry manure may only be applied at the planned rate per acre once per crop year. Do not apply other manures to the same fields as imported poultry manure in the same crop year. Fields must have 25% cover from a growing crop, crop residue or cover crop at the time of fall poultry manure application.
BM1 Corn Grain Spring 35' Stbk	Corn for Grain (No-till)	Broiler Manure	Planned rate can be applied annually	Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs	Do not apply imported poultry manure within 100 feet of water wells or 35 feet of surface water. Maintain established permanent 35 foot vegetative buffer for reduced surface water application setback. Imported poultry manure may only be applied at the planned rate per acre once per crop year. Do not apply other manures to the same fields as imported poultry manure in the same crop year.
BM1 Corn Grain Fall 35' Stbk	Corn for Grain (No-till)	Broiler Manure	Planned rate can be applied annually	Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs	Do not apply imported poultry manure within 100 feet of water wells or 35 feet of surface water. Maintain established permanent 35 foot vegetative buffer for reduced surface water application setback. Imported poultry manure may only be applied at the planned rate per acre once per crop year. Do not apply other manures to the same fields as imported poultry manure in the same crop year. Fields must have 25% cover from a growing crop, crop residue or cover crop at the time of fall poultry manure application.
BM1 Soybeans Spring 35' Stbk	Soybeans with Manure	Broiler Manure	Planned rate can be applied annually	Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs	Do not apply imported poultry manure within 100 feet of water wells or 35 feet of surface water. Maintain established permanent 35 foot vegetative buffer for reduced surface water application setback. Imported poultry manure may only be applied at the planned rate per acre once per crop year. Do not apply other manures to the same fields as imported poultry manure in the same crop year.
BM1 Soybeans Fall 35' Stbk	Soybeans with Manure	Broiler Manure	Planned rate can be applied annually	Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs	Do not apply imported poultry manure within 100 feet of water wells or 35 feet of surface water. Maintain established permanent 35 foot vegetative buffer for reduced surface water application setback. Imported poultry manure may only be applied at the planned rate per acre once per crop year. Do not apply other manures to the same fields as imported poultry manure in the same crop year. Fields must have 25% cover from a growing crop, crop residue or cover crop at the time of fall poultry manure application.
BM2 Corn Grain Spring 35' Stbk	Corn for Grain (No-till)	Broiler Manure	Planned rate can be applied annually	Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs	Do not apply imported poultry manure within 100 feet of water wells or 35 feet of surface water. Maintain established permanent 35 foot vegetative buffer for reduced surface water application setback. Imported poultry manure may only be applied at the planned rate per acre once per crop year. Do not apply other manures to the same fields as imported poultry manure in the same crop year.
BM2 Corn Grain Fall 35' Stbk	Corn for Grain (No-till)	Broiler Manure	Planned rate can be applied annually	Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs	Do not apply imported poultry manure within 100 feet of water wells or 35 feet of surface water. Maintain established permanent 35 foot vegetative buffer for reduced surface water application setback. Imported poultry manure may only be applied at the planned rate per acre once per crop year. Do not apply other manures to the same fields as imported poultry manure in the same crop year. Fields must have 25% cover from a growing crop, crop residue or cover crop at the time of fall poultry manure application.

CMU/Field ID	Crop	Manure Group	Planned Rate Notes	Nutrient Balance Notes	Notes
BM2 Soybeans Spring 35' Stbk	Soybeans with Manure	Broiler Manure	Planned rate can be applied annually	Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs	Do not apply imported poultry manure within 100 feet of water wells or 35 feet of surface water. Maintain established permanent 35 foot vegetative buffer for reduced surface water application setback. Imported poultry manure may only be applied at the planned rate per acre once per crop year. Do not apply other manures to the same fields as imported poultry manure in the same crop year.
BM2 Soybeans Fall 35' Stbk	Soybeans with Manure	Broiler Manure	Planned rate can be applied annually	Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs	Do not apply imported poultry manure within 100 feet of water wells or 35 feet of surface water. Maintain established permanent 35 foot vegetative buffer for reduced surface water application setback. Imported poultry manure may only be applied at the planned rate per acre once per crop year. Do not apply other manures to the same fields as imported poultry manure in the same crop year. Fields must have 25% cover from a growing crop, crop residue or cover crop at the time of fall poultry manure application.
BM3 Corn Grain Spring 35' Stbk	Corn for Grain (No-till)	Broiler Manure	Planned rate can be applied annually	Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs	Do not apply imported poultry manure within 100 feet of water wells or 35 feet of surface water. Maintain established permanent 35 foot vegetative buffer for reduced surface water application setback. Imported poultry manure may only be applied at the planned rate per acre once per crop year. Do not apply other manures to the same fields as imported poultry manure in the same crop year.
BM3 Corn Grain Fall 35' Stbk	Corn for Grain (No-till)	Broiler Manure	Planned rate can be applied annually	Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs	Do not apply imported poultry manure within 100 feet of water wells or 35 feet of surface water. Maintain established permanent 35 foot vegetative buffer for reduced surface water application setback. Imported poultry manure may only be applied at the planned rate per acre once per crop year. Do not apply other manures to the same fields as imported poultry manure in the same crop year. Fields must have 25% cover from a growing crop, crop residue or cover crop at the time of fall poultry manure application.
BM3 Soybeans Spring 35' Stbk	Soybeans with Manure	Broiler Manure	Planned rate can be applied annually	Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs	Do not apply imported poultry manure within 100 feet of water wells or 35 feet of surface water. Maintain established permanent 35 foot vegetative buffer for reduced surface water application setback. Imported poultry manure may only be applied at the planned rate per acre once per crop year. Do not apply other manures to the same fields as imported poultry manure in the same crop year.
BM3 Soybeans Fall 35' Stbk	Soybeans with Manure	Broiler Manure	Planned rate can be applied annually	Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs	Do not apply imported poultry manure within 100 feet of water wells or 35 feet of surface water. Maintain established permanent 35 foot vegetative buffer for reduced surface water application setback. Imported poultry manure may only be applied at the planned rate per acre once per crop year. Do not apply other manures to the same fields as imported poultry manure in the same crop year. Fields must have 25% cover from a growing crop, crop residue or cover crop at the time of fall poultry manure application.
MellsSE1 Corn Grain Spring 35' Stbk	Corn for Grain (No-till)	Broiler Manure	Planned rate can be applied annually	Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs	Do not apply imported poultry manure within 100 feet of water wells or 35 feet of surface water. Maintain established permanent 35 foot vegetative buffer for reduced surface water application setback. Imported poultry manure may only be applied at the planned rate per acre once per crop year. Do not apply other manures to the same fields as imported poultry manure in the same crop year.
MellsSE1 Corn Grain Fall 35' Stbk	Corn for Grain (No-till)	Broiler Manure	Planned rate can be applied annually	Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs	Do not apply imported poultry manure within 100 feet of water wells or 35 feet of surface water. Maintain established permanent 35 foot vegetative buffer for reduced surface water application setback. Imported poultry manure may only be applied at the planned rate per acre once per crop year. Do not apply other manures to the same fields as imported poultry manure in the same crop year. Fields must have 25% cover from a growing crop, crop residue or cover crop at the time of fall poultry manure application.
MellsSE1 Soybeans Spring 35' Stbk	Soybeans with Manure	Broiler Manure	Planned rate can be applied annually	Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs	Do not apply imported poultry manure within 100 feet of water wells or 35 feet of surface water. Maintain established permanent 35 foot vegetative buffer for reduced surface water application setback. Imported poultry manure may only be applied at the planned rate per acre once per crop year. Do not apply other manures to the same fields as imported poultry manure in the same crop year.
MellsSE1 Soybeans Fall 35' Stbk	Soybeans with Manure	Broiler Manure	Planned rate can be applied annually	Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs	Do not apply imported poultry manure within 100 feet of water wells or 35 feet of surface water. Maintain established permanent 35 foot vegetative buffer for reduced surface water application setback. Imported poultry manure may only be applied at the planned rate per acre once per crop year. Do not apply other manures to the same fields as imported poultry manure in the same crop year. Fields must have 25% cover from a growing crop, crop residue or cover crop at the time of fall poultry manure application.

CMU/Field ID	Crop	Manure Group	Planned Rate Notes	Nutrient Balance Notes	Notes
MellsSE2 Corn Grain Spring 35' Stbk	Corn for Grain (No-till)	Broiler Manure	Planned rate can be applied annually	Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs	Do not apply imported poultry manure within 100 feet of water wells or 35 feet of surface water. Maintain established permanent 35 foot vegetative buffer for reduced surface water application setback. Imported poultry manure may only be applied at the planned rate per acre once per crop year. Do not apply other manures to the same fields as imported poultry manure in the same crop year.
MellsSE2 Corn Grain Fall 35' Stbk	Corn for Grain (No-till)	Broiler Manure	Planned rate can be applied annually	Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs	Do not apply imported poultry manure within 100 feet of water wells or 35 feet of surface water. Maintain established permanent 35 foot vegetative buffer for reduced surface water application setback. Imported poultry manure may only be applied at the planned rate per acre once per crop year. Do not apply other manures to the same fields as imported poultry manure in the same crop year. Fields must have 25% cover from a growing crop, crop residue or cover crop at the time of fall poultry manure application.
MellsSE2 Soybeans Spring 35' Stbk	Soybeans with Manure	Broiler Manure	Planned rate can be applied annually	Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs	Do not apply imported poultry manure within 100 feet of water wells or 35 feet of surface water. Maintain established permanent 35 foot vegetative buffer for reduced surface water application setback. Imported poultry manure may only be applied at the planned rate per acre once per crop year. Do not apply other manures to the same fields as imported poultry manure in the same crop year.
MellsSE2 Soybeans Fall 35' Stbk	Soybeans with Manure	Broiler Manure	Planned rate can be applied annually	Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs	Do not apply imported poultry manure within 100 feet of water wells or 35 feet of surface water. Maintain established permanent 35 foot vegetative buffer for reduced surface water application setback. Imported poultry manure may only be applied at the planned rate per acre once per crop year. Do not apply other manures to the same fields as imported poultry manure in the same crop year. Fields must have 25% cover from a growing crop, crop residue or cover crop at the time of fall poultry manure application.
MellsNE Corn Grain Spring 35' Stbk	Corn for Grain (No-till)	Broiler Manure	Planned rate can be applied annually	Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs	Do not apply imported poultry manure within 100 feet of water wells or 35 feet of surface water. Maintain established permanent 35 foot vegetative buffer for reduced surface water application setback. Imported poultry manure may only be applied at the planned rate per acre once per crop year. Do not apply other manures to the same fields as imported poultry manure in the same crop year.
MellsNE Corn Grain Fall 35' Stbk	Corn for Grain (No-till)	Broiler Manure	Planned rate can be applied annually	Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs	Do not apply imported poultry manure within 100 feet of water wells or 35 feet of surface water. Maintain established permanent 35 foot vegetative buffer for reduced surface water application setback. Imported poultry manure may only be applied at the planned rate per acre once per crop year. Do not apply other manures to the same fields as imported poultry manure in the same crop year. Fields must have 25% cover from a growing crop, crop residue or cover crop at the time of fall poultry manure application.
MellsNE Soybeans Spring 35' Stbk	Soybeans with Manure	Broiler Manure	Planned rate can be applied annually	Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs	Do not apply imported poultry manure within 100 feet of water wells or 35 feet of surface water. Maintain established permanent 35 foot vegetative buffer for reduced surface water application setback. Imported poultry manure may only be applied at the planned rate per acre once per crop year. Do not apply other manures to the same fields as imported poultry manure in the same crop year.
MellsNE Soybeans Fall 35' Stbk	Soybeans with Manure	Broiler Manure	Planned rate can be applied annually	Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs	Do not apply imported poultry manure within 100 feet of water wells or 35 feet of surface water. Maintain established permanent 35 foot vegetative buffer for reduced surface water application setback. Imported poultry manure may only be applied at the planned rate per acre once per crop year. Do not apply other manures to the same fields as imported poultry manure in the same crop year. Fields must have 25% cover from a growing crop, crop residue or cover crop at the time of fall poultry manure application.
SW3 Corn Grain Spring 35' Stbk	Corn for Grain (No-till)	Broiler Manure	Planned rate can be applied annually	Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs	Do not apply imported poultry manure within 100 feet of water wells or 35 feet of surface water. Maintain established permanent 35 foot vegetative buffer for reduced surface water application setback. Imported poultry manure may only be applied at the planned rate per acre once per crop year. Do not apply other manures to the same fields as imported poultry manure in the same crop year.
SW3 Corn Grain Fall 35' Stbk	Corn for Grain (No-till)	Broiler Manure	Planned rate can be applied annually	Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs	Do not apply imported poultry manure within 100 feet of water wells or 35 feet of surface water. Maintain established permanent 35 foot vegetative buffer for reduced surface water application setback. Imported poultry manure may only be applied at the planned rate per acre once per crop year. Do not apply other manures to the same fields as imported poultry manure in the same crop year. Fields must have 25% cover from a growing crop, crop residue or cover crop at the time of fall poultry manure application.

CMU/Field ID	Crop	Manure Group	Planned Rate Notes	Nutrient Balance Notes	Notes
SW3 Soybeans Spring 35' Stbk	Soybeans with Manure	Broiler Manure	Planned rate can be applied annually	Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs	Do not apply imported poultry manure within 100 feet of water wells or 35 feet of surface water. Maintain established permanent 35 foot vegetative buffer for reduced surface water application setback. Imported poultry manure may only be applied at the planned rate per acre once per crop year. Do not apply other manures to the same fields as imported poultry manure in the same crop year.
SW3 Soybeans Fall 35' Stbk	Soybeans with Manure	Broiler Manure	Planned rate can be applied annually	Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs	Do not apply imported poultry manure within 100 feet of water wells or 35 feet of surface water. Maintain established permanent 35 foot vegetative buffer for reduced surface water application setback. Imported poultry manure may only be applied at the planned rate per acre once per crop year. Do not apply other manures to the same fields as imported poultry manure in the same crop year. Fields must have 25% cover from a growing crop, crop residue or cover crop at the time of fall poultry manure application.
SW4 Corn Grain Spring 35' Stbk	Corn for Grain (No-till)	Broiler Manure	Planned rate can be applied annually	Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs	Do not apply imported poultry manure within 100 feet of water wells or 35 feet of surface water. Maintain established permanent 35 foot vegetative buffer for reduced surface water application setback. Imported poultry manure may only be applied at the planned rate per acre once per crop year. Do not apply other manures to the same fields as imported poultry manure in the same crop year.
SW4 Corn Grain Fall 35' Stbk	Corn for Grain (No-till)	Broiler Manure	Planned rate can be applied annually	Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs	Do not apply imported poultry manure within 100 feet of water wells or 35 feet of surface water. Maintain established permanent 35 foot vegetative buffer for reduced surface water application setback. Imported poultry manure may only be applied at the planned rate per acre once per crop year. Do not apply other manures to the same fields as imported poultry manure in the same crop year. Fields must have 25% cover from a growing crop, crop residue or cover crop at the time of fall poultry manure application.
SW4 Soybeans Spring 35' Stbk	Soybeans with Manure	Broiler Manure	Planned rate can be applied annually	Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs	Do not apply imported poultry manure within 100 feet of water wells or 35 feet of surface water. Maintain established permanent 35 foot vegetative buffer for reduced surface water application setback. Imported poultry manure may only be applied at the planned rate per acre once per crop year. Do not apply other manures to the same fields as imported poultry manure in the same crop year.
SW4 Soybeans Fall 35' Stbk	Soybeans with Manure	Broiler Manure	Planned rate can be applied annually	Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs	Do not apply imported poultry manure within 100 feet of water wells or 35 feet of surface water. Maintain established permanent 35 foot vegetative buffer for reduced surface water application setback. Imported poultry manure may only be applied at the planned rate per acre once per crop year. Do not apply other manures to the same fields as imported poultry manure in the same crop year. Fields must have 25% cover from a growing crop, crop residue or cover crop at the time of fall poultry manure application.
BSun1 Corn Grain Winter	Corn for Grain (No-till)	Broiler Manure	Planned rate can be applied annually	Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs	Do not apply imported poultry manure within 100 feet of water wells or 150 feet of surface water. Imported poultry manure may only be applied at the planned rate per acre once per crop year. Do not apply other manures to the same fields as imported poultry manure in the same crop year. Fields must have 25% cover from a growing crop, crop residue or cover crop at the time of fall poultry manure application. Manure may be applied to this field if it is snow or ice covered.
BSun1 Soybeans Winter	Soybeans with Manure	Broiler Manure	Planned rate can be applied annually	Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs	Do not apply imported poultry manure within 100 feet of water wells or 150 feet of surface water. Imported poultry manure may only be applied at the planned rate per acre once per crop year. Do not apply other manures to the same fields as imported poultry manure in the same crop year. Fields must have 25% cover from a growing crop, crop residue or cover crop at the time of fall poultry manure application. Manure may be applied to this field if it is snow or ice covered.
Butcher4 Corn Grain Winter	Corn for Grain (No-till)	Broiler Manure	Planned rate can be applied annually	Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs	Do not apply imported poultry manure within 100 feet of water wells or 150 feet of surface water. Imported poultry manure may only be applied at the planned rate per acre once per crop year. Do not apply other manures to the same fields as imported poultry manure in the same crop year. Fields must have 25% cover from a growing crop, crop residue or cover crop at the time of fall poultry manure application. Manure may be applied to this field if it is snow or ice covered.
Butcher4 Soybeans Winter	Soybeans with Manure	Broiler Manure	Planned rate can be applied annually	Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs	Do not apply imported poultry manure within 100 feet of water wells or 150 feet of surface water. Imported poultry manure may only be applied at the planned rate per acre once per crop year. Do not apply other manures to the same fields as imported poultry manure in the same crop year. Fields must have 25% cover from a growing crop, crop residue or cover crop at the time of fall poultry manure application. Manure may be applied to this field if it is snow or ice covered.
Turkey1 Corn Grain Winter	Corn for Grain (No-till)	Broiler Manure	Planned rate can be applied annually	Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs	Do not apply imported poultry manure within 100 feet of water wells or 150 feet of surface water. Imported poultry manure may only be applied at the planned rate per acre once per crop year. Do not apply other manures to the same fields as imported poultry manure in the same crop year. Fields must have 25% cover from a growing crop, crop residue or cover crop at the time of fall poultry manure application. Manure may be applied to this field if it is snow or ice covered.

CMU/Field ID	Crop	Manure Group	Planned Rate Notes	Nutrient Balance Notes	Notes
Turkey1 Soybeans Winter	Soybeans with Manure	Broiler Manure	Planned rate can be applied annually	Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs	Do not apply imported poultry manure within 100 feet of water wells or 150 feet of surface water. Imported poultry manure may only be applied at the planned rate per acre once per crop year. Do not apply other manures to the same fields as imported poultry manure in the same crop year. Fields must have 25% cover from a growing crop, crop residue or cover crop at the time of fall poultry manure application. Manure may be applied to this field if it is snow or ice covered.

N-Balance Fields Spring & Fall Application

1A	23.9
5A	16.1
5B	7.8
5C	8.6
5D	2.1
5E	1.6
5F	3.2
6A	9.3
14A	13.2
BSun1	23.7
BSun2	7.2
BSun3	7.6
BSun4	8.5
BSun5	8.8
Butcher1	5.3
Butcher2	5.3
Butcher3	7.4
Butcher4	17.7
BW1	3.7
BW2	4.9
BW3	4.8
BW4	9.8
DNW2	2.1
DNW3	4.2
DNW4	7.5
DNW5	3.1
DNW6	2.7
SW1	5
SW2	3.1
Turkey1	9.7
Turkey2A	7.5
Turkey2B	3.4
Turkey3	6.2
Turkey4	4.2
Turkey5	2
	261.2

Nutrient Balance Sheets	N Balance Corn Grain Spring			N Balance Corn Grain Fall			N Balance Soybeans Spring			N Balance Soybeans Fall			BM1 Corn Grain Spring 35' Stbk			BM1 Corn Grain Fall 35' Stbk		
Crop Group Indentification																		
Fields	See Attached List			See Attached List			See Attached List			See Attached List			BM1			BM1		
Acres	261.2			261.2			261.2			261.2			2.2			2.2		
NBS Option	Option 2 Nitrogen Requirement			Option 2 Nitrogen Requirement			Option 2 Nitrogen Requirement			Option 2 Nitrogen Requirement			Option 3 P Index Must be Completed			Option 3 P Index Must be Completed		
P Banking																		
Mehlich 3 Soil Test P For Option 2 enter maximum Soil Test For Option 3 enter soil test for PI	ppm P 145			ppm P 145			ppm P 145			ppm P 145			ppm P 74			ppm P 74		
P Index Part A Evaluation													<150ft			<150ft		
Part A Result	P Index not Required			P Index not Required			P Index not Required			P Index not Required			Part B			Part B		
Crop	Corn for Grain (No-till)			Corn for Grain (No-till)			Soybeans with Manure			Soybeans with Manure			Corn for Grain (No-till)			Corn for Grain (No-till)		
Planned Yield	150 bu/A			150 bu/A			50 bu/A			50 bu/A			150 bu/A			150 bu/A		
Crop Removal Recommendations (LB/A)	**N**	**P2O5**	**K2O**	**N**	**P2O5**	**K2O**	**N**	**P2O5**	**K2O**	**N**	**P2O5**	**K2O**	**N**	**P2O5**	**K2O**	**N**	**P2O5**	**K2O**
	150	60	45	150	60	45	160	50	70	160	50	70	150	60	45	150	60	45
Soil Test Recommendation (lb/A)																		
Other Nutrients Applied (lb/A) (Nutrients applied regardless of manure)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
P Index Application Method																		
Double Crop CarryOver N (lb/A)	0			0			0			0			0			0		
Manure History Description Residual Manure N (lb/A)	35	Continuously - Summer Crop		35	Continuously - Summer Crop		35	Continuously - Summer Crop		35	Continuously - Summer Crop		35	Continuously - Summer Crop		35	Continuously - Summer Crop	
Legume History Description Residual Legume N (lb/A)	50	Soybeans, 50 bu/A		50	Soybeans, 50 bu/A		0	No Previous Year Legume		0	No Previous Year Legume		50	Soybeans, 50 bu/A		50	Soybeans, 50 bu/A	
Net Nutrients Required (lb/A)	65	60	45	65	60	45	125	50	70	125	50	70	65	60	45	65	60	45
Manure Group	Broiler Manure			Broiler Manure			Broiler Manure			Broiler Manure			Broiler Manure			Broiler Manure		
Units	lb/ton			lb/ton			lb/ton			lb/ton			lb/ton			lb/ton		
Manure Nutrient Content	**N**	**P2O5**	**K20**	**N**	P2O5	**K20**	**N**	P2O5	**K20**	**N**	P2O5	**K20**	**N**	P2O5	**K20**	**N**	P2O5	**K20**
(lbs/ton or 1000 gal)	43.37	28.84	29.06	43.37	28.84	29.06	43.37	28.84	29.06	43.37	28.84	29.06	43.37	28.84	29.06	43.37	28.84	29.06
Application Season: Management (Incorporation, cover crops, etc.)	Spring: Spring or summer utilization-Incorporation after 7 days or none			Late Fall: Summer Utilization. Single crop corn or annuals-Green manure cover crop			Spring: Spring or summer utilization-Incorporation after 7 days or none			Late Fall: Summer Utilization. Single crop corn or annuals-Green manure cover crop			Spring: Spring or summer utilization-Incorporation after 7 days or none			Late Fall: Summer Utilization. Single crop corn or annuals-Green manure cover crop		
Availability Factors (Total N or NH4-N & Organic N)	**Total N**	**NH4-N**	**Org. N**	**Total N**	**NH4-N**	**Org. N**	**Total N**	**NH4-N**	**Org. N**	**Total N**	**NH4-N**	**Org. N**	**Total N**	**NH4-N**	**Org. N**	**Total N**	**NH4-N**	**Org. N**
	0.15			0.50			0.15			0.50			0.15			0.50		
P Index Application Method													April - Oct: No incorp or incorp > 1 wk.			Nov - Mar: No incorp or incorp > 1 wk.		
N Balanced Manure Rate (ton; gal/A)	10 tons/A			3 tons/A			19 tons/A			6 tons/A			10 tons/A			3 tons/A		
P Removal Balance Manure Rate (ton or gal/A; If required by P Index)	2 tons/A			2 tons/A			2 tons/A			2 tons/A			2 tons/A			2 tons/A		
	Crop P Removal (lb/A) 60.0			Crop P Removal (lb/A) 60.0			Crop P Removal (lb/A) 50.0			Crop P Removal (lb/A) 50.0			Crop P Removal (lb/A) 60.0			Crop P Removal (lb/A) 60.0		
P Index Value													51			64		
Planned Manure Rate (ton or gal/A)	**3 tons/A**			**3 tons/A**			**2 tons/A**			**2 tons/A**			**3 tons/A**			**3 tons/A**		
Nutrients Applied at Planned Manure Rate (lb/A)	20	87	87	65	87	87	13	58	58	43	58	58	20	87	87	65	87	87
Nutrient Balance after Manure	45	-27	-42	0	-27	-42	0	-8	12	0	-8	12	45	-27	-42	0	-27	-42
Supplemental Fertilizer (lb/A)	45	0	0	0	0	0	0	0	12	0	0	12	45	0	0	0	0	0
P Index Application Method																		
Final Nutrient Balance (lb/A)	**0**	**-27**	**-42**	**0**	**-27**	**-42**	**0**	**-8**	**0**	**0**	**-8**	**0**	**0**	**-27**	**-42**	**0**	**-27**	**-42**
Multiple Application																		
Soil test or Crop Removal	Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs			Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs			Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs			Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs			Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs			Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs		

Nutrient Balance Sheets	BM1 Soybeans Spring 35' Stbk			BM1 Soybeans Fall 35' Stbk			BM2 Corn Grain Spring 35' Stbk		
Crop Group Indentification									
Fields	BM1			BM1			BM2		
Acres	2.2			2.2			5.9		
NBS Option	Option 3 P Index Must be Completed			Option 3 P Index Must be Completed			Option 3 P Index Must be Completed		
P Banking									
Mehlich 3 Soil Test P	ppm P			ppm P			ppm P		
For Option 2 enter maximum Soil Test For Option 3 enter soil test for PI	74			74			74		
P Index Part A Evaluation	<150ft			<150ft			<150ft		
Part A Result	Part B			Part B			Part B		
Crop	Soybeans with Manure			Soybeans with Manure			Corn for Grain (No-till)		
Planned Yield	50 bu/A			50 bu/A			150 bu/A		
Crop Removal Recommendations (LB/A)	**N**	**P2O5**	**K2O**	**N**	**P2O5**	**K2O**	**N**	**P2O5**	**K2O**
	160	50	70	160	50	70	150	60	45
Soil Test Recommendation (lb/A)									
Other Nutrients Applied (lb/A) (Nutrients applied regardless of manure)	0	0	0	0	0	0	0	0	0
P Index Application Method									
Double Crop CarryOver N (lb/A)	0			0			0		
Manure History Description Residual Manure N (lb/A)	35	Continuously - Summer Crop		35	Continuously - Summer Crop		35	Continuously - Summer Crop	
Legume History Description Residual Legume N (lb/A)	0	No Previous Year Legume		0	No Previous Year Legume		50	Soybeans, 50 bu/A	
Net Nutrients Required (lb/A)	125	50	70	125	50	70	65	60	45
Manure Group	Broiler Manure			Broiler Manure			Broiler Manure		
Units	lb/ton			lb/ton			lb/ton		
Manure Nutrient Content	**N**	P2O5	**K20**	**N**	P2O5	**K20**	**N**	P2O5	**K20**
(lbs/ton or 1000 gal)	43.37	28.84	29.06	43.37	28.84	29.06	43.37	28.84	29.06
Application Season: Management (Incorporation, cover crops, etc.)	Spring: Spring or summer utilization-Incorporation after 7 days or none			Late Fall: Summer Utilization. Single crop corn or annuals-Green manure cover crop			Spring: Spring or summer utilization-Incorporation after 7 days or none		
Availability Factors (Total N or NH4-N & Organic N)	**Total N**	**NH4-N**	**Org. N**	**Total N**	**NH4-N**	**Org. N**	**Total N**	**NH4-N**	**Org. N**
	0.15			0.50			0.15		
P Index Application Method	April - Oct: No incorp or incorp > 1 wk.			Nov - Mar: No incorp or incorp > 1 wk.			April - Oct: No incorp or incorp > 1 wk.		
N Balanced Manure Rate (ton; gal/A)	19 tons/A			6 tons/A			10 tons/A		
P Removal Balance Manure Rate (ton or gal/A; If required by P Index)	2 tons/A			2 tons/A			2 tons/A		
	Crop P Removal (lb/A) 50.0			Crop P Removal (lb/A) 50.0			Crop P Removal (lb/A) 60.0		
P Index Value	40			48			43		
Planned Manure Rate (ton or gal/A)	**2 tons/A**			**2 tons/A**			**3 tons/A**		
Nutrients Applied at Planned Manure Rate (lb/A)	13	58	58	43	58	58	20	87	87
Nutrient Balance after Manure	0	-8	12	0	-8	12	45	-27	-42
Supplemental Fertilizer (lb/A)	0	0	12	0	0	12	45	0	0
P Index Application Method									
Final Nutrient Balance (lb/A)	**0**	**-8**	**0**	**0**	**-8**	**0**	**0**	**-27**	**-42**
Multiple Application									
Soil test or Crop Removal	Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs			Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs			Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs		

Nutrient Balance Sheets	BM2 Corn Grain Fall 35' Stbk			BM2 Soybeans Spring 35' Stbk			BM2 Soybeans Fall 35' Stbk		
Crop Group Indentification									
Fields	BM2			BM2			BM2		
Acres	5.9			5.9			5.9		
NBS Option	Option 3 P Index Must be Completed			Option 3 P Index Must be Completed			Option 3 P Index Must be Completed		
P Banking									
Mehlich 3 Soil Test P	ppm P			ppm P			ppm P		
For Option 2 enter maximum Soil Test For Option 3 enter soil test for PI	74			74			74		
P Index Part A Evaluation	<150ft			<150ft			<150ft		
Part A Result	Part B			Part B			Part B		
Crop	Corn for Grain (No-till)			Soybeans with Manure			Soybeans with Manure		
Planned Yield	150 bu/A			50 bu/A			50 bu/A		
Crop Removal Recommendations (LB/A)	**N**	**P2O5**	**K2O**	**N**	**P2O5**	**K2O**	**N**	**P2O5**	**K2O**
	150	60	45	160	50	70	160	50	70
Soil Test Recommendation (lb/A)									
Other Nutrients Applied (lb/A) (Nutrients applied regardless of manure)	0	0	0	0	0	0	0	0	0
P Index Application Method									
Double Crop CarryOver N (lb/A)	0			0			0		
Manure History Description Residual Manure N (lb/A)	35	Continuously - Summer Crop		35	Continuously - Summer Crop		35	Continuously - Summer Crop	
Legume History Description Residual Legume N (lb/A)	50	Soybeans, 50 bu/A		0	No Previous Year Legume		0	No Previous Year Legume	
Net Nutrients Required (lb/A)	65	60	45	125	50	70	125	50	70
Manure Group	Broiler Manure			Broiler Manure			Broiler Manure		
Units	lb/ton			lb/ton			lb/ton		
Manure Nutrient Content	**N**	P2O5	**K20**	**N**	P2O5	**K20**	**N**	P2O5	**K20**
(lbs/ton or 1000 gal)	43.37	28.84	29.06	43.37	28.84	29.06	43.37	28.84	29.06
Application Season: Management (Incorporation, cover crops, etc.)	Late Fall: Summer Utilization. Single crop corn or annuals-Green manure cover crop			Spring: Spring or summer utilization-Incorporation after 7 days or none			Late Fall: Summer Utilization. Single crop corn or annuals-Green manure cover crop		
Availability Factors (Total N or NH4-N & Organic N)	**Total N**	**NH4-N**	**Org. N**	**Total N**	**NH4-N**	**Org. N**	**Total N**	**NH4-N**	**Org. N**
	0.50			0.15			0.50		
P Index Application Method	Nov - Mar: No incorp or incorp > 1 wk.			April - Oct: No incorp or incorp > 1 wk.			Nov - Mar: No incorp or incorp > 1 wk.		
N Balanced Manure Rate (ton; gal/A)	3 tons/A			19 tons/A			6 tons/A		
P Removal Balance Manure Rate (ton or gal/A; If required by P Index)	2 tons/A			2 tons/A			2 tons/A		
	Crop P Removal (lb/A) 60.0			Crop P Removal (lb/A) 50.0			Crop P Removal (lb/A) 50.0		
P Index Value	53			34			41		
Planned Manure Rate (ton or gal/A)	**3 tons/A**			**2 tons/A**			**2 tons/A**		
Nutrients Applied at Planned Manure Rate (lb/A)	65	87	87	13	58	58	43	58	58
Nutrient Balance after Manure	0	-27	-42	0	-8	12	0	-8	12
Supplemental Fertilizer (lb/A)	0	0	0	0	0	12	0	0	12
P Index Application Method									
Final Nutrient Balance (lb/A)	**0**	**-27**	**-42**	**0**	**-8**	**0**	**0**	**-8**	**0**
Multiple Application									
Soil test or Crop Removal	Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs			Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs			Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs		

Nutrient Balance Sheets	BM3 Corn Grain Spring 35' Stbk			BM3 Corn Grain Fall 35' Stbk		
Crop Group Indentification						
Fields	BM3			BM3		
Acres	3.2			3.2		
NBS Option	Option 3 P Index Must be Completed			Option 3 P Index Must be Completed		
P Banking						
Mehlich 3 Soil Test P For Option 2 enter maximum Soil Test For Option 3 enter soil test for PI	ppm P			ppm P		
	74			74		
P Index Part A Evaluation	<150ft			<150ft		
Part A Result	Part B			Part B		
Crop	Corn for Grain (No-till)			Corn for Grain (No-till)		
Planned Yield	150 bu/A			150 bu/A		
Crop Removal Recommendations (LB/A)	**N**	**P2O5**	**K2O**	**N**	**P2O5**	**K2O**
	150	60	45	150	60	45
Soil Test Recommendation (lb/A)						
Other Nutrients Applied (lb/A) (Nutrients applied regardless of manure)	0	0	0	0	0	0
P Index Application Method						
Double Crop CarryOver N (lb/A)	0			0		
Manure History Description Residual Manure N (lb/A)	35	Continuously - Summer Crop		35	Continuously - Summer Crop	
Legume History Description Residual Legume N (lb/A)	50	Soybeans, 50 bu/A		50	Soybeans, 50 bu/A	
Net Nutrients Required (lb/A)	65	60	45	65	60	45
Manure Group	Broiler Manure			Broiler Manure		
Units	lb/ton			lb/ton		
Manure Nutrient Content	**N**	P2O5	**K20**	**N**	P2O5	**K20**
(lbs/ton or 1000 gal)	43.37	28.84	29.06	43.37	28.84	29.06
Application Season: Management (Incorporation, cover crops, etc.)	Spring: Spring or summer utilization-Incorporation after 7 days or none			Late Fall: Summer Utilization. Single crop corn or annuals-Green manure cover crop		
Availability Factors	**Total N**	**NH4-N**	**Org. N**	**Total N**	**NH4-N**	**Org. N**
(Total N or NH4-N & Organic N)	0.15			0.50		
P Index Application Method	April - Oct: No incorp or incorp > 1 wk.			Nov - Mar: No incorp or incorp > 1 wk.		
N Balanced Manure Rate (ton; gal/A)	10 tons/A			3 tons/A		
P Removal Balance Manure Rate	2 tons/A			2 tons/A		
(ton or gal/A; If required by P Index)	Crop P Removal (lb/A) 60.0			Crop P Removal (lb/A) 60.0		
P Index Value	55			68		
Planned Manure Rate (ton or gal/A)	**3 tons/A**			**3 tons/A**		
Nutrients Applied at Planned Manure Rate (lb/A)	20	87	87	65	87	87
Nutrient Balance after Manure	45	-27	-42	0	-27	-42
Supplemental Fertilizer (lb/A)	45	0	0	0	0	0
P Index Application Method						
Final Nutrient Balance (lb/A)	**0**	**-27**	**-42**	**0**	**-27**	**-42**
Multiple Application						
Soil test or Crop Removal	Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs			Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs		

Nutrient Balance Sheets	BM3 Soybeans Spring 35' Stbk			BM3 Soybeans Fall 35' Stbk		
Crop Group Indentification						
Fields	BM3			BM3		
Acres	3.2			3.2		
NBS Option	Option 3 P Index Must be Completed			Option 3 P Index Must be Completed		
P Banking						
Mehlich 3 Soil Test P For Option 2 enter maximum Soil Test For Option 3 enter soil test for PI	ppm P			ppm P		
	74			74		
P Index Part A Evaluation	<150ft			<150ft		
Part A Result	Part B			Part B		
Crop	Soybeans with Manure			Soybeans with Manure		
Planned Yield	50 bu/A			50 bu/A		
Crop Removal Recommendations (LB/A)	**N**	**P2O5**	**K2O**	**N**	**P2O5**	**K2O**
	160	50	70	160	50	70
Soil Test Recommendation (lb/A)						
Other Nutrients Applied (lb/A) (Nutrients applied regardless of manure)	0	0	0	0	0	0
P Index Application Method						
Double Crop CarryOver N (lb/A)	0			0		
Manure History Description Residual Manure N (lb/A)	35	Continuously - Summer Crop		35	Continuously - Summer Crop	
Legume History Description Residual Legume N (lb/A)	0	No Previous Year Legume		0	No Previous Year Legume	
Net Nutrients Required (lb/A)	125	50	70	125	50	70
Manure Group	Broiler Manure			Broiler Manure		
Units	lb/ton			lb/ton		
Manure Nutrient Content	**N**	P2O5	**K20**	**N**	P2O5	**K20**
(lbs/ton or 1000 gal)	43.37	28.84	29.06	43.37	28.84	29.06
Application Season: Management (Incorporation, cover crops, etc.)	Spring: Spring or summer utilization-Incorporation after 7 days or none			Late Fall: Summer Utilization. Single crop corn or annuals-Green manure cover crop		
Availability Factors	**Total N**	**NH4-N**	**Org. N**	**Total N**	**NH4-N**	**Org. N**
(Total N or NH4-N & Organic N)	0.15			0.50		
P Index Application Method	April - Oct: No incorp or incorp > 1 wk.			Nov - Mar: No incorp or incorp > 1 wk.		
N Balanced Manure Rate (ton; gal/A)	19 tons/A			6 tons/A		
P Removal Balance Manure Rate	2 tons/A			2 tons/A		
(ton or gal/A; If required by P Index)	Crop P Removal (lb/A) 50.0			Crop P Removal (lb/A) 50.0		
P Index Value	43			52		
Planned Manure Rate (ton or gal/A)	**2 tons/A**			**2 tons/A**		
Nutrients Applied at Planned Manure Rate (lb/A)	13	58	58	43	58	58
Nutrient Balance after Manure	0	-8	12	0	-8	12
Supplemental Fertilizer (lb/A)	0	0	12	0	0	12
P Index Application Method						
Final Nutrient Balance (lb/A)	**0**	**-8**	**0**	**0**	**-8**	**0**
Multiple Application						
Soil test or Crop Removal	Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs			Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs		

Nutrient Balance Sheets	MellsSE1 Corn Grain Spring 35' Stbk			MellsSE1 Corn Grain Fall 35' Stbk		
Crop Group Indentification						
Fields	MellsSE1			MellsSE1		
Acres	14.2			14.2		
NBS Option	Option 3 P Index Must be Completed			Option 3 P Index Must be Completed		
P Banking						
Mehlich 3 Soil Test P For Option 2 enter maximum Soil Test For Option 3 enter soil test for PI	ppm P			ppm P		
	140			140		
P Index Part A Evaluation	<150ft			<150ft		
Part A Result	Part B			Part B		
Crop	Corn for Grain (No-till)			Corn for Grain (No-till)		
Planned Yield	150 bu/A			150 bu/A		
Crop Removal Recommendations (LB/A)	**N**	**P2O5**	**K2O**	**N**	**P2O5**	**K2O**
	150	60	45	150	60	45
Soil Test Recommendation (lb/A)						
Other Nutrients Applied (lb/A) (Nutrients applied regardless of manure)	0	0	0	0	0	0
P Index Application Method						
Double Crop CarryOver N (lb/A)	0			0		
Manure History Description Residual Manure N (lb/A)	35	Continuously - Summer Crop		35	Continuously - Summer Crop	
Legume History Description Residual Legume N (lb/A)	50	Soybeans, 50 bu/A		50	Soybeans, 50 bu/A	
Net Nutrients Required (lb/A)	65	60	45	65	60	45
Manure Group	Broiler Manure			Broiler Manure		
Units	lb/ton			lb/ton		
Manure Nutrient Content	**N**	P2O5	**K20**	**N**	P2O5	**K20**
(lbs/ton or 1000 gal)	43.37	28.84	29.06	43.37	28.84	29.06
Application Season: Management (Incorporation, cover crops, etc.)	Spring: Spring or summer utilization-Incorporation after 7 days or none			Late Fall: Summer Utilization. Single crop corn or annuals-Green manure cover crop		
Availability Factors	**Total N**	**NH4-N**	**Org. N**	**Total N**	**NH4-N**	**Org. N**
(Total N or NH4-N & Organic N)	0.15			0.50		
P Index Application Method	April - Oct: No incorp or incorp > 1 wk.			Nov - Mar: No incorp or incorp > 1 wk.		
N Balanced Manure Rate (ton; gal/A)	10 tons/A			3 tons/A		
P Removal Balance Manure Rate	2 tons/A			2 tons/A		
(ton or gal/A; If required by P Index)	Crop P Removal (lb/A) 60.0			Crop P Removal (lb/A) 60.0		
P Index Value	57			67		
Planned Manure Rate (ton or gal/A)	**3 tons/A**			**3 tons/A**		
Nutrients Applied at Planned Manure Rate (lb/A)	20	87	87	65	87	87
Nutrient Balance after Manure	45	-27	-42	0	-27	-42
Supplemental Fertilizer (lb/A)	45	0	0	0	0	0
P Index Application Method						
Final Nutrient Balance (lb/A)	**0**	**-27**	**-42**	**0**	**-27**	**-42**
Multiple Application						
Soil test or Crop Removal	Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs			Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs		

Nutrient Balance Sheets	MellsSE1 Soybeans Spring 35' Stbk			MellsSE1 Soybeans Fall 35' Stbk		
Crop Group Indentification						
Fields	MellsSE1			MellsSE1		
Acres	14.2			14.2		
NBS Option	Option 3 P Index Must be Completed			Option 3 P Index Must be Completed		
P Banking						
Mehlich 3 Soil Test P For Option 2 enter maximum Soil Test For Option 3 enter soil test for PI	ppm P 140			ppm P 140		
P Index Part A Evaluation	<150ft			<150ft		
Part A Result	Part B			Part B		
Crop	Soybeans with Manure			Soybeans with Manure		
Planned Yield	50 bu/A			50 bu/A		
Crop Removal Recommendations (LB/A)	**N**	**P2O5**	**K2O**	**N**	**P2O5**	**K2O**
	160	50	70	160	50	70
Soil Test Recommendation (lb/A)						
Other Nutrients Applied (lb/A) (Nutrients applied regardless of manure)	0	0	0	0	0	0
P Index Application Method						
Double Crop CarryOver N (lb/A)	0			0		
Manure History Description Residual Manure N (lb/A)	35	Continuously - Summer Crop		35	Continuously - Summer Crop	
Legume History Description Residual Legume N (lb/A)	0	No Previous Year Legume		0	No Previous Year Legume	
Net Nutrients Required (lb/A)	125	50	70	125	50	70
Manure Group	Broiler Manure			Broiler Manure		
Units	lb/ton			lb/ton		
Manure Nutrient Content	**N**	P2O5	**K20**	**N**	P2O5	**K20**
(lbs/ton or 1000 gal)	43.37	28.84	29.06	43.37	28.84	29.06
Application Season: Management (Incorporation, cover crops, etc.)	Spring: Spring or summer utilization-Incorporation after 7 days or none			Late Fall: Summer Utilization. Single crop corn or annuals-Green manure cover crop		
Availability Factors (Total N or NH4-N & Organic N)	**Total N**	**NH4-N**	**Org. N**	**Total N**	**NH4-N**	**Org. N**
	0.15			0.50		
P Index Application Method	April - Oct: No incorp or incorp > 1 wk.			Nov - Mar: No incorp or incorp > 1 wk.		
N Balanced Manure Rate (ton; gal/A)	19 tons/A			6 tons/A		
P Removal Balance Manure Rate (ton or gal/A; If required by P Index)	2 tons/A			2 tons/A		
	Crop P Removal (lb/A) 50.0			Crop P Removal (lb/A) 50.0		
P Index Value	47			54		
Planned Manure Rate (ton or gal/A)	**2 tons/A**			**2 tons/A**		
Nutrients Applied at Planned Manure Rate (lb/A)	13	58	58	43	58	58
Nutrient Balance after Manure	0	-8	12	0	-8	12
Supplemental Fertilizer (lb/A)	0	0	12	0	0	12
P Index Application Method						
Final Nutrient Balance (lb/A)	**0**	**-8**	**0**	**0**	**-8**	**0**
Multiple Application						
Soil test or Crop Removal	Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs			Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs		

Nutrient Balance Sheets	MellsSE2 Corn Grain Spring 35' Stbk			MellsSE2 Corn Grain Fall 35' Stbk		
Crop Group Indentification						
Fields	MellsSE2			MellsSE2		
Acres	2.7			2.7		
NBS Option	Option 3 P Index Must be Completed			Option 3 P Index Must be Completed		
P Banking						
Mehlich 3 Soil Test P For Option 2 enter maximum Soil Test For Option 3 enter soil test for PI	ppm P 140			ppm P 140		
P Index Part A Evaluation	<150ft			<150ft		
Part A Result	Part B			Part B		
Crop	Corn for Grain (No-till)			Corn for Grain (No-till)		
Planned Yield	150 bu/A			150 bu/A		
Crop Removal Recommendations (LB/A)	**N**	**P2O5**	**K2O**	**N**	**P2O5**	**K2O**
	150	60	45	150	60	45
Soil Test Recommendation (lb/A)						
Other Nutrients Applied (lb/A) (Nutrients applied regardless of manure)	0	0	0	0	0	0
P Index Application Method						
Double Crop CarryOver N (lb/A)	0			0		
Manure History Description Residual Manure N (lb/A)	35	Continuously - Summer Crop		35	Continuously - Summer Crop	
Legume History Description Residual Legume N (lb/A)	50	Soybeans, 50 bu/A		50	Soybeans, 50 bu/A	
Net Nutrients Required (lb/A)	65	60	45	65	60	45
Manure Group	Broiler Manure			Broiler Manure		
Units	lb/ton			lb/ton		
Manure Nutrient Content	**N**	P2O5	**K20**	**N**	P2O5	**K20**
(lbs/ton or 1000 gal)	43.37	28.84	29.06	43.37	28.84	29.06
Application Season: Management (Incorporation, cover crops, etc.)	Spring: Spring or summer utilization-Incorporation after 7 days or none			Late Fall: Summer Utilization. Single crop corn or annuals-Green manure cover crop		
Availability Factors (Total N or NH4-N & Organic N)	**Total N**	**NH4-N**	**Org. N**	**Total N**	**NH4-N**	**Org. N**
	0.15			0.50		
P Index Application Method	April - Oct: No incorp or incorp > 1 wk.			Nov - Mar: No incorp or incorp > 1 wk.		
N Balanced Manure Rate (ton; gal/A)	10 tons/A			3 tons/A		
P Removal Balance Manure Rate (ton or gal/A; If required by P Index)	2 tons/A			2 tons/A		
	Crop P Removal (lb/A) 60.0			Crop P Removal (lb/A) 60.0		
P Index Value	58			68		
Planned Manure Rate (ton or gal/A)	**3 tons/A**			**3 tons/A**		
Nutrients Applied at Planned Manure Rate (lb/A)	20	87	87	65	87	87
Nutrient Balance after Manure	45	-27	-42	0	-27	-42
Supplemental Fertilizer (lb/A)	45	0	0	0	0	0
P Index Application Method						
Final Nutrient Balance (lb/A)	**0**	**-27**	**-42**	**0**	**-27**	**-42**
Multiple Application						
Soil test or Crop Removal	Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs			Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs		

Nutrient Balance Sheets	MellsSE2 Soybeans Spring 35' Stbk			MellsSE2 Soybeans Fall 35' Stbk		
Crop Group Indentification						
Fields	MellsSE2			MellsSE2		
Acres	2.7			2.7		
NBS Option	Option 3 P Index Must be Completed			Option 3 P Index Must be Completed		
P Banking						
Mehlich 3 Soil Test P For Option 2 enter maximum Soil Test For Option 3 enter soil test for PI	ppm P 140			ppm P 140		
P Index Part A Evaluation	<150ft			<150ft		
Part A Result	Part B			Part B		
Crop	Soybeans with Manure			Soybeans with Manure		
Planned Yield	50 bu/A			50 bu/A		
Crop Removal Recommendations (LB/A)	**N**	**P2O5**	**K2O**	**N**	**P2O5**	**K2O**
	160	50	70	160	50	70
Soil Test Recommendation (lb/A)						
Other Nutrients Applied (lb/A) (Nutrients applied regardless of manure)	0	0	0	0	0	0
P Index Application Method						
Double Crop CarryOver N (lb/A)	0			0		
Manure History Description Residual Manure N (lb/A)	35	Continuously - Summer Crop		35	Continuously - Summer Crop	
Legume History Description Residual Legume N (lb/A)	0	No Previous Year Legume		0	No Previous Year Legume	
Net Nutrients Required (lb/A)	125	50	70	125	50	70
Manure Group	Broiler Manure			Broiler Manure		
Units	lb/ton			lb/ton		
Manure Nutrient Content	**N**	P2O5	**K20**	**N**	P2O5	**K20**
(lbs/ton or 1000 gal)	43.37	28.84	29.06	43.37	28.84	29.06
Application Season: Management (Incorporation, cover crops, etc.)	Spring: Spring or summer utilization-Incorporation after 7 days or none			Late Fall: Summer Utilization. Single crop corn or annuals-Green manure cover crop		
Availability Factors (Total N or NH4-N & Organic N)	**Total N**	**NH4-N**	**Org. N**	**Total N**	**NH4-N**	**Org. N**
	0.15			0.50		
P Index Application Method	April - Oct: No incorp or incorp > 1 wk.			Nov - Mar: No incorp or incorp > 1 wk.		
N Balanced Manure Rate (ton; gal/A)	19 tons/A			6 tons/A		
P Removal Balance Manure Rate (ton or gal/A; If required by P Index)	2 tons/A			2 tons/A		
	Crop P Removal (lb/A) 50.0			Crop P Removal (lb/A) 50.0		
P Index Value	48			55		
Planned Manure Rate (ton or gal/A)	**2 tons/A**			**2 tons/A**		
Nutrients Applied at Planned Manure Rate (lb/A)	13	58	58	43	58	58
Nutrient Balance after Manure	0	-8	12	0	-8	12
Supplemental Fertilizer (lb/A)	0	0	12	0	0	12
P Index Application Method						
Final Nutrient Balance (lb/A)	**0**	**-8**	**0**	**0**	**-8**	**0**
Multiple Application						
Soil test or Crop Removal	Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs			Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs		

Nutrient Balance Sheets	MellsNE Corn Grain Spring 35' Stbk			MellsNE Corn Grain Fall 35' Stbk			MellsNE Soybeans Spring 35' Stbk			MellsNE Soybeans Fall 35' Stbk			SW3 Corn Grain Spring 35' Stbk			SW3 Corn Grain Fall 35' Stbk		
Crop Group Indentification																		
Fields	MellsNE			MellsNE			MellsNE			MellsNE			SW3			SW3		
Acres	8.6			8.6			8.6			8.6			3.1			3.1		
NBS Option	Option 3 P Index Must be Completed			Option 3 P Index Must be Completed			Option 3 P Index Must be Completed			Option 3 P Index Must be Completed			Option 3 P Index Must be Completed			Option 3 P Index Must be Completed		
P Banking																		
Mehlich 3 Soil Test P For Option 2 enter maximum Soil Test For Option 3 enter soil test for PI	ppm P			ppm P			ppm P			ppm P			ppm P			ppm P		
	121			121			121			121			97			97		
P Index Part A Evaluation	<150ft			<150ft			<150ft			<150ft			<150ft			<150ft		
Part A Result	Part B			Part B			Part B			Part B			Part B			Part B		
Crop	Corn for Grain (No-till)			Corn for Grain (No-till)			Soybeans with Manure			Soybeans with Manure			Corn for Grain (No-till)			Corn for Grain (No-till)		
Planned Yield	150 bu/A			150 bu/A			50 bu/A			50 bu/A			150 bu/A			150 bu/A		
Crop Removal Recommendations (LB/A)	**N**	**P2O5**	**K2O**	**N**	**P2O5**	**K2O**	**N**	**P2O5**	**K2O**	**N**	**P2O5**	**K2O**	**N**	**P2O5**	**K2O**	**N**	**P2O5**	**K2O**
	150	60	45	150	60	45	160	50	70	160	50	70	150	60	45	150	60	45
Soil Test Recommendation (lb/A)																		
Other Nutrients Applied (lb/A) (Nutrients applied regardless of manure)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
P Index Application Method																		
Double Crop CarryOver N (lb/A)	0			0			0			0			0			0		
Manure History Description Residual Manure N (lb/A)	35	Continuously - Summer Crop		35	Continuously - Summer Crop		35	Continuously - Summer Crop		35	Continuously - Summer Crop		35	Continuously - Summer Crop		35	Continuously - Summer Crop	
Legume History Description Residual Legume N (lb/A)	50	Soybeans, 50 bu/A		50	Soybeans, 50 bu/A		0	No Previous Year Legume		0	No Previous Year Legume		50	Soybeans, 50 bu/A		50	Soybeans, 50 bu/A	
Net Nutrients Required (lb/A)	65	60	45	65	60	45	125	50	70	125	50	70	65	60	45	65	60	45
Manure Group	Broiler Manure			Broiler Manure			Broiler Manure			Broiler Manure			Broiler Manure			Broiler Manure		
Units	lb/ton			lb/ton			lb/ton			lb/ton			lb/ton			lb/ton		
Manure Nutrient Content	**N**	P2O5	**K20**	**N**	P2O5	**K20**	**N**	P2O5	**K20**	**N**	P2O5	**K20**	**N**	P2O5	**K20**	**N**	P2O5	**K20**
(lbs/ton or 1000 gal)	43.37	28.84	29.06	43.37	28.84	29.06	43.37	28.84	29.06	43.37	28.84	29.06	43.37	28.84	29.06	43.37	28.84	29.06
Application Season: Management (Incorporation, cover crops, etc.)	Spring: Spring or summer utilization-Incorporation after 7 days or none			Late Fall: Summer Utilization. Single crop corn or annuals-Green manure cover crop			Spring: Spring or summer utilization-Incorporation after 7 days or none			Late Fall: Summer Utilization. Single crop corn or annuals-Green manure cover crop			Spring: Spring or summer utilization-Incorporation after 7 days or none			Late Fall: Summer Utilization. Single crop corn or annuals-Green manure cover crop		
Availability Factors (Total N or NH4-N & Organic N)	**Total N**	**NH4-N**	**Org. N**	**Total N**	**NH4-N**	**Org. N**	**Total N**	**NH4-N**	**Org. N**	**Total N**	**NH4-N**	**Org. N**	**Total N**	**NH4-N**	**Org. N**	**Total N**	**NH4-N**	**Org. N**
	0.15			0.50			0.15			0.50			0.15			0.50		
P Index Application Method	April - Oct: No incorp or incorp > 1 wk.			Nov - Mar: No incorp or incorp > 1 wk.			April - Oct: No incorp or incorp > 1 wk.			Nov - Mar: No incorp or incorp > 1 wk.			April - Oct: No incorp or incorp > 1 wk.			Nov - Mar: No incorp or incorp > 1 wk.		
N Balanced Manure Rate (ton; gal/A)	10 tons/A			3 tons/A			19 tons/A			6 tons/A			10 tons/A			3 tons/A		
P Removal Balance Manure Rate (ton or gal/A; If required by P Index)	2 tons/A			2 tons/A			2 tons/A			2 tons/A			2 tons/A			2 tons/A		
	Crop P Removal (lb/A) 60.0			Crop P Removal (lb/A) 60.0			Crop P Removal (lb/A) 50.0			Crop P Removal (lb/A) 50.0			Crop P Removal (lb/A) 60.0			Crop P Removal (lb/A) 60.0		
P Index Value	56			67			46			53			40			48		
Planned Manure Rate (ton or gal/A)	**3 tons/A**			**3 tons/A**			**2 tons/A**			**2 tons/A**			**3 tons/A**			**3 tons/A**		
Nutrients Applied at Planned Manure Rate (lb/A)	20	87	87	65	87	87	13	58	58	43	58	58	20	87	87	65	87	87
Nutrient Balance after Manure	45	-27	-42	0	-27	-42	0	-8	12	0	-8	12	45	-27	-42	0	-27	-42
Supplemental Fertilizer (lb/A)	45	0	0	0	0	0	0	0	12	0	0	12	45	0	0	0	0	0
P Index Application Method																		
Final Nutrient Balance (lb/A)	**0**	**-27**	**-42**	**0**	**-27**	**-42**	**0**	**-8**	**0**	**0**	**-8**	**0**	**0**	**-27**	**-42**	**0**	**-27**	**-42**
Multiple Application																		
Soil test or Crop Removal	Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs			Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs			Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs			Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs			Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs			Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs		

Nutrient Balance Sheets Crop Group Indentification	SW3 Soybeans Spring 35' Stbk			SW3 Soybeans Fall 35' Stbk		
Fields	SW3			SW3		
Acres	3.1			3.1		
NBS Option	Option 3 P Index Must be Completed			Option 3 P Index Must be Completed		
P Banking						
Mehlich 3 Soil Test P For Option 2 enter maximum Soil Test For Option 3 enter soil test for PI	ppm P 97			ppm P 97		
P Index Part A Evaluation	<150ft			<150ft		
Part A Result	Part B			Part B		
Crop	Soybeans with Manure			Soybeans with Manure		
Planned Yield	50 bu/A			50 bu/A		
Crop Removal Recommendations (LB/A)	**N**	**P2O5**	**K2O**	**N**	**P2O5**	**K2O**
	160	50	70	160	50	70
Soil Test Recommendation (lb/A)						
Other Nutrients Applied (lb/A) (Nutrients applied regardless of manure)	0	0	0	0	0	0
P Index Application Method						
Double Crop CarryOver N (lb/A)	0			0		
Manure History Description Residual Manure N (lb/A)	35	Continuously - Summer Crop		35	Continuously - Summer Crop	
Legume History Description Residual Legume N (lb/A)	0	No Previous Year Legume		0	No Previous Year Legume	
Net Nutrients Required (lb/A)	125	50	70	125	50	70
Manure Group	Broiler Manure			Broiler Manure		
Units	lb/ton			lb/ton		
Manure Nutrient Content	**N**	P2O5	**K20**	**N**	P2O5	**K20**
(lbs/ton or 1000 gal)	43.37	28.84	29.06	43.37	28.84	29.06
Application Season: Management (Incorporation, cover crops, etc.)	Spring: Spring or summer utilization-Incorporation after 7 days or none			Late Fall: Summer Utilization. Single crop corn or annuals-Green manure cover crop		
Availability Factors (Total N or NH4-N & Organic N)	**Total N**	**NH4-N**	**Org. N**	**Total N**	**NH4-N**	**Org. N**
	0.15			0.50		
P Index Application Method	April - Oct: No incorp or incorp > 1 wk.			Nov - Mar: No incorp or incorp > 1 wk.		
N Balanced Manure Rate (ton; gal/A)	19 tons/A			6 tons/A		
P Removal Balance Manure Rate	2 tons/A			2 tons/A		
(ton or gal/A; If required by P Index)	Crop P Removal (lb/A) 50.0			Crop P Removal (lb/A) 50.0		
P Index Value	32			38		
Planned Manure Rate (ton or gal/A)	**2 tons/A**			**2 tons/A**		
Nutrients Applied at Planned Manure Rate (lb/A)	13	58	58	43	58	58
Nutrient Balance after Manure	0	-8	12	0	-8	12
Supplemental Fertilizer (lb/A)	0	0	12	0	0	12
P Index Application Method						
Final Nutrient Balance (lb/A)	**0**	**-8**	**0**	**0**	**-8**	**0**
Multiple Application						
Soil test or Crop Removal	Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs			Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs		

Nutrient Balance Sheets Crop Group Indentification	SW4 Corn Grain Spring 35' Stbk			SW4 Corn Grain Fall 35' Stbk		
Fields	SW4			SW4		
Acres	2.0			2.0		
NBS Option	Option 3 P Index Must be Completed			Option 3 P Index Must be Completed		
P Banking						
Mehlich 3 Soil Test P For Option 2 enter maximum Soil Test For Option 3 enter soil test for PI	ppm P 106			ppm P 106		
P Index Part A Evaluation	<150ft			<150ft		
Part A Result	Part B			Part B		
Crop	Corn for Grain (No-till)			Corn for Grain (No-till)		
Planned Yield	150 bu/A			150 bu/A		
Crop Removal Recommendations (LB/A)	**N**	**P2O5**	**K2O**	**N**	**P2O5**	**K2O**
	150	60	45	150	60	45
Soil Test Recommendation (lb/A)						
Other Nutrients Applied (lb/A) (Nutrients applied regardless of manure)	0	0	0	0	0	0
P Index Application Method						
Double Crop CarryOver N (lb/A)	0			0		
Manure History Description Residual Manure N (lb/A)	35	Continuously - Summer Crop		35	Continuously - Summer Crop	
Legume History Description Residual Legume N (lb/A)	50	Soybeans, 50 bu/A		50	Soybeans, 50 bu/A	
Net Nutrients Required (lb/A)	65	60	45	65	60	45
Manure Group	Broiler Manure			Broiler Manure		
Units	lb/ton			lb/ton		
Manure Nutrient Content	**N**	P2O5	**K20**	**N**	P2O5	**K20**
(lbs/ton or 1000 gal)	43.37	28.84	29.06	43.37	28.84	29.06
Application Season: Management (Incorporation, cover crops, etc.)	Spring: Spring or summer utilization-Incorporation after 7 days or none			Late Fall: Summer Utilization. Single crop corn or annuals-Green manure cover crop		
Availability Factors (Total N or NH4-N & Organic N)	**Total N**	**NH4-N**	**Org. N**	**Total N**	**NH4-N**	**Org. N**
	0.15			0.50		
P Index Application Method	April - Oct: No incorp or incorp > 1 wk.			Nov - Mar: No incorp or incorp > 1 wk.		
N Balanced Manure Rate (ton; gal/A)	10 tons/A			3 tons/A		
P Removal Balance Manure Rate	2 tons/A			2 tons/A		
(ton or gal/A; If required by P Index)	Crop P Removal (lb/A) 60.0			Crop P Removal (lb/A) 60.0		
P Index Value	50			60		
Planned Manure Rate (ton or gal/A)	**3 tons/A**			**3 tons/A**		
Nutrients Applied at Planned Manure Rate (lb/A)	20	87	87	65	87	87
Nutrient Balance after Manure	45	-27	-42	0	-27	-42
Supplemental Fertilizer (lb/A)	45	0	0	0	0	0
P Index Application Method						
Final Nutrient Balance (lb/A)	**0**	**-27**	**-42**	**0**	**-27**	**-42**
Multiple Application						
Soil test or Crop Removal	Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs			Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs		

Nutrient Balance Sheets Crop Group Indentification	SW4 Soybeans Spring 35' Stbk			SW4 Soybeans Fall 35' Stbk		
Fields	SW4			SW4		
Acres	2.0			2.0		
NBS Option	Option 3 P Index Must be Completed			Option 3 P Index Must be Completed		
P Banking						
Mehlich 3 Soil Test P For Option 2 enter maximum Soil Test For Option 3 enter soil test for PI	ppm P 106			ppm P 106		
P Index Part A Evaluation	<150ft			<150ft		
Part A Result	Part B			Part B		
Crop	Soybeans with Manure			Soybeans with Manure		
Planned Yield	50 bu/A			50 bu/A		
Crop Removal Recommendations (LB/A)	**N**	**P2O5**	**K2O**	**N**	**P2O5**	**K2O**
	160	50	70	160	50	70
Soil Test Recommendation (lb/A)						
Other Nutrients Applied (lb/A) (Nutrients applied regardless of manure)	0	0	0	0	0	0
P Index Application Method						
Double Crop CarryOver N (lb/A)	0			0		
Manure History Description Residual Manure N (lb/A)	35	Continuously - Summer Crop		35	Continuously - Summer Crop	
Legume History Description Residual Legume N (lb/A)	0	No Previous Year Legume		0	No Previous Year Legume	
Net Nutrients Required (lb/A)	125	50	70	125	50	70
Manure Group	Broiler Manure			Broiler Manure		
Units	lb/ton			lb/ton		
Manure Nutrient Content	**N**	P2O5	**K20**	**N**	P2O5	**K20**
(lbs/ton or 1000 gal)	43.37	28.84	29.06	43.37	28.84	29.06
Application Season: Management (Incorporation, cover crops, etc.)	Spring: Spring or summer utilization-Incorporation after 7 days or none			Late Fall: Summer Utilization. Single crop corn or annuals-Green manure cover crop		
Availability Factors (Total N or NH4-N & Organic N)	**Total N**	**NH4-N**	**Org. N**	**Total N**	**NH4-N**	**Org. N**
	0.15			0.50		
P Index Application Method	April - Oct: No incorp or incorp > 1 wk.			Nov - Mar: No incorp or incorp > 1 wk.		
N Balanced Manure Rate (ton; gal/A)	19 tons/A			6 tons/A		
P Removal Balance Manure Rate	2 tons/A			2 tons/A		
(ton or gal/A; If required by P Index)	Crop P Removal (lb/A) 50.0			Crop P Removal (lb/A) 50.0		
P Index Value	41			47		
Planned Manure Rate (ton or gal/A)	**2 tons/A**			**2 tons/A**		
Nutrients Applied at Planned Manure Rate (lb/A)	13	58	58	43	58	58
Nutrient Balance after Manure	0	-8	12	0	-8	12
Supplemental Fertilizer (lb/A)	0	0	12	0	0	12
P Index Application Method						
Final Nutrient Balance (lb/A)	**0**	**-8**	**0**	**0**	**-8**	**0**
Multiple Application						
Soil test or Crop Removal	Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs			Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs		

Nutrient Balance Sheets	BSun1 Corn Grain Winter			BSun1 Soybeans Winter			Butcher4 Corn Grain Winter			Butcher4 Soybeans Winter			Turkey1 Corn Grain Winter			Turkey1 Soybeans Winter		
Crop Group Indentification																		
Fields	BSun1			BSun1			Butcher4			Butcher4			Turkey1			Turkey1		
Acres	23.7			23.7			17.7			17.7			9.7			9.7		
NBS Option	Option 3 P Index Must be Completed			Option 3 P Index Must be Completed			Option 3 P Index Must be Completed			Option 3 P Index Must be Completed			Option 3 P Index Must be Completed			Option 3 P Index Must be Completed		
P Banking																		
Mehlich 3 Soil Test P	ppm P			ppm P			ppm P			ppm P			ppm P			ppm P		
For Option 2 enter maximum Soil Test For Option 3 enter soil test for PI	113			113			154			154			163			163		
P Index Part A Evaluation	Winter			Winter			Winter			Winter			Winter			Winter		
Part A Result	Part B			Part B			Part B			Part B			Part B			Part B		
Crop	Corn for Grain (No-till)			Soybeans with Manure			Corn for Grain (No-till)			Soybeans with Manure			Corn for Grain (No-till)			Soybeans with Manure		
Planned Yield	150 bu/A			50 bu/A			150 bu/A			50 bu/A			150 bu/A			50 bu/A		
Crop Removal Recommendations (LB/A)	**N**	**P2O5**	**K2O**	**N**	**P2O5**	**K2O**	**N**	**P2O5**	**K2O**	**N**	**P2O5**	**K2O**	**N**	**P2O5**	**K2O**	**N**	**P2O5**	**K2O**
	150	60	45	160	50	70	150	60	45	160	50	70	150	60	45	160	50	70
Soil Test Recommendation (lb/A)																		
Other Nutrients Applied (lb/A) (Nutrients applied regardless of manure)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
P Index Application Method																		
Double Crop CarryOver N (lb/A)	0			0			0			0			0			0		
Manure History Description Residual Manure N (lb/A)	35	Continuously - Summer Crop		35	Continuously - Summer Crop		35	Continuously - Summer Crop		35	Continuously - Summer Crop		35	Continuously - Summer Crop		35	Continuously - Summer Crop	
Legume History Description Residual Legume N (lb/A)	50	Soybeans, 50 bu/A		0	No Previous Year Legume		50	Soybeans, 50 bu/A		0	No Previous Year Legume		50	Soybeans, 50 bu/A		0	No Previous Year Legume	
Net Nutrients Required (lb/A)	65	60	45	125	50	70	65	60	45	125	50	70	65	60	45	125	50	70
Manure Group	Broiler Manure			Broiler Manure			Broiler Manure			Broiler Manure			Broiler Manure			Broiler Manure		
Units	lb/ton			lb/ton			lb/ton			lb/ton			lb/ton			lb/ton		
Manure Nutrient Content	**N**	P2O5	**K20**	**N**	P2O5	**K20**	**N**	P2O5	**K20**	**N**	P2O5	**K20**	**N**	P2O5	**K20**	**N**	P2O5	**K20**
(lbs/ton or 1000 gal)	43.37	28.84	29.06	43.37	28.84	29.06	43.37	28.84	29.06	43.37	28.84	29.06	43.37	28.84	29.06	43.37	28.84	29.06
Application Season: Management (Incorporation, cover crops, etc.)	Winter: Summer Utilization. Single crop corn or annuals-Green manure cover crop			Winter: Summer Utilization. Single crop corn or annuals-Green manure cover crop			Winter: Summer Utilization. Single crop corn or annuals-Green manure cover crop			Winter: Summer Utilization. Single crop corn or annuals-Green manure cover crop			Winter: Summer Utilization. Single crop corn or annuals-Green manure cover crop			Winter: Summer Utilization. Single crop corn or annuals-Green manure cover crop		
Availability Factors	**Total N**	**NH4-N**	**Org. N**	**Total N**	**NH4-N**	**Org. N**	**Total N**	**NH4-N**	**Org. N**	**Total N**	**NH4-N**	**Org. N**	**Total N**	**NH4-N**	**Org. N**	**Total N**	**NH4-N**	**Org. N**
(Total N or NH4-N & Organic N)	0.50			0.50			0.50			0.50			0.50			0.50		
P Index Application Method	Surface app. when frozen/snow covered			Surface app. when frozen/snow covered			Surface app. when frozen/snow covered			Surface app. when frozen/snow covered			Surface app. when frozen/snow covered			Surface app. when frozen/snow covered		
N Balanced Manure Rate (ton; gal/A)	3 tons/A			6 tons/A			3 tons/A			6 tons/A			3 tons/A			6 tons/A		
P Removal Balance Manure Rate	2 tons/A			2 tons/A			2 tons/A			2 tons/A			2 tons/A			2 tons/A		
(ton or gal/A; If required by P Index)	Crop P Removal (lb/A) 60.0			Crop P Removal (lb/A) 50.0			Crop P Removal (lb/A) 60.0			Crop P Removal (lb/A) 50.0			Crop P Removal (lb/A) 60.0			Crop P Removal (lb/A) 50.0		
P Index Value	34			26			48			38			49			39		
Planned Manure Rate (ton or gal/A)	**3 tons/A**			**2 tons/A**			**3 tons/A**			**2 tons/A**			**3 tons/A**			**2 tons/A**		
Nutrients Applied at Planned Manure Rate (lb/A)	65	87	87	43	58	58	65	87	87	43	58	58	65	87	87	43	58	58
Nutrient Balance after Manure	0	-27	-42	0	-8	12	0	-27	-42	0	-8	12	0	-27	-42	0	-8	12
Supplemental Fertilizer (lb/A)	0	0	0	0	0	12	0	0	0	0	0	12	0	0	0	0	0	12
P Index Application Method																		
Final Nutrient Balance (lb/A)	**0**	**-27**	**-42**	**0**	**-8**	**0**	**0**	**-27**	**-42**	**0**	**-8**	**0**	**0**	**-27**	**-42**	**0**	**-8**	**0**
Multiple Application																		
Soil test or Crop Removal	Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs			Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs			Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs			Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs			Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs			Nutrient Balances for P2O5 and K2O are based on Crop Removal and SHOULD NOT be used to determine additional fertilizer needs		

Phosphorus Index

Go to NBS Input   Go to NBS Index

Pennsylvania P Index Version 2

PART A: SCREENING TOOL CMU/Field ID		PART A: SCREENING TOOL	CMU/Field ID	1 Corn Grain Spring 35' S
Is the CMU in a Special Protection watershed?		Is the CMU in a Special Protection watershed?	If the answer is Yes to any of these questions, Part B must be used.	**No**
A significant farm management change as defined by Act 38?		Is there a significant farm management change as defined by Act 38?		**No**
Soil Test Mehlich 3 P greater than 200 ppm P?		Is the Soil Test Mehlich 3 P greater than 200 ppm P? (enter soil test value in ppm P)		**74**
Contributing Distance from CMU to receiving water <150 ft.?		Is the Contributing Distance from this CMU to receiving water less than 150 ft.?		**Yes**
Is winter manure application planned for this field ?		Is winter manure application planned for this field ?		**No**
Run P Index Part B voluntarily? (No to all Part A questions.)		Run P Index Part B voluntarily? (Answers are No to all Part A questions.)		**No**

PART B: SOURCE FACTORS: Mehlich 3 Soil Test P (ppm P)			Mehlich 3 Soil Test P (ppm P)			74
Soil Test Rating = 0.20* Mehlich 3 Soil Test P (ppm P)						15
FERTILIZER P APPLIED REGARDLESS OF MANURE (Starter or other)					Fertilizer P (lb P2O5/acre)	0
P INDEX APPLICATION METHOD OF FERTILIZER P APPLIED REGARGLESS OF MANURE[3]	0.2 Placed or injected 2" or more deep	0.4 Incorporated <1 week following application	0.6 Incorporated > 1 week or not incorporated following application in April - October	0.8 Incorporated >1 week or not incorporated following application in Nov. - March	1.0 Surface applied to frozen or snow covered soil	-
SUPPLEMENTAL P FERTILIZER					Fertilizer P (lb P2O5/acre)	0
P INDEX APPLICATION METHOD OF SUPPLEMENTAL P FERTILIZER[3]	0.2 Placed or injected 2" or more deep	0.4 Incorporated <1 week following application	0.6 Incorporated > 1 week or not incorporated following application in April - October	0.8 Incorporated >1 week or not incorporated following application in Nov. - March	1.0 Surface applied to frozen or snow covered soil	-
Fertilizer Rating = Fertilizer Rate x Fertilizer Application Method						0
MANURE P RATE					Manure P (lb P2O5/acre)	87
MANURE APPLICATION METHOD[3]	0.2 Placed or injected 2" or more deep	0.4 Incorporated <1 week following application	0.6 Incorporated > 1 week or not incorporated following application in April - October	0.8 Incorporated >1 week or not incorporated following application in Nov. - March	1.0 Surface applied to frozen or snow covered soil	0.6
P SOURCE COEFFICIENT[3]	Refer to: Test results for P Source Coefficient OR Book values from P Index Fact Sheet Table 1					0.62
Manure Rating = Manure Rate x Manure Application Method x P Source Coefficient						32
Source Factor Sum						47
PART B: TRANSPORT FACTORS EROSION			Soil Loss (ton/acre/yr)			1.2
RUNOFF POTENTIAL	0 *Drainage Class is* Excessively	2 *Drainage Class is* Somewhat Excessively	4 *Drainage Class is* Well/Moderately Well	6 *Drainage Class is* Somewhat Poorly	8 *Drainage Class is* Poorly/Very Poorly	6
SUBSURFACE DRAINAGE	0 None		1 Random		2 [1] Patterned	0
CONTRIBUTING DISTANCE	0 > 500 ft.	2 350 to 500 ft.	4 200 to 349 ft.	6 100 to 199 ft. OR < 100 ft. with 35 ft. buffer	9 [2] < 100 ft.	6
Transport Sum = Erosion + Runoff Potential + Subsurface Drainage + Contributing Distance						13
MODIFIED CONNECTIVITY	0.85 50 ft. Riparian Buffer APPLIES TO DIST < 100 FT		1.0 Grassed Waterway or None	1.1 Direct Connection APPLIES TO DIST > 100 FT		1.0
Transport Sum x Modified Connectivity / 24						0.55
P Index Value = 2 x Source x Transport						**51**

Low: 59 or less Nitrogen based management	Medium: 60 to 79 Nitrogen based management	High: 80 to 99 Phosphorus limited to crop removal	Very High: 100 or greater No Phosphorus applied

1 OR rapidly permeable soil near a stream
2 "9" factor does not apply to fields receiving manure with a 35 ft. buffer.
3 Error Note: if there is a manure or fertilizer rate and there is no corresponding method factor or PSC, it will display an “E”.

Phosphorus Index

PART A: SCREENING TOOL CMU/Field ID	BM1 Corn Grain Fall 35' Stbk	BM1 Soybeans Spring 35' Stbk	BM1 Soybeans Fall 35' Stbk	BM2 Corn Grain Spring 35' Stbk	BM2 Corn Grain Fall 35' Stbk	BM2 Soybeans Spring 35' Stbk	BM2 Soybeans Fall 35' Stbk
Is the CMU in a Special Protection watershed?	No	No	No	No	No	No	No
A significant farm management change as defined by Act 38?	No	No	No	No	No	No	No
Soil Test Mehlich 3 P greater than 200 ppm P?	74	74	74	74	74	74	74
Contributing Distance from CMU to receiving water <150 ft.?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Is winter manure application planned for this field ?	No	No	No	No	No	No	No
Run P Index Part B voluntarily? (No to all Part A questions.)	No	No	No	No	No	No	No
PART B: SOURCE FACTORS: Mehlich 3 Soil Test P (ppm P)	74	74	74	74	74	74	74
Soil Test Rating = 0.20* Mehlich 3 Soil Test P (ppm P)	15	15	15	15	15	15	15
FERTILIZER P APPLIED REGARDLESS OF MANURE (Starter or other)	0	0	0	0	0	0	0
P INDEX APPLICATION METHOD OF FERTILIZER P APPLIED REGARGLESS OF MANURE[3]	-	-	-	-	-	-	-
SUPPLEMENTAL P FERTILIZER	0	0	0	0	0	0	0
P INDEX APPLICATION METHOD OF SUPPLEMENTAL P FERTILIZER[3]	-	-	-	-	-	-	-
Fertilizer Rating = Fertilizer Rate x Fertilizer Application Me	0	0	0	0	0	0	0
MANURE P RATE	87	58	58	87	87	58	58
MANURE APPLICATION METHOD[3]	0.8	0.6	0.8	0.6	0.8	0.6	0.8
P SOURCE COEFFICIENT[3]	0.62	0.62	0.62	0.62	0.62	0.62	0.62
Manure Rating = Manure Rate x Manure Application Metho	43	22	29	32	43	22	29
Source Factor Sum	58	37	44	47	58	37	44
PART B: TRANSPORT FACTORS EROSION	1.2	1.2	1.2	1.1	1.1	1.1	1.1
RUNOFF POTENTIAL	6	6	6	4	4	4	4
SUBSURFACE DRAINAGE	0	0	0	0	0	0	0
CONTRIBUTING DISTANCE	6	6	6	6	6	6	6
Transport Sum = Erosion + Runoff Potential + Subsurface	13	13	13	11	11	11	11
MODIFIED CONNECTIVITY	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Transport Sum x Modified Connectivity / 24	0.55	0.55	0.55	0.46	0.46	0.46	0.46
P Index Value = 2 x Source x Transport	**64**	**40**	**48**	**43**	**53**	**34**	**41**

Low: 59 or less
Nitrogen based management

1 OR rapidly permeable soil near a stream
2 "9" factor does not apply to fields receiving manure with a 35 ft. buffer.
3 Error Note: if there is a manure or fertilizer rate and there is no correspondi

Phosphorus Index

PART A: SCREENING TOOL CMU/Field ID	BM3 Corn Grain Spring 35' Stbk	BM3 Corn Grain Fall 35' Stbk	BM3 Soybeans Spring 35' Stbk	BM3 Soybeans Fall 35' Stbk	MellsSE1 Corn Grain Spring 35' Stbk	MellsSE1 Corn Grain Fall 35' Stbk	MellsSE1 Soybeans Spring 35' Stbk
Is the CMU in a Special Protection watershed?	No	No	No	No	No	No	No
A significant farm management change as defined by Act 38?	No	No	No	No	No	No	No
Soil Test Mehlich 3 P greater than 200 ppm P?	74	74	74	74	140	140	140
Contributing Distance from CMU to receiving water <150 ft.?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Is winter manure application planned for this field ?	No	No	No	No	No	No	No
Run P Index Part B voluntarily? (No to all Part A questions.)	No	No	No	No	No	No	No
PART B: SOURCE FACTORS: Mehlich 3 Soil Test P (ppm P)	74	74	74	74	140	140	140
Soil Test Rating = 0.20* Mehlich 3 Soil Test P (ppm P)	15	15	15	15	28	28	28
FERTILIZER P APPLIED REGARDLESS OF MANURE (Starter or other)	0	0	0	0	0	0	0
P INDEX APPLICATION METHOD OF FERTILIZER P APPLIED REGARGLESS OF MANURE[3]	-	-	-	-	-	-	-
SUPPLEMENTAL P FERTILIZER	0	0	0	0	0	0	0
P INDEX APPLICATION METHOD OF SUPPLEMENTAL P FERTILIZER[3]	-	-	-	-	-	-	-
Fertilizer Rating = Fertilizer Rate x Fertilizer Application Me	0	0	0	0	0	0	0
MANURE P RATE	87	87	58	58	87	87	58
MANURE APPLICATION METHOD[3]	0.6	0.8	0.6	0.8	0.6	0.8	0.6
P SOURCE COEFFICIENT[3]	0.62	0.62	0.62	0.62	0.62	0.62	0.62
Manure Rating = Manure Rate x Manure Application Metho	32	43	22	29	32	43	22
Source Factor Sum	47	58	37	44	60	71	50
PART B: TRANSPORT FACTORS EROSION	0.14	0.14	0.14	0.14	1.3	1.3	1.3
RUNOFF POTENTIAL	8	8	8	8	4	4	4
SUBSURFACE DRAINAGE	0	0	0	0	0	0	0
CONTRIBUTING DISTANCE	6	6	6	6	6	6	6
Transport Sum = Erosion + Runoff Potential + Subsurface	14	14	14	14	11	11	11
MODIFIED CONNECTIVITY	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Transport Sum x Modified Connectivity / 24	0.59	0.59	0.59	0.59	0.47	0.47	0.47
P Index Value = 2 x Source x Transport	**55**	**68**	**43**	**52**	**57**	**67**	**47**

Low: 59 or less
Nitrogen based management

1 OR rapidly permeable soil near a stream
2 "9" factor does not apply to fields receiving manure with a 35 ft. buffer.
3 Error Note: if there is a manure or fertilizer rate and there is no correspondi

Phosphorus Index

PART A: SCREENING TOOL CMU/Field ID	MellsSE1 Soybeans Fall 35' Stbk	MellsSE2 Corn Grain Spring 35' Stbk	MellsSE2 Corn Grain Fall 35' Stbk	MellsSE2 Soybeans Spring 35' Stbk	MellsSE2 Soybeans Fall 35' Stbk	MellsNE Corn Grain Spring 35' Stbk	MellsNE Corn Grain Fall 35' Stbk
Is the CMU in a Special Protection watershed?	No	No	No	No	No	No	No
A significant farm management change as defined by Act 38?	No	No	No	No	No	No	No
Soil Test Mehlich 3 P greater than 200 ppm P?	140	140	140	140	140	121	121
Contributing Distance from CMU to receiving water <150 ft.?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Is winter manure application planned for this field ?	No	No	No	No	No	No	No
Run P Index Part B voluntarily? (No to all Part A questions.)	No	No	No	No	No	No	No
PART B: SOURCE FACTORS: Mehlich 3 Soil Test P (ppm P)	140	140	140	140	140	121	121
Soil Test Rating = 0.20* Mehlich 3 Soil Test P (ppm P)	28	28	28	28	28	24	24
FERTILIZER P APPLIED REGARDLESS OF MANURE (Starter or other)	0	0	0	0	0	0	0
P INDEX APPLICATION METHOD OF FERTILIZER P APPLIED REGARGLESS OF MANURE[3]	-	-	-	-	-	-	-
SUPPLEMENTAL P FERTILIZER	0	0	0	0	0	0	0
P INDEX APPLICATION METHOD OF SUPPLEMENTAL P FERTILIZER[3]	-	-	-	-	-	-	-
Fertilizer Rating = Fertilizer Rate x Fertilizer Application Me	0	0	0	0	0	0	0
MANURE P RATE	58	87	87	58	58	87	87
MANURE APPLICATION METHOD[3]	0.8	0.6	0.8	0.6	0.8	0.6	0.8
P SOURCE COEFFICIENT[3]	0.62	0.62	0.62	0.62	0.62	0.62	0.62
Manure Rating = Manure Rate x Manure Application Metho	29	32	43	22	29	32	43
Source Factor Sum	57	60	71	50	57	56	67
PART B: TRANSPORT FACTORS EROSION	1.3	1.5	1.5	1.5	1.5	2	2
RUNOFF POTENTIAL	4	4	4	4	4	4	4
SUBSURFACE DRAINAGE	0	0	0	0	0	0	0
CONTRIBUTING DISTANCE	6	6	6	6	6	6	6
Transport Sum = Erosion + Runoff Potential + Subsurface	11	12	12	12	12	12	12
MODIFIED CONNECTIVITY	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Transport Sum x Modified Connectivity / 24	0.47	0.48	0.48	0.48	0.48	0.50	0.50
P Index Value = 2 x Source x Transport	**54**	**58**	**68**	**48**	**55**	**56**	**67**

Low: 59 or less
Nitrogen based management

1 OR rapidly permeable soil near a stream
2 "9" factor does not apply to fields receiving manure with a 35 ft. buffer.
3 Error Note: if there is a manure or fertilizer rate and there is no correspondi

Phosphorus Index

PART A: SCREENING TOOL CMU/Field ID	MellsNE Soybeans Spring 35' Stbk	MellsNE Soybeans Fall 35' Stbk	SW3 Corn Grain Spring 35' Stbk	SW3 Corn Grain Fall 35' Stbk	SW3 Soybeans Spring 35' Stbk	SW3 Soybeans Fall 35' Stbk	SW4 Corn Grain Spring 35' Stbk
Is the CMU in a Special Protection watershed?	**No**	**No**	**No**	**No**	**No**	**No**	**No**
A significant farm management change as defined by Act 38?	**No**	**No**	**No**	**No**	**No**	**No**	**No**
Soil Test Mehlich 3 P greater than 200 ppm P?	**121**	**121**	**97**	**97**	**97**	**97**	**106**
Contributing Distance from CMU to receiving water <150 ft.?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Is winter manure application planned for this field ?	**No**	**No**	**No**	**No**	**No**	**No**	**No**
Run P Index Part B voluntarily? (No to all Part A questions.)	**No**	**No**	**No**	**No**	**No**	**No**	**No**
PART B: SOURCE FACTORS: Mehlich 3 Soil Test P (ppm P)	121	121	97	97	97	97	106
Soil Test Rating = 0.20* Mehlich 3 Soil Test P (ppm P)	24	24	19	19	19	19	21
FERTILIZER P APPLIED REGARDLESS OF MANURE (Starter or other)	0	0	0	0	0	0	0
P INDEX APPLICATION METHOD OF FERTILIZER P APPLIED REGARGLESS OF MANURE[3]	-	-	-	-	-	-	-
SUPPLEMENTAL P FERTILIZER	0	0	0	0	0	0	0
P INDEX APPLICATION METHOD OF SUPPLEMENTAL P FERTILIZER[3]	-	-	-	-	-	-	-
Fertilizer Rating = Fertilizer Rate x Fertilizer Application Me	0	0	0	0	0	0	0
MANURE P RATE	58	58	87	87	58	58	87
MANURE APPLICATION METHOD[3]	0.6	0.8	0.6	0.8	0.6	0.8	0.6
P SOURCE COEFFICIENT[3]	0.62	0.62	0.62	0.62	0.62	0.62	0.62
Manure Rating = Manure Rate x Manure Application Metho	22	29	32	43	22	29	32
Source Factor Sum	46	53	51	62	41	48	53
PART B: TRANSPORT FACTORS EROSION	2	2	1.3	1.3	1.3	1.3	1.3
RUNOFF POTENTIAL	4	4	2	2	2	2	4
SUBSURFACE DRAINAGE	0	0	0	0	0	0	0
CONTRIBUTING DISTANCE	6	6	6	6	6	6	6
Transport Sum = Erosion + Runoff Potential + Subsurface	12	12	9	9	9	9	11
MODIFIED CONNECTIVITY	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Transport Sum x Modified Connectivity / 24	0.50	0.50	0.39	0.39	0.39	0.39	0.47
P Index Value = 2 x Source x Transport	**46**	**53**	**40**	**48**	**32**	**38**	**50**

Low: 59 or less
Nitrogen based management

1 OR rapidly permeable soil near a stream
2 "9" factor does not apply to fields receiving manure with a 35 ft. buffer.
3 Error Note: if there is a manure or fertilizer rate and there is no correspondi

Phosphorus Index

PART A: SCREENING TOOL CMU/Field ID	SW4 Corn Grain Fall 35' Stbk	SW4 Soybeans Spring 35' Stbk	SW4 Soybeans Fall 35' Stbk	BSun1 Corn Grain Winter	BSun1 Soybeans Winter	Butcher4 Corn Grain Winter	Butcher4 Soybeans Winter
Is the CMU in a Special Protection watershed?	No	No	No	No	No	No	No
A significant farm management change as defined by Act 38?	No	No	No	No	No	No	No
Soil Test Mehlich 3 P greater than 200 ppm P?	106	106	106	113	113	154	154
Contributing Distance from CMU to receiving water <150 ft.?	Yes	Yes	Yes	No	No	No	No
Is winter manure application planned for this field ?	No	No	No	Yes	Yes	Yes	Yes
Run P Index Part B voluntarily? (No to all Part A questions.)	No	No	No	No	No	No	No
PART B: SOURCE FACTORS: Mehlich 3 Soil Test P (ppm P)	106	106	106	113	113	154	154
Soil Test Rating = 0.20* Mehlich 3 Soil Test P (ppm P)	21	21	21	23	23	31	31
FERTILIZER P APPLIED REGARDLESS OF MANURE (Starter or other)	0	0	0	0	0	0	0
P INDEX APPLICATION METHOD OF FERTILIZER P APPLIED REGARGLESS OF MANURE[3]	-	-	-	-	-	-	-
SUPPLEMENTAL P FERTILIZER	0	0	0	0	0	0	0
P INDEX APPLICATION METHOD OF SUPPLEMENTAL P FERTILIZER[3]	-	-	-	-	-	-	-
Fertilizer Rating = Fertilizer Rate x Fertilizer Application Me	0	0	0	0	0	0	0
MANURE P RATE	87	58	58	87	58	87	58
MANURE APPLICATION METHOD[3]	0.8	0.6	0.8	1	1	1	1
P SOURCE COEFFICIENT[3]	0.62	0.62	0.62	0.62	0.62	0.62	0.62
Manure Rating = Manure Rate x Manure Application Metho	43	22	29	54	36	54	36
Source Factor Sum	64	43	50	77	59	85	67
PART B: TRANSPORT FACTORS EROSION	1.3	1.3	1.3	1.3	1.3	0.81	0.81
RUNOFF POTENTIAL	4	4	4	4	4	4	4
SUBSURFACE DRAINAGE	0	0	0	0	0	0	0
CONTRIBUTING DISTANCE	6	6	6	0	0	2	2
Transport Sum = Erosion + Runoff Potential + Subsurface	11	11	11	5	5	7	7
MODIFIED CONNECTIVITY	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Transport Sum x Modified Connectivity / 24	0.47	0.47	0.47	0.22	0.22	0.28	0.28
P Index Value = 2 x Source x Transport	**60**	**41**	**47**	**34**	**26**	**48**	**38**

Low: 59 or less
Nitrogen based management

1 OR rapidly permeable soil near a stream
2 "9" factor does not apply to fields receiving manure with a 35 ft. buffer.
3 Error Note: if there is a manure or fertilizer rate and there is no correspondi

Phosphorus Index

PART A: SCREENING TOOL CMU/Field ID	Turkey1 Corn Grain Winter	Turkey1 Soybeans Winter
Is the CMU in a Special Protection watershed?	**No**	**No**
A significant farm management change as defined by Act 38?	**No**	**No**
Soil Test Mehlich 3 P greater than 200 ppm P?	**163**	**163**
Contributing Distance from CMU to receiving water <150 ft.?	**No**	**No**
Is winter manure application planned for this field ?	**Yes**	**Yes**
Run P Index Part B voluntarily? (No to all Part A questions.)	**No**	**No**
PART B: SOURCE FACTORS: Mehlich 3 Soil Test P (ppm P)	163	163
Soil Test Rating = 0.20* Mehlich 3 Soil Test P (ppm P)	33	33
FERTILIZER P APPLIED REGARDLESS OF MANURE (Starter or other)	0	0
P INDEX APPLICATION METHOD OF FERTILIZER P APPLIED REGARGLESS OF MANURE[3]	-	-
SUPPLEMENTAL P FERTILIZER	0	0
P INDEX APPLICATION METHOD OF SUPPLEMENTAL P FERTILIZER[3]	-	-
Fertilizer Rating = Fertilizer Rate x Fertilizer Application Me	0	0
MANURE P RATE	87	58
MANURE APPLICATION METHOD[3]	1	1
P SOURCE COEFFICIENT[3]	0.62	0.62
Manure Rating = Manure Rate x Manure Application Metho	54	36
Source Factor Sum	87	69
PART B: TRANSPORT FACTORS EROSION	0.84	0.84
RUNOFF POTENTIAL	4	4
SUBSURFACE DRAINAGE	0	0
CONTRIBUTING DISTANCE	2	2
Transport Sum = Erosion + Runoff Potential + Subsurface	7	7
MODIFIED CONNECTIVITY	1.0	1.0
Transport Sum x Modified Connectivity / 24	0.29	0.29
P Index Value = 2 x Source x Transport	**49**	**39**

Low: 59 or less
Nitrogen based management

1 OR rapidly permeable soil near a stream
2 "9" factor does not apply to fields receiving manure with a 35 ft. buffer.
3 Error Note: if there is a manure or fertilizer rate and there is no correspondi

PA Technical Manual Supplement 10:
Winter Manure Application Matrix

Go to NBS Index

Go to NBS Input

User Notes for the Winter Manure Application Matrix

1. Under Act 38, any one of the following conditions meets the "winter" definition - see §83.201.
   - December 15 to February 28
   - Frozen ground (4 inch depth)
   - Snow-covered ground
2. All setbacks including those specific to winter manure application must be followed - see §83.294 (f) and (g).
   - No winter manure application within 100 ft. of an above ground agricultural drainage inlet where surface flow is toward the inlet.
   - No winter manure application within 100 ft. of a wetland (identified on National Wetland Inventory Maps) within the 100 year floodplain of an Exceptional Value stream segment if surface flow is toward the wetland.
3. Fields receiving winter manure applications must have 25% cover or an established cover crop - see §83.294 (g).

Verify the CMU meets the required cover conditions described in User Note 3.

CMU/Field ID				**CMU/Field ID**	**BSun1 Corn Grain Winter**	**BSun1 Soybeans Winter**
Does the CMU have 25% cover or an established cover crop?				Does the CMU have 25% cover or an established cover crop?	Yes	Yes
Evaluation Criteria	**Evaluation Criteria Descriptions and Ranking Values** 4	3	2[b]	1[c]		
Field Slope	< 4 %	4 - 8%	9 - 15%	> 15%	3	3
Distance from Water Bodies[a] Determined using Phosphorus Index Contributing Distance	> 350 ft.	350 - 200 ft	199 - 100 ft	<100 ft	4	4
Drainage Class Determined using Phosphorus Index Runoff Potential	Somewhat Excessively OR Excessively	Well OR Moderately Well	Somewhat Poorly	Poorly OR Very Poorly	3	3
Runoff Control	Recommended conservation practices are in place. **Very low potential for concentrated flow.**	Some conservation practices are in place. **Low potential for concentrated flow.**	Some conservation practices are in place. **Moderate potential for concentrated flow.**	No conservation practices are in place. **High potential for concentrated flow.**	4	4
					14	14
					Good	Good

[a] Includes Perennial and Intermittent streams with defined bed and bank, Lakes, Ponds, Open sinkholes, and Active private and public water sources.
[b] If a field receives a rating of "2" in any two categories the field is not recommended for winter application regardless of the final field Ranking Value.
[c] If a field receives a rating of "1" in any one category the field is not recommended for winter application regardless of the final field Ranking Value.

Recommended Winter Manure Application Prioritization		
Ranking Value - Category	*Ranking Category*	*Recommendation for Winter Manure Spreading Prioritization*
Greater than 12 - Good	Good	These fields should receive first priority for winter manure application.
8 to 12 - Fair	Fair	These fields should receive second priority for winter manure application.
Less than 8 - Poor	Poor	These fields are not recommended for winter manure application.

PA Technical Manual Supplement 10:
Winter Manure Application Matrix

User Notes for the Winter Manure Application Matrix

1. Under Act 38, any one of the following conditions me
   - December 15 to February 28
   - Frozen ground (4 inch depth)
   - Snow-covered ground

2. All setbacks including those specific to winter manure
   - No winter manure application within 100 ft. of an abo
   - No winter manure application within 100 ft. of a wetl
   Exceptional Value stream segment if surface flow is to

3. Fields receiving winter manure applications must hav

Verify the CMU meets the required cover conditions described in User Note 3.

CMU/Field ID	Butcher4 Corn Grain Winter	Butcher4 Soybeans Winter	Turkey1 Corn Grain Winter	Turkey1 Soybeans Winter
Does the CMU have 25% cover or an established cover crop?	Yes	Yes	Yes	Yes
Evaluation Criteria				
Field Slope	3	3	3	3
Distance from Water Bodies[a] Determined using Phosphorus Index Contributing Distance	4	4	4	4
Drainage Class Determined using Phosphorus Index Runoff Potential	3	3	3	3
Runoff Control	4	4	4	4
[a] Includes Perennial and Intermittent streams with defined bed and b	14	14	14	14
[b] If a field receives a rating of "2" in any two categories the field is no	Good	Good	Good	Good

[c] If a field receives a rating of "1" in any one category the field is not

Recommended Winter Manure Application Prioritization
Ranking Value - Category
Greater than 12 - Good
8 to 12 - Fair
Less than 8 - Poor

Manure Group Information

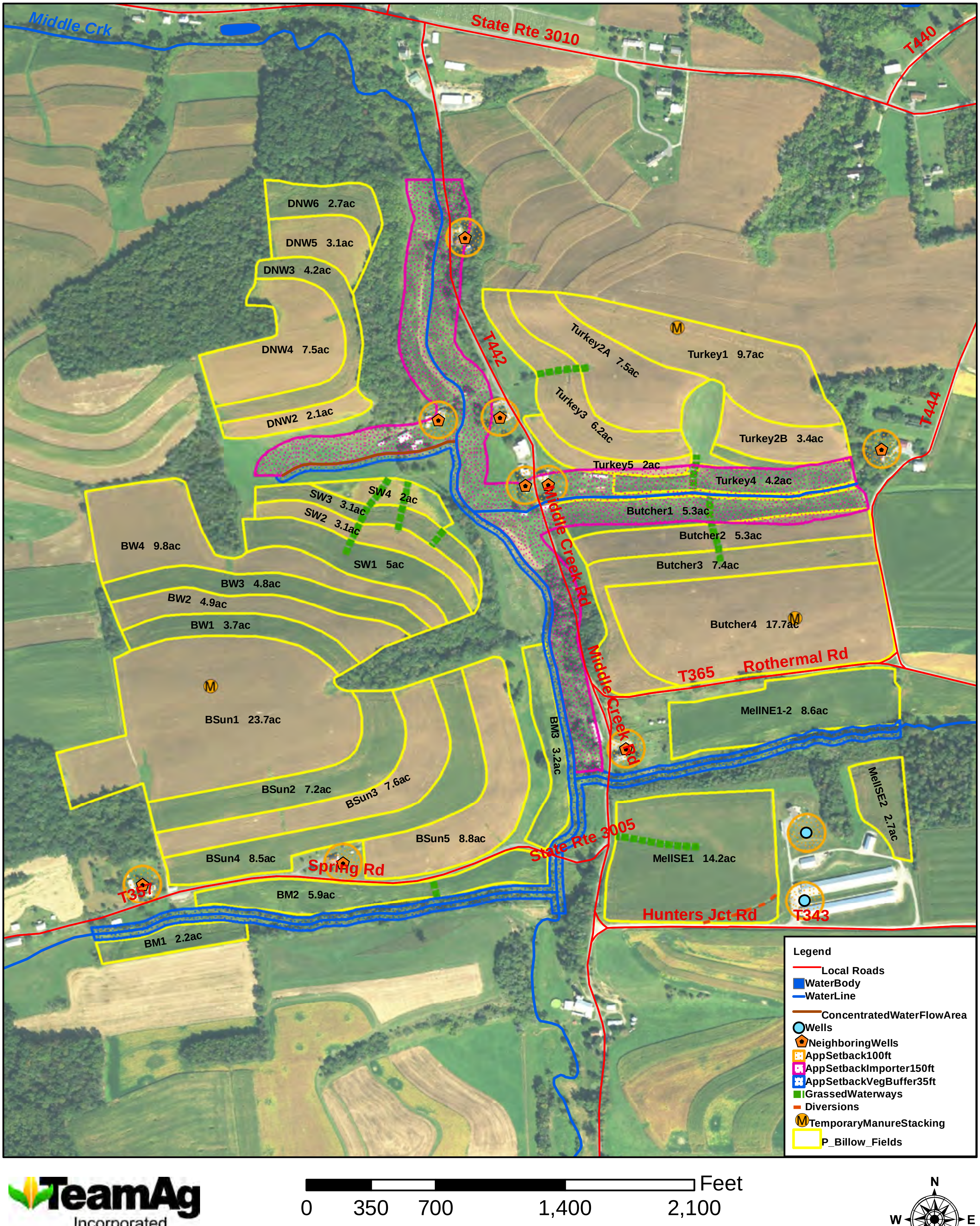
Appendix 3 Manure Group Information	Broiler Manure
Manure Report Date (note if averaging several reports)	December 26, 2018
Laboratory Name	Spectrum Analytic, Inc.
Manure Type	Poultry
Manure Unit (lbs/ton or 1000 gal)	lb/ton
Total Nitrogen (N) (lbs/ton or 1000 gal)	43.37
Ammonium N (NH_4-N) (lbs/ton or 1000 gal)	10.46
Total Organic N (lbs/ton or 1000 gal)	32.91
Total Phosphate (P_2O_5) (lbs/ton or 1000 gal)	28.84
Total Potash (K_2O) (lbs/ton or 1000 gal)	29.06
Percent Solids	59.87
PSC Value (analytical or book value)	0.62

Appendix 1

Operation Maps

Maps (or aerial photographs) required in Nutrient Balance Sheets must identify: road and road names adjacent to and within the operation; field identification, boundaries and acreage; manure application setback areas and vegetated buffers and associated landscape features (streams and other water bodies, sinkholes, and active water wells or springs); and location of in-field manure stacking areas (including each site in stacking area rotation).

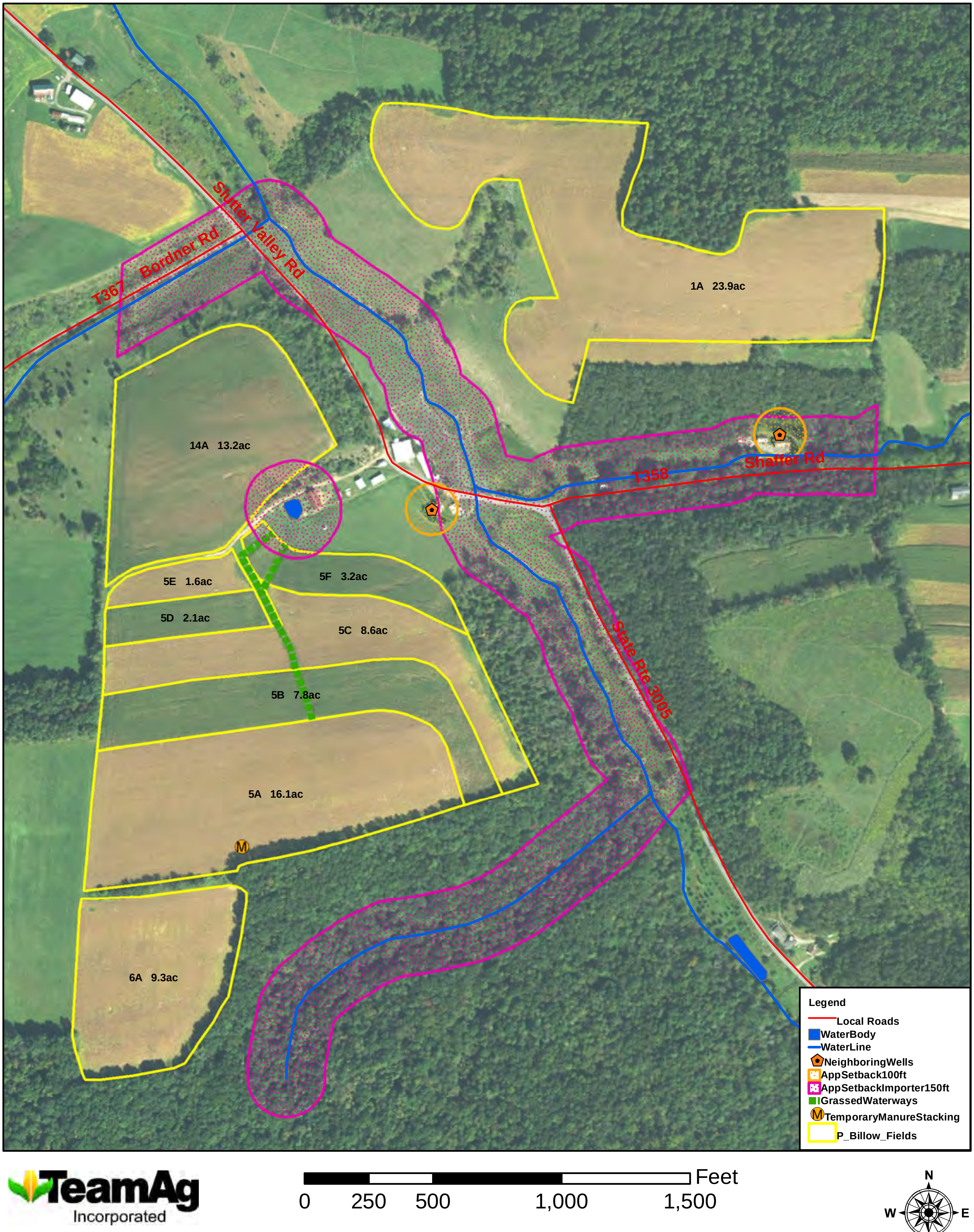
Paul Billow NBS Field Map



TeamAg Incorporated

Field verification of application setbacks and buffers is required prior to land application of manure.

Paul Billow NBS Field Map



TeamAg Incorporated

Field verification of application setbacks and buffers is required prior to land application of manure.

Appendix 9
Operation Maps

Three types of maps are required for an Act 38 Nutrient Management Plan: 1) Topographic Map, 2) Soils Map, and 3) Operator Management Map. The **Topographic Map and Soils Map** must be included here. The Topographic map must be drawn to scale and identify the land included in the plan with operation boundaries. The Soils Map must include the field identification and boundaries, soil types and slopes with soil legend. Adding P Index lines can be helpful on the Topographic or Soils map but are not required. The Operator Management Map must be included in the Nutrient Management Plan Summary.

Burnell & Sharon Nolt Topographic Map

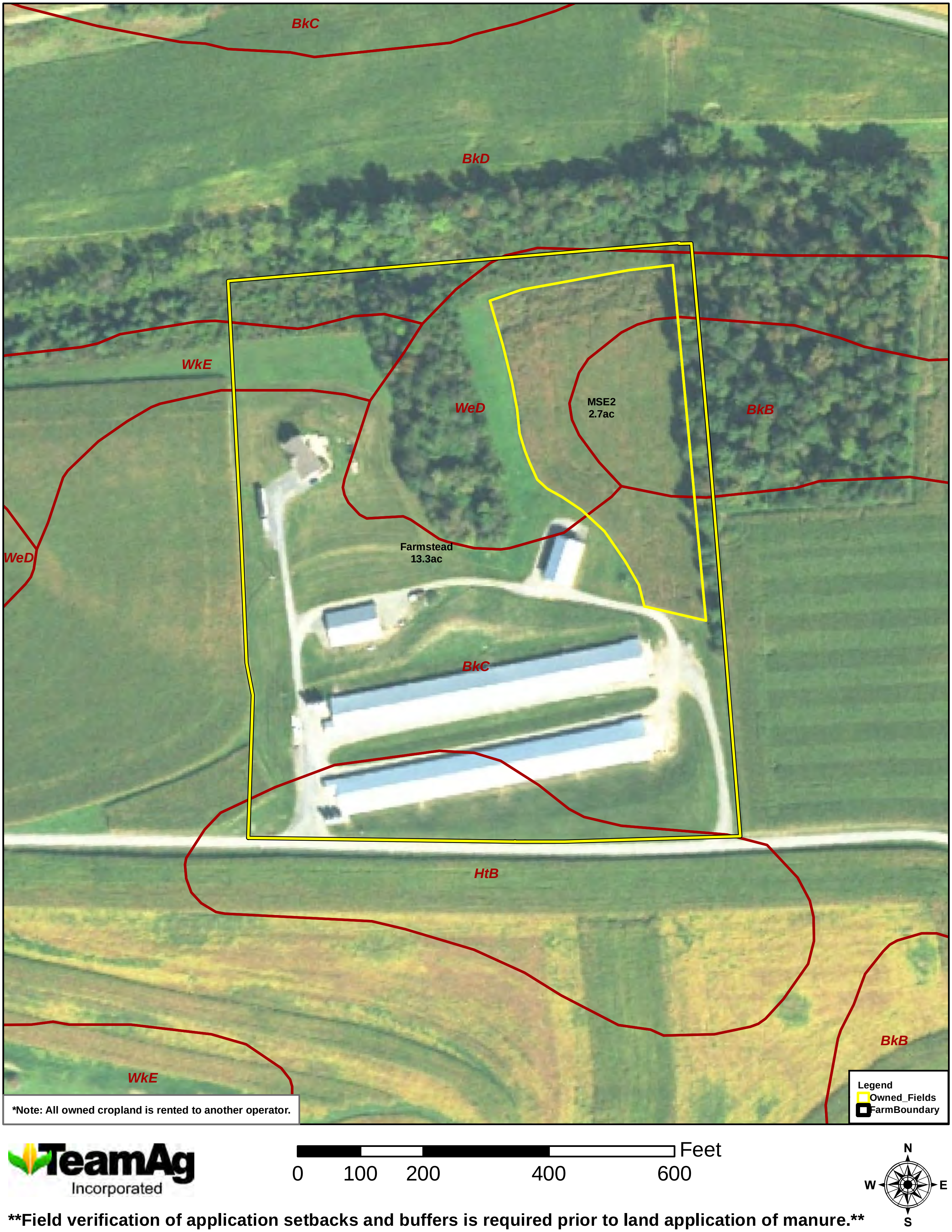
TeamAg Incorporated

Feet
0 350 700 1,400 2,100

N W E S

****Field verification of application setbacks and buffers is required prior to land application of manure.****

Burnell & Sharon Nolt Soils Map



Field verification of application setbacks and buffers is required prior to land application of manure.

Northumberland County Soils Legend

AbB	ALBRIGHTS SILT LOAM, 3 TO 8 PERCENT SLOPES
AnA	ALLENWOOD GRAVELLY SILT LOAM, 0 TO 3 PERCENT SLOPES
AnD	ALLENWOOD GRAVELLY SILT LOAM, 15 TO 25 PERCENT SLOPES
AoB	ALLENWOOD AND WASHINGTON SOILS, 3 TO 8 PERCENT SLOPES
AoC	ALLENWOOD AND WASHINGTON SOILS, 8 TO 15 PERCENT SLOPES
ArA	ALVIRA SILT LOAM, 0 TO 3 PERCENT SLOPES
ArB	ALVIRA SILT LOAM, 3 TO 8 PERCENT SLOPES
ArC	ALVIRA SILT LOAM, 8 TO 15 PERCENT SLOPES
AsB	ALVIRA VERY STONY SILT LOAM, 0 TO 8 PERCENT SLOPES
Ba	BARBOUR SOILS, FREQUENTLY FLOODED
Bb	BARBOUR-LINDEN COMPLEX, RARELY FLOODED
Bc	BASHER SOILS
Bd	BASHER SOILS, FREQUENTLY FLOODED
BeB	BEDINGTON SILT LOAM, 3 TO 8 PERCENT SLOPES
BeC	BEDINGTON SILT LOAM, 8 TO 15 PERCENT SLOPES
BeD	BEDINGTON SILT LOAM, 15 TO 25 PERCENT SLOPES
BkB	BERKS SHALY SILT LOAM, 3 TO 8 PERCENT SLOPES
BkC	BERKS SHALY SILT LOAM, 8 TO 15 PERCENT SLOPES
BkD	BERKS SHALY SILT LOAM, 15 TO 25 PERCENT SLOPES
BuB	BUCHANAN GRAVELLY LOAM, 3 TO 8 PERCENT SLOPES
BuC	BUCHANAN GRAVELLY LOAM, 8 TO 15 PERCENT SLOPES
BxB	BUCHANAN VERY STONY LOAM, 0 TO 8 PERCENT SLOPES
BxD	BUCHANAN VERY STONY LOAM, 8 TO 25 PERCENT SLOPES
CaB	CALVIN-KLINESVILLE SHALY SILT LOAMS, 3 TO 8 PERCENT SLOPES
CaC	CALVIN-KLINESVILLE SHALY SILT LOAMS, 8 TO 15 PERCENT SLOPES
CaD	CALVIN-KLINESVILLE SHALY SILT LOAMS, 15 TO 25 PERCENT SLOPES
DAM	DAMS
DeB	DEKALB EXTREMELY STONY SANDY LOAM, 0 TO 8 PERCENT SLOPES
DeD	DEKALB EXTREMELY STONY SANDY LOAM, 8 TO 25 PERCENT SLOPES
DeF	DEKALB EXTREMELY STONY SANDY LOAM, STEEP
Du	DUMPS, MINE
Dy	DYSTROCHREPTS, BOULDERY
EdB	EDOM COMPLEX, 3 TO 8 PERCENT SLOPES
EdC	EDOM COMPLEX, 8 TO 15 PERCENT SLOPES
EdD	EDOM COMPLEX, 15 TO 25 PERCENT SLOPES
EsB	ELLIBER CHERTY SILT LOAM, 3 TO 8 PERCENT SLOPES
EsC	ELLIBER CHERTY SILT LOAM, 8 TO 15 PERCENT SLOPES
EsD	ELLIBER CHERTY SILT LOAM, 15 TO 25 PERCENT SLOPES
EtB	ELLIBER VERY CHERTY SILT LOAM, 3 TO 8 PERCENT SLOPES
EtC	ELLIBER VERY CHERTY SILT LOAM, 8 TO 15 PERCENT SLOPES
EtD	ELLIBER VERY CHERTY SILT LOAM, 15 TO 25 PERCENT SLOPES
EtF	ELLIBER VERY CHERTY SILT LOAM, 25 TO 70 PERCENT SLOPES
EvB	EVENDALE CHERTY SILT LOAM, 3 TO 8 PERCENT SLOPES
HaB	HAGERSTOWN SILT LOAM, 3 TO 8 PERCENT SLOPES
HaC	HAGERSTOWN SILT LOAM, 8 TO 15 PERCENT SLOPES
HaD	HAGERSTOWN SILT LOAM, 15 TO 25 PERCENT SLOPES
HtB	HARTLETON CHANNERY SILT LOAM, 3 TO 8 PERCENT SLOPES
HtC	HARTLETON CHANNERY SILT LOAM, 8 TO 15 PERCENT
HtD	HARTLETON CHANNERY SILT LOAM, 15 TO 25 PERCENT SLOPES
HuB	HAZLETON AND CLYMER EXTREMELY STONY SANDY LOAMS, 0 TO 8 PERCENT SLOPES
HuD	HAZLETON AND CLYMER EXTREMELY STONY SANDY LOAMS, 8 TO 25 PERCENT SLOPES
HuF	HAZLETON AND CLYMER EXTREMELY STONY SANDY LOAMS, 25 TO 80 PERCENT SLOPES
Hv	HOLLY SILT LOAM
Hy	HOLLY SILT LOAM, PONDED
Hz	HOLLY SILT LOAM, RARELY FLOODED
KmB	KREAMER CHERTY SILT LOAM, 3 TO 8 PERCENT SLOPES
KmC	KREAMER CHERTY SILT LOAM, 8 TO 15 PERCENT SLOPES
LaB	LAIDIG GRAVELLY LOAM, 3 TO 8 PERCENT SLOPES
LaC	LAIDIG GRAVELLY LOAM, 8 TO 15 PERCENT SLOPES
LbB	LAIDIG EXTREMELY STONY LOAM, 0 TO 8 PERCENT SLOPES
LdD	LAIDIG AND MECKESVILLE EXTREMELY STONY SOILS, 8 TO 25 PERCENT SLOPES
LdF	LAIDIG AND MECKESVILLE EXTREMELY STONY SOILS, STEEP
LkB	LAKIN LOAMY FINE SAND, 3 TO 8 PERCENT SLOPES
LkC	LAKIN LOAMY FINE SAND, 8 TO 15 PERCENT SLOPES
LnB	LECK KILL SHALY SILT LOAM, 3 TO 8 PERCENT SLOPES
LnC	LECK KILL SHALY SILT LOAM, 8 TO 15 PERCENT SLOPES
LnD	LECK KILL SHALY SILT LOAM, 15 TO 25 PERCENT SLOPES
Lw	LINDEN SILT LOAM
MkB	MECKESVILLE SILT LOAM, 3 TO 8 PERCENT SLOPES
MkC	MECKESVILLE SILT LOAM, 8 TO 15 PERCENT SLOPES
MkD	MECKESVILLE SILT LOAM, 15 TO 25 PERCENT SLOPES
MoA	MONONGAHELA SILT LOAM, 0 TO 3 PERCENT SLOPES
MoB	MONONGAHELA SILT LOAM, 3 TO 8 PERCENT SLOPES
OpB	OPEQUON SILTY CLAY LOAM, 3 TO 8 PERCENT SLOPES
OpD	OPEQUON SILTY CLAY LOAM, 8 TO 25 PERCENT SLOPES
OpE	OPEQUON SILTY CLAY LOAM, 25 TO 50 PERCENT SLOPES
Pa	PITS
Qu	QUARRIES
RwB	RUSHTOWN VERY SHALY SILT LOAM, 3 TO 8 PERCENT SLOPES
RwC	RUSHTOWN VERY SHALY SILT LOAM, 8 TO 25 PERCENT SLOPES
ShA	SHELMADINE SILT LOAM, 0 TO 3 PERCENT SLOPES
ShB	SHELMADINE SILT LOAM, 3 TO 8 PERCENT SLOPES
SmB	SHELMADINE VERY STONY SILT LOAM, 0 TO 8 PERCENT SLOPES
Uf	UDIFLUVENTS, COAL OVERWASH
Ug	UDIFLUVENTS AND FLUVAQUENTS, GRAVELLY
Uh	UDORTHENTS, SANDSTONE AND SHALE
UnB	UNADILLA SILT LOAM, 3 TO 8 PERCENT SLOPES
UnC	UNADILLA SILT LOAM, 8 TO 15 PERCENT SLOPES
UnD	UNADILLA SILT LOAM, 15 TO 25 PERCENT SLOPES
Ur	URBAN LAND
W	WATER
WaB	WASHINGTON SILT LOAM, WET SUBSTRATUM, 3 TO 8 PERCENT SLOPES
WbA	WATSON SILT LOAM, 0 TO 3 PERCENT SLOPES
WbB	WATSON SILT LOAM, 3 TO 8 PERCENT SLOPES
WbC	WATSON SILT LOAM, 8 TO 15 PERCENT SLOPES
WeB	WEIKERT SHALY SILT LOAM, 3 TO 8 PERCENT SLOPES
WeC	WEIKERT SHALY SILT LOAM, 8 TO 15 PERCENT SLOPES
WeD	WEIKERT SHALY SILT LOAM, 15 TO 25 PERCENT SLOPES
WkE	WEIKERT AND KLINESVILLE SHALY SILT LOAMS, STEEP
WsA	WHEELING SOILS, 0 TO 3 PERCENT SLOPES
WsB	WHEELING SOILS, 3 TO 8 PERCENT SLOPES
WsC	WHEELING SOILS, 8 TO 15 PERCENT SLOPES
WyA	WYOMING GRAVELLY SANDY LOAM, 0 TO 3 PERCENT SLOPES
WyB	WYOMING GRAVELLY SANDY LOAM, 3 TO 8 PERCENT SLOPES

Supporting Information & Documentation

Includes if applicable the Rainfall Additions Worksheet, Winter Application Matrix, Residual N Calculation Worksheet and other supplemental worksheets included in the NMP Spreadsheet. Attach information and documentation necessary to support plan content not included elsewhere in the NMP Spreadsheet or appendices. Examples include, but are not limited to, documentation of animal weights if Agronomy Facts 54 is not used, bedding calculations, or calculations for irrigation rates.

Emergency Response Plan

If an emergency spill should occur you need to take the following actions:

1) **Ensure that you and other people are safe. If the spill involves a public road:**
   a. Contact the police for traffic control: *State Police - 911*
   b. Use flares, safety cones, etc. to warn approaching motorists

2) **Stop the source of the spill:**
   a. If the spill occurs while emptying the barn / storage:
      i. Stop removal of manure from the structure
      ii. Take measures to ensure that the spilled solid manure is not entering surface water
   b. If the spill happens while on the road:
      i. Pull off to the side of the road
      ii. Plug the leak or otherwise stop the flow of manure from the spreader
      iii. Take measures to keep manure from entering into streams, ditches, etc.
      iv. Call the police for traffic control: *State Police – 911*

3) **Contain and control the spill:**
   a. Build a containment area to capture and aid in collecting the manure using soil, gravel, hay bales, etc. Limit the area in contact with manure. Local individuals with access to excavation and manure hauling equipment are:
      i. *Paul Billow – 570-850-9512*
      ii. *Stacy Snyder – 570-850-3752*

   b. If necessary, locate an emergency field stacking areas using the following guidelines:
      i. Stacked piles should be stacked in a cone or windrow shape so as to shed rainwater. This shape limitation would not be necessary if, upon stacking, the stack will be covered with an impermeable cover.
      ii. Stacks should be setback 100 feet from streams (intermittent and perennial), lakes, ponds, open existing sinkholes, and active water wells.
      iii. Stacks should not be located in water concentration areas, such as a swale, ditch, or waterway.
      iv. Stacks should not be located on areas that have excessively drained soils. This limitation would not be necessary if, upon stacking, the stack will be covered with an impermeable cover.
      v. Stacks should not be located within 3 feet of the seasonal high water table.
      vi. Stacks should not be located above subsurface drain tiles. This limitation would not be necessary if, upon stacking, the stack will be covered with an impermeable cover.
      vii. Stacking sites should not have a slope of greater than 8%.

4) **Notify the proper authorities:**
   Pennsylvania Department of Environmental Protection Emergency Response – 570-327-3636
   Northumberland County Conservation District – 570-495-4665
   PA Fish & Boat Commission Southeast Regional Office – 814-359-5250
   TeamAg, Inc. Nutrient Management Specialist – 570-764-7003

   a. Make a record of the details of the spill and the actions you took to remedy the situation. Take pictures of the extent of the spill as well as your containment and cleanup practices.

   b. If a spill enters a sinkhole or otherwise has the potential to enter groundwater, notify adjacent landowners who use private wells for their water supply.

5) **Clean up the spill:**
   a. Clean up procedures may be directed by the authorities listed above.
   b. Pick up absorbent materials (if required) you used and properly dispose of the material.
   c. Restore damaged areas if necessary.

Nutrient Management Plan

NON-FINAL FORM
Version 1.0
NMP may be revised prior to a formal action by the Conservation District Board. The final form of the plan will be available at least 7 days prior to Board action. You may contact the Conservation District to determine the current status of the NMP
January 28, 2019
Month, Day and Year

For Crop Year(s)

2020 2021 2022

Prepared For

Operator's Name, Mailing Address, Telephone Number(s)

Burnell & Sharon Nolt, 197 Hunters Junction Road, Dornsife, PA 17823
717-821-0537

Operation's Location Address (if different than above)

Same

FINAL FORM
This version ... considered for action by the ~~Conservation District Board~~ SCC at the March 12, 2019 meeting
January 28, 2019
MONTH, DAY AND YEAR

Site Name (CAFOs)

N/A

Prepared By

Nutrient Management Specialist's Name, Address, Telephone Number(s)

Todd C. Rush, TeamAg, Inc., 120 Lake Street, Ephrata, PA 17522
570-764-7003

Nutrient Management Specialist's Program Certification Number

#988-NMC

Administratively Complete Date

January 28, 2019

Plan Approval Date

Plan Update Submission Date(s)

(updates to the approved plan not requiring board action)

TeamAg Incorporated

COMMONWEALTH OF PENNSYLVANIA
STATE CONSERVATION COMMISSION

DATE: February 20, 2019

TO: State Conservation Commission Members

FROM: Frank X. Schneider
Director, Nutrient and Odor Management Programs

THROUGH: Karl G. Brown
Executive Secretary, State Conservation Commission

REFERENCE: Nutrient Balance Sheet – Phosphorus Planning

The State Conservation Commission (SCC) and the Pennsylvania State University (PSU) reviewed how Phosphorus is planned, handled, and managed in Act 38 Nutrient Balance Sheets (NBS).

The SCC and PSU briefed the Nutrient Management Advisory Board (NMAB) at their August 16, 2018 meeting on two topics and possible changes that include:

1. Removal of Phosphorus Banking in Option 1 (Phosphorus Removal) of the NBS.
2. Planning Options for Option 3 (Phosphorus Index) in the NBS.

The SCC and PSU hosted a webinar on September 12, 2018 to introduce the topic to the planning and review community. At the conclusion of the webinar, the SCC opened a comment period on the two topics addressed above. The comment period ended November 16, 2018.

On October 30, 2018, the NMAB had a subcommittee meeting to discuss the two topics presented. A total of 24 comments were received during the open comment period and the NMAB subcommittee meeting. The comments and responses are attached.

In regards to topic #1 - Removal of Phosphorus Banking in Option 1 (Phosphorus Removal) of the NBS, the SCC workgroup and NMAB recommend that the P-Banking Option be removed from Option 1 of NBS development.

In regards to topic #2 - Planning Options for Option 3 (Phosphorus Index) in the NBS, the SCC workgroup and NMAB recommend that the next version of the NBS have the following:

1. Two separate input decks (One deck for Option 1 and 2 and One deck for Option 3).
2. One Summary sheet for the farmer or hauler/broker (combining both input decks).
3. Post crop grouping, to combine fields with similar application recommendation, etc., for ease of implementation.

At this time, staff is asking for an approval action. If approval is granted, SCC and PSU staff will update the NBS development tools and time the release with changes made under the next version of the Technical Manual, to be brought to the SCC at a later date.

ATTACHMENTS:

- Comment Document

Nutrient Balance Sheets and Phosphorus Management
Summary of Comments Received

A Meeting to discuss comments received during the Nutrient Balance Sheets and Phosphorus Management Open Comment Period was held on December 12, 2018.

Meeting Attendees:

Frank Schneider	Kate Bresaw
Arthur Ulrich	Charlie White
Jerry Martin	Johan Berger
Peter Vanderstappen	Michael Aucoin
Mark Jackson	Mark Goodson
Don Orner	

Listed below are comments received during the Nutrient Balance Sheets and Phosphorus Management open comment period. Recommendations were made to incorporate or dismiss the comment. There were a total of 24 comments received during the open comment period. The comment and response are listed below and were presented to the Nutrient Management Advisory Board at their January 17, 2019. The NMAB agreed with the recommendations of the workgroup.

Commentators:
1 – Martin Krone
2 – RoseTree Consulting
3 – TeamAg Meeting
4 – Melissa Rubano, R&R Engineering
5 – Lisa Blazure, Clinton County Conservation District
6 – York County Conservation District

	Comment 1 – Phosphorus Banking
Comment	As a Plan writer, I have rarely used it. If it was not available, I doubt if I would miss it. I think your argument #1 regarding soil tests is a valid argument. I think your argument #2 for equipment improvements may not be valid. Some of your commercial haulers and more progressive farmers will have application equipment that can apply low rates. However, there are some farmers with older equipment yet. Still, I think it is a moot point. P-Banking can be deleted and not missed in my book. (1, 5, 6)
Open Comment Period Discussion Meeting 12/12/18	**The workgroup recommends that the P-Banking Option be removed from Option 1 of NBS development.**

Issue	**Comment 2 - Phosphorus Banking**
Comment	Plan Development Costs: A portion of managing fertilizer needs on a farm is also about managing the costs associated with NBS development. Producers choose to use manure as a lower cost alternative to commercial fertilizer. Plan development costs influence that decision. Traditionally, Option 1 NBS are the least costly alternative for clients, while Option 3 are the highest cost alternative. Option 1 seems to be the most restrictive way of writing NBS with manure rates that equal or are less than P removal of the crop and increased

	manure application setbacks from surface water. We would support removing Option 1 from the planning process only if an equally low-cost alternative was developed. (2, 4)
Open Comment Period Discussion Meeting 12/12/18	**The proposal was not to eliminate option 1 from NBS development but to ONLY eliminate the P Banking portion of Option 1.**

Issue	Comment 3 - Phosphorus Banking
Comment	Tracking Compliance: Any method used to track compliance relies on the honesty of the individual operating the farm, the relationship they have with their plan writer, and the integrity of the plan writer. Option 1 can be misused as often as Option 3. We rely on the integrity of farm operators when recording where manure was applied, if setbacks were adhered to, what manure application rates were, and what supplemental fertilizer was applied. Eliminating Option 1 will not improve this process. Additional clarity surrounding recordkeeping requirements for manure applications may be helpful for agencies and farmers to track manure applications. (2)
Open Comment Period Discussion Meeting 12/12/18	**The proposal was not to eliminate option 1 from NBS development but to ONLY eliminate the P Banking portion of Option 1.**

Issue	Comment 4 - Phosphorus Banking
Comment	Ability to Apply Manure at Lower Rates**:** SCC staff stated on the webinar that on today's farms, farmers have the ability to apply manure at lower rates due to advances in equipment design and manufacturing. This is true – but only for farms that have invested in such equipment. In recent years, a number of our clients have invested in new equipment not purchased with low application rates as their end goal. For example - a dairy/beef operation invests $30,000+ on a vertical beater spreader to apply solid manure. This equipment would be able to apply pen manure at a consistent rate of 4 to 10 ton/A but may struggle to apply poultry manure at a 1-1.5 ton/A rate – especially on rolling hills where the delivery of manure to the beaters would be inconsistent. Many operations will not rent low-rate application equipment due to the added cost of manure application, particularly when they have viable spreading equipment on the farm. (2)
Open Comment Period Discussion Meeting 12/12/18	**The workgroup considered this comment and doesn't disagree, but the workgroup recommends that the P-Banking portion be eliminated from Option 1 of NBS development.**

Issue	Comment 5 - Phosphorus Banking
Comment	P Banking is an important tool for NBS development where fields do not have excessive (+200 ppm) P. It allows for a conservative plan (conservative in manure application rates and setbacks) to be developed at a lower cost to the producer. It should not relieve the producer from their soil testing responsibilities and fields with soil test phosphorus in excess of 200 ppm should not be allowed to use P banking. (2)

Open Comment Period Discussion Meeting 12/12/18	**The workgroup agrees, if soil tests are below 200 ppm P they can apply more than required P, through Option 2 (N-Based planning). If soil tests are available and greater than 200 ppm, then Option 3 (P-Index) is required. The workgroup recommends that the P-Banking portion be eliminated from Option 1 of NBS development.**

Issue	Comment 6 - Phosphorus Banking
Comment	The water quality benefits to NBS development and implementation are being maximized by using the Phosphorus Index for NBS development. We feel that Option 1 can provide a similar return, with a few tweaks. If any of the NBS options are to be eliminated, we would prefer Option 2 be eliminated. (2)
Open Comment Period Discussion Meeting 12/12/18	**The proposal was not to eliminate option 1 from NBS development but to ONLY eliminate the P Banking portion of Option 1.**

Issue	Comment 7 - Phosphorus Banking
Comment	Commentator understands the SCC's concern but have run into the situations where soil tests are not available, for a variety of reasons, and would encourage the P Banking still be allowed for these situations. (3)
Open Comment Period Discussion Meeting 12/12/18	**The workgroup felt this comment was valid for the transition period when P-Banking was allowed, but it has been known for years that soil tests were/are required. The workgroup recommends that the P-Banking portion be eliminate from Option 1 of NBS development.**

Issue	Comment 8 - Phosphorus Banking
Comment	It should be noted that P Banking does not always necessarily fit the crop rotation in which it was planned. Example would be using P Banking for Corn Grain in year one, years 2 and 3 assume corn grain again, but the 2nd and 3rd years could be soybeans, or some other crops (3)
Open Comment Period Discussion Meeting 12/12/18	**The workgroup recommends that the P-Banking portion be eliminated from Option 1 of NBS development.**

Issue	Comment 9 - Phosphorus Banking
Comment	I have witnessed the complexity of the Nutrient Balance Sheets and soil sampling requirements become a "deal-breaker" for importing operations. This limits the outlets for manure and results in a time-consuming search for a new export situation. (4)
Open Comment Period Discussion Meeting 12/12/18	**The proposal was not to eliminate option 1 from NBS but to ONLY eliminate the P Banking portion of Option 1.**

Issue	**Comment 10 – Phosphorus Index**
Comment	I don't like the idea of requiring a Volunteer NMP for importers requiring Phosphorous Index. As the process of importing manure gets more complicated, importers will say "Count me out. I will just buy commercial fertilizer." That will make finding a home for excess manure more complicated. (1, 3)
Open Comment Period Discussion Meeting 12/12/18	**The workgroup agrees and does not recommend the Voluntary NMP option.**

Issue	**Comment 11 – Phosphorus Index**
Comment	As a Plan writer, I don't think I want Option 3 in a separate planning tool, apart from Options 1 & 2. Splitting Option 3 into a separate tool is another step in the wrong direction. We would encourage you to take a close look at separate pages for Option 3 on the same Excel document. Right now, we are filling out input pages; when we are done, we go to the Summary page, and click on the Import button to import that information into the Summary Page. I think you should be able to have separate input page for Option 1 & 2 vs Option 3; then when you click on the import button, it would import Option 1 & 2 information, then import Option 3 information after that. But all Summary information would be in one document, and when a Planner goes to print, it would all be in the same document. (1, 3)
Open Comment Period Discussion Meeting 12/12/18	**The workgroup is recommending that the next version of the NBS have the following:** - **Two separate input decks (One deck for Option 1 and 2 and one deck for Option 3)** - **One Summary sheet for the farmer or hauler/broker (combining both input decks)** - **Post crop grouping, to combine fields with similar application recommendation, etc., for ease of implementation**

Issue	**Comment 12 – Phosphorous Index**
Comment	Develop Separate NBS planning tools vs. modify the existing tool for multiple input pages. Will multiple input pages slow down the processing speed of the program? One tool that does it all would be great; however, we still need grouping to reduce paperwork and complexity (2, 3)
Open Comment Period Discussion Meeting 12/12/18	**The workgroup agrees with this comment and is proposing two input decks with one summary sheet. The workgroup believes that this will not slow down the Excel program that runs NBS.**

Issue	**Comment 13 - Phosphorous Index**
Comment	Eliminate Option 3 from the NBS planning tool, requiring a VAO plan: a. This is not a feasible option b. Will the NBS VAO plan require separate board approval, or would approval

	of the NBS VAO plan be tied to the CAO/CAFO exporter's plan? c. Would a NBS VAO be held to the same standards as a "normal" VAO plan – does the NBS VAO now need annual manure analysis of their own generated manure and would conservation districts be required to perform site visits? d. This seems to be a long-term solution. PA, with multiple layers of NM regulation (Manure Management Plans, VAO, CAO, NRCS 590, CNMP, CAFO, etc.) should look to streamline planning options. Moving MMP requirements toward VAO, or replacing NBS with MMP would be a logical step. (2)
Open Comment Period Discussion Meeting 12/12/18	**The workgroup agrees and does not recommend the Voluntary NMP option**.

Issue	**Comment 14 - Phosphorous Index**
Comment	Post Grouping modification to the PA Phosphorous Index - Post Grouping would be great! Any way to have less paperwork and easier understanding by clients would be appreciated. This would be our preferred option for NBS development. The old NBS version 3.2 allowed post grouping in an easy, efficient manner. (2, 3)
Open Comment Period Discussion Meeting 12/12/18	**The workgroup agrees and is recommending to combine fields with similar application recommendation, etc., into post crop groupings, for ease of implementation.**

Issue	**Comment 15 – Phosphorous Index**
Comment	Crop Grouping: We strongly believe in the utilization of crop grouping for NBS development. This tool simplifies plans and thereby improves the ability for compliance and, as a result, provides a positive impact to water quality. Field-specific information is important, but often leads to thicker plans which increases the likelihood that plans will not be implemented / adhered to. Farmers operate a complex business, with many moving parts. Their NBS should not be one of them. Simplicity is easier for farmers to remember and easier for them to implement. We understand that, to some extent, the development of "simple" NBS is in the hands of the plan writer. However, without a NBS development tool that allows for easy to understand plans to be developed, our hands are tied. If a farm has 20 fields where manure is to be applied, and 18 of those fields can be managed with the same application rates and overall management philosophy, nobody (farmer, plan writer, plan reviewer) needs to see 20 lines in the NBS, when 2 or 3 lines would suffice. The extra paperwork does nothing to improve water quality. Increased complexity of plan development and the overall size of the document increases farmer frustration and resentment. This reduces the success of plan implementation and the ability of our farms to be compliant. We have used crop grouping extensively to write Option 3 NBS in the past versions of the NBS template (version 3.2 specifically). In version 3.2, the Phosphorus Index was a separate worksheet, allowing data entry of all fields into

	the Phosphorus Index. This format allowed you to see which fields had issues and group fields accordingly in the NBS. All fields with no Phosphorus Index problem can be grouped together, as can fields with Phosphorus Index restricted applications and fields where Phosphorus Index eliminates manure application. This information could then be easily transferred to a visual representation (map) for a quick and easy reference / implementation guide for the farmer which serves to increase compliance and have a positive impact on water quality. Crop Grouping simplifies paperwork. (2)
Open Comment Period Discussion Meeting 12/12/18	**The workgroup is recommending that the next version of the NBS have the following:** - **Two separate input decks (One deck for Option 1 and 2 and one deck for Option 3)** - **One Summary sheet for the farmer or hauler/broker (combining both input decks)** - **Post crop grouping, to combine fields with similar application recommendation, etc., for ease of implementation**

Issue	**Comment 16 - Phosphorous Index**
Comment	Phosphorus Index as a Yearly, Site Specific Tool: The SCC webinar seemed to indicate that the Commission is viewing the Phosphorus Index as an annual tool, meaning a NBS using Option 3 needs to be updated every year to reflect the site-specific crop plans of the operation. Again, for simplicity, consistency and ability to comply, this is not ideal. Phosphorus Index should be a multi-year / multi-crop tool if we want to increase compliance and simplify management. Multi-year / multi-crop NBS is possible if NBS are developed around a rotation's "limiting crop." Using this methodology, a NBS could be developed to last for as long as the farm management practices remain unchanged. For example, if a farmer raises 50 bu./A soybeans, 160 bu./A corn and 70 bu./A wheat, the soybeans are the limiting crop in terms of P-Removal. A NBS developed using Option 3 manure application rates would then be based on soybean P-removal, thus assuring manure applied at that same rate to corn and wheat would result in a negative P balance and an eventual decline in soil P levels. The Phosphorus Index would not need to be re-run for the other cropping scenarios listed in the rotation. This is how our staff has successfully utilized older versions of the NBS template and our clients appreciate the consistency this approach brings to their annual management. (2, 4)
Open Comment Period Discussion Meeting 12/12/18	**The workgroup appreciates the comment, but for the P-Index (Option 3), planning is required for each crop and specific field. With the recommended two separate input decks and one summary sheet with post crop grouping, this comment can be addressed to a certain extent. It is unknown at this time how the revised P-index will look and function, so we will keep this comment in mind, when developing the next generation of tools.**

Issue	**Comment 17 - Phosphorous Index**
Comment	NBS version 3.2 met our needs for crop grouping and PI development. Consider

	an Option 3 NBS that allows Phosphorus Index information to be entered for all fields, then allows for calculated or manual grouping of fields based on Phosphorus Index results. (2, 3)
Open Comment Period Discussion Meeting 12/12/18	**The workgroup's recommendation is to combine fields with similar application recommendation, etc., into post crop groupings, for ease of implementation.**

Issue	**Comment 18 - Phosphorous Index**
Comment	With the new requirements that came with version 4.3 of the NBS spreadsheet, the NBS is often as many sheets of paper as the Nutrient Management Plan and results in a product that the importing operation can't (or more likely, won't spend the time) to understand. Although developing 2 summary sections (1 for planners/districts and 1 for manure applicators) could help, it does not address the underlying problem of the NBS being too complicated. (4, 5)
Open Comment Period Discussion Meeting 12/12/18	**The workgroup understands the comment. The workgroups recommendation is to combine fields with similar application recommendation, etc., into post crop groupings, for ease of implementation.**

Issue	**Comment 19 - Phosphorous Index**
Comment	If the importing operation is not a CAO or CAFO, why can't the Manure Management Plan format for spreading rates be used? (4)
Open Comment Period Discussion Meeting 12/12/18	**The Act 38 regulations at 83.301 require the use of NBS.**

Issue	**Comment 20 - Phosphorous Index**
Comment	When needing to run the P-index, the current NBS format creates a very complicated summary sheet for the farmer to understand and implement. (5)
Open Comment Period Discussion Meeting 12/12/18	**The workgroups recommendation is to combine fields with similar application recommendation, etc., into post crop groupings, for ease of implementation.**

Issue	**Comment 21 - Phosphorous Index**
Comment	Documenting the phosphorus environmental risks should be a stand-alone process used by the plan writers and reviewers. This information does not need to be shared with the farmer and included in the farmer copy. (5)
Open Comment Period Discussion Meeting 12/12/18	**The workgroup understands the comment and will take under advisement.**

Issue	**Comment 22 - Phosphorous Index**
Comment	Does it make sense to only have an Option 1 & 2 NBS spreadsheet and use stand-alone P-index and winter matrix spreadsheets like we used to do? If the results of the P-index require manure application adjustments, then the planner would separate those individual fields from the crop grouping in the NBS and add a note saying that application rates in that fields are adjusted based on the

	results of the P-index or winter matrix. The map should show a highlighted color for those high-risk fields so the farmer has a reminder that those fields have a different application rate then the rest of the farm. (5)
Open Comment Period Discussion Meeting 12/12/18	**The workgroup is recommending that the next version of the NBS have the following:** - **Two separate input decks (One deck for Option 1 and 2 and One deck for Option 3)** - **One Summary sheet for the farmer or hauler/broker (combining both input decks)** - **Post crop grouping, to combine fields with similar application recommendation, etc., for ease of implementation**

Issue	**Comment 23 - Phosphorous Index**
Comment	We support either of the following: • Develop separate Input & NBS Summary pages within the NBS planning tool • Develop a component in the next version of the PA P Index that would enable "Post Grouping" and planning on crop group basis (6)
Open Comment Period Discussion Meeting 12/12/18	**The workgroup is recommending that the next version of the NBS have the following:** - **Two separate input decks (One deck for Option 1 and 2 and One deck for Option 3)** - **One Summary sheet for the farmer or hauler/broker (combining both input decks)** - **Post crop grouping, to combine fields with similar application recommendation, etc., for ease of implementation**

Issue	**Comment # 24 - NBS is general**
Comment	Reduce the paperwork associated with NBS to deliver a concise document to the client that can be easily adhered to and implemented. Our clients would be comfortable receiving the following information from us: a. Cover page and Importer/Exporter Agreement b. Two-page NBS Quick Reference Guide c. NBS Summary d. Site Maps with application rates and setbacks (2)
Open Comment Period Discussion Meeting 12/12/18	**The workgroup understands the comment and will take under advisement.**

COMMONWEALTH OF PENNSYLVANIA
STATE CONSERVATION COMMISSION

DATE: February 20, 2019

TO: State Conservation Commission Members

FROM: Frank X. Schneider
Director, Nutrient and Odor Management Programs

Karl Dymond
Odor Management Coordinator

THROUGH: Karl G. Brown
Executive Secretary, State Conservation Commission

REFERENCE: Version 3.0 – Odor Management Program Best Management Practice Reference List

The State Conservation Commission (SCC) and the Pennsylvania State University (PSU) revised the Odor Management (OM) Best Management Practice (BMP) Reference List. PSU developed and the SCC approved version 2.0 of the OM BMP Reference list in August 2013

The OM BMP Reference List is developed in order to provide consistent program guidance to be utilized in the development, review, and implementation of odor management plans. The main audience for this Reference List consists of those Pennsylvania certified odor management specialists who will be developing, reviewing, or assisting with implementing plans to meet the requirements and intent of Pennsylvania's Act 38 Odor Management program. The secondary audience would be Operators that need to implement their plans. Information in this Reference List is to be used as a guide for those individuals working within the program.

The SCC held an open public comment period for suggestions on possible addition or changes to version 3.0 of the OM BMP Reference List. The comment period ended November 16, 2018.

Attached you will find a listing of comments that were received and the SCC staff, PSU and Nutrient Management Advisory Board (NMAB) approved recommendations for each comment. The NMAB discussed these comments at their January 17, 2019 meeting.

The proposed changes to version 3.0 of the OM BMP Reference List include:

1. Updated weblinks and reference materials
2. Added Reference Materials

3. Updated language on when the different level Odor BMPs are needed, to make more clear.
4. Updated Level 1 Odor BMP sample template language that could be used in Odor Management Plan for the following principles:
   a. Ventilation is managed to provide sufficient fresh airflow throughout the facility to keep animals and facility surfaces clean and dry.
   b. Manure will be managed to minimize damp, exposed manure that contributes to odor generation.
   c. Manage Manure Storage Facilities to reduce exposed surface area and off-site odor transfer.
5. Added Level 2 Odor BMP:
   a. Ultraviolet (UV) Light
   b. Urine / Feces Segregation (Non-poultry species)

As mentioned previously, the NMAB passed a motion to recommend approval of version 3.0 of the OMP BMP Reference List. At this time, staff is asking the SCC for action of approval.

ATTACHMENTS:

- Comment Document
- Draft Final Version 3.0 OM BMP Reference List

Odor Management Best Management Practice Reference List version 3.0 Open Comment Period
Summary of Comments Received

A Meeting to discuss comments received during the OM BMP Reference List Open Comment Period was held on by electronic mail between November 15 - November 26, 2018.

Meeting Attendees:

Frank Schneider
Karl Dymond
Robert Mikesell

Listed below are comments received during the OM BMP Reference List open comment period. Recommendations were made to incorporate or dismiss the comment. The decision to dismiss or assign a "No Merit" status was made because either there is sufficient guidance in the BMP Reference List or the request exceeds the regulatory requirements. There were a total of 2 comments received during the open comment period. Of the 2 comments received, 1 comments were determined to have merit and will be addressed in Version 3.0 of the OM BMP Reference List. The results are listed below and will be presented to the Nutrient Management Advisory Board on January 17, 2019.

	Comment 1 – Create Vegetative Buffer write up / discussion		
Comment	Create an SCC stand-alone Vegetative Buffer Standard and Specification that are specific to the SCC Odor Management Program		
Manual Sections Impacted (Author)	None - New		
Issue Workgroup Leader	Dymond	**Issue Workgroup**	Dymond Mikesell Schneider
Bulletin Article Author	NA		
Open Comment Period Discussion Meeting 11/26/18	**It was decided this comment had Merit and will be addressed.**		

Issue	**Comment 2 – Decommissioning Manure Storage**
Comment	Suggest that the decommissioning of a manure storage structure, particularly liquid, be considered as a Level II BMP. I realize that a new storage may replace an existing one but often the older structure has some flaws or issues that are being corrected. I have had cases where the liquid system is not replaced. With the plight of the dairy industry we may see liquid structures unused and the farm converted to another purpose perhaps some credit should be given for removing a storage structure.
Manual Sections Impacted (Author)	Level II Odor BMPs (page 6 of Version 2)

Odor Management Best Management Practice Reference List version 3.0 Open Comment Period
Summary of Comments Received

Issue Workgroup Leader	Mikesell	**Issue Workgroup**	Mikesell Dymond Schneider
Bulletin Article Author	NA		
Open Comment Period Discussion Meeting 11/26/18	Determination was made that we would handle the above request on a case by case basis, with a staff site visit, versus adding directly into the OM BMP Reference List. We will make sure that we have wording that is prominent that OM Specialist can ask for case by case determinations on BMPs that are not included on the list.		

PENNSYLVANIA ODOR MANAGEMENT PROGRAM

PA Odor BMP Reference List

Provided by: The Pennsylvania State Conservation Commission with the assistance of the Penn State University

Version 3.0
March 12, 2019

Preface:

This Reference List has been developed in order to provide consistent program guidance to be utilized in the development, review, and implementation of Pennsylvania Act 38 (of 2005) odor management plans. Information in this Reference List is to be used as a guide for those individuals working within the program. For the final direction on how to implement and interpret program requirements or policies, please contact Nutrient and Odor Management Act (NOMA) program staff from the Pa. State Conservation Commission for assistance. Additional program refinements will be incorporated into later revisions of this manual as time and resources permit. The main audience for this Reference List consists of those Pennsylvania-certified odor management specialists who will be developing, reviewing, or assisting with implementing plans to meet the requirements and intent of Pennsylvania's Act 38 Odor Management program.

Odor BMPs for Facility Odor Management

Identification of Odor BMPs

The Pennsylvania State Conservation Commission has approved the use of Odor BMPs described in the following three reference sources for identification, design, construction and operation of the Odor BMPs that are appropriate for the site-specific situation.

Please note that in addition to the Odor BMPs described in these reference sources, other Odor BMPs, as proposed by the operator, may be used if approved by the Commission.

1. PA Odor BMP Reference List. This list was compiled with the assistance of odor management experts at Penn State University to assist odor management specialists and farmers in developing odor management plans consistent with the State Conservation Commission's Odor Management Guidance. This list is intended to provide links to a number of possible references describing various Odor BMPs a farmer may consider for their operation.

2. "PA Tech Guide", Section IV of the NRCS electronic Field Office Technical Guide, at https://efotg.sc.egov.usda.gov/#/details

3. ASABE Standards: Management of Manure Odors. (ASAE EP379.4 Jan2007), at http://elibrary.asabe.org/ (Search – Title: Management of Manure Odors)

Odor BMP Principles

These are the core Odor BMP principles for reducing odor generation and/or transport from any animal operation.
1. Steps are taken to reduce dust and feed accumulation in pens, aisles, and on animals.
2. Ventilation is managed to provide sufficient fresh airflow throughout the facility to keep animals and facility surfaces clean and dry.
3. Manure is managed to minimize damp, exposed manure that contributes to odor generation.
4. Mortalities are removed daily and managed appropriately.
5. Feed nutrients are matched to animal nutrient requirements to avoid excess nutrient excretion.
6. Manure storage facility is managed to reduce exposed surface area and off-site odor transfer.

Level I Odor BMPs

Level I Odor BMPs are basic Odor BMPs that are applicable to the operation according to the species of animals and/or to the manure handling system. These Odor BMPs manage odors by using generally accepted operation and maintenance activities used in Pennsylvania animal industries. **The OMP will specifically describe how each of the Odor BMP principles will be accomplished for the site-specific situation.**

The plan writer and operator together will determine how to implement the applicable Odor BMPs for the site-specific scenario, detailing how they will meet the goals of reducing odor generation and/or transport.

For OSI scores of fewer than 50 points AND in which the Operational Map identifies one or more neighboring or public facilities in the evaluation distance area, the operation must implement Level I Odor BMPs that are applicable to their operation. The operation must also attest to the implementation of these Odor BMPs.

For OSI scores of 50 or above, the operation must implement Level I Odor BMPs that are applicable to their operation. The operation must also attest to the implementation of these Odor BMPs and implement maintenance documentation.

Examples of Level 1 BMPs are given, but are not meant to merely be cut and pasted into the OMP without verifying with the operator.

Animal Housing Facilities Related Odor BMPs

1. Steps taken to reduce dust and feed accumulation in pens, aisles, and on animals. **(Planner specifically describes how these will be accomplished).**

Examples for All Species:
- Feed Cleanup – Spilled feed will be removed promptly.
- Dust Control of Ventilation Components – Fan motors, blades, and shrouds will be cleaned on a standard schedule (Planner details frequency).

Examples for Swine:
- Feed Wastage –
  - Keeping aisles and pens (if applicable) free of accumulated feed in all phases of production via (Planner details frequency) scraping or sweeping.
- Cleaning and Sanitation –The entire inside of the facility will be power washed and disinfected (Planner describes when it will occur within the production schedule).
- Dust Control – (Nursery and Grow Finish)
  - Drop tubes will be extended from the feed delivery auger into each feeder.
  - Feeder Adjustment – Dry feeders will be checked (Planner details frequency) for proper feeder adjustment. Less than 2” of feed should be visible at the back of the tray. Wet/dry feeders should not exhibit spilled feed.

Examples for Veal:
- Feed Preparation and Handing – Formula feed ingredients will be stored in a dry location. Any reconstituted feed not consumed will be removed or washed from feeders.
- Feed Wastage –

- Aisles in front and back of the stalls will be scraped or swept (Planner details frequency) to keep free of accumulated feed.
- Any feed accumulating on the slatted floors (i.e. wooden slatted floors) will be scraped (Planner details frequency).

- Cleaning and Sanitation – The entire inside of the facility will be power washed and disinfected (Planner details frequency).

<u>Examples for Horses:</u>

- Feed Wastage – Unconsumed feed will be removed from around stalls and feeders (Planner details frequency).
- Cleaning and Sanitation – The entire inside of the facility will be power washed or dry cleaned (Planner details frequency).

<u>Examples for all Non-Slotted Flooring Poultry Facilities:</u>

- Feed Wastage – Feeding equipment will be adjusted to ensure the appropriate flow rate of feed into the feeder. Feeder height will be checked (Planner details frequency) and raised as needed to match the height of the birds. When present, feed junction boxes will be monitored (Planner details frequency) for malfunction. Feed spills will be removed after any necessary repairs are performed. Feed height in the feed trough will be monitored (Planner details frequency) and adjusted as needed.

<u>Examples for Poultry Raised on Slotted Flooring:</u>

- Feed Wastage – Feed wastage is generally related to substandard feed and pellet quality and will be monitored (Planner details frequency). Feed refusal behavior will be reported to the feed company; adjustments in feed preparation will be made as needed.
- Cleaning and Sanitation – Buildings will be power washed and disinfected (Planner details frequency).

<u>Examples for Caged Layer Facilities:</u>

- Building Maintenance – High-rise facilities will be power washed (Planner details frequency). Stack houses will be dry cleaned (Planner details frequency).

<u>Examples for Dairy:</u>

- Dust Control – Dust will be removed from stall dividers, feeder surfaces, fans, walls and other surfaces by (wet or dry method) (Planner details frequency and mechanism).
- Calf Hutch Management – Calf hutches will be cleaned and moved to new locations (Planner details frequency).

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2. Ventilation is managed to provide sufficient fresh airflow throughout the facility to keep animals and facility surfaces clean and dry. **(Bullets below provide planner guidance).**

<u>Examples for all species:</u>

- Ventilation Components – Ventilation system components including (planner details components) will be checked (Planner details frequency) for functionality.
  - Mechanical Ventilation –The ventilation system will be designed to provide appropriate ventilation during the winter months. As ambient temperature increases, ventilation rate will automatically increase via staged ventilation. Inlet openings will be automatically controlled by a static pressure monitor or by temperature, which will also be integrated into the computer controls.
    - Fans are and inspected (Planner details frequency) and cleaned as needed.
    - Inlet openings are adjusted to provide adequate air distribution (Planner details frequency).
    - Static pressure monitors are calibrated (Planner details frequency).
    - Curtains are controlled (Planner details frequency and mechanism).
    - Curtains, cables, winches, and other components of the ventilation system are inspected (Planner details frequency).
  - Natural Ventilation – The ventilation system will be designed to provide adequate fresh air while minimizing drafts so that aisles, pen surfaces, and animals remain relatively free of manure. During certain times of the year (particularly during periods of extreme temperatures) bedding may be used to minimize accumulation of manure on pen surfaces and animals.
    - Inlet openings are adjusted to provide adequate air distribution (Planner details frequency).
    - Curtains are manually controlled by (Planner details frequency and mechanism).
    - Curtains, cables, winches, and other components of the ventilation system are inspected (Planner details frequency).

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3. Manure will be managed to minimize damp, exposed manure that contributes to odor generation. **(Planner specifically describes how this will be accomplished).**

<u>Examples for Swine:</u>

- Controlling Accumulated Manure –
  - Keeping aisles and pens (if applicable) free of accumulated manure in all phases of production via scraping or sweeping (Planner details frequency).
  - Removal of Manure from the Pens with Partial or Solid Flooring – Manure will be removed from the pens or scraped to the slatted area (Planner details frequency).
  - Removal of Manure from the Pens with Total Slatted Flooring – Manure should drop through the floor continuously; if any manure does not fall through the slats and accumulates, then it will be removed or scraped through the slats (Planner details frequency).

- Cleaning and Sanitation – The entire inside of the facility will be power washed and disinfected (Planner describes when it will occur within the production schedule).

Examples for Veal:

- Controlling Accumulated Manure – **(Planner selects applicable systems)**
  - Removal of Manure in and around the Pens or Stalls. For calves housed on slotted flooring, any accumulated manure on the slats will be scraped through the slats (Planner details frequency).
  - Mechanically conveyed manure will be removed (Planner details frequency).
  - In bedded systems, sufficient bedding will be added (Planner details frequency) to minimize excess manure from sticking to calves.
- Cleaning and Sanitation – The entire inside of the facility will be power washed and disinfected (Planner describes when it will occur within the production schedule).

Examples for Horses:

- Controlling Accumulated Manure –
  - Stalls and aisles will be kept free of accumulated manure in all phases of production by removing manure (Planner details frequency).
  - For confined horses, bedding will be added as needed to minimize excess manure from sticking to horses.
- Moisture Control – Water delivery system will be checked (Planner details frequency) for functionality and leakage to minimize moisture accumulation in the stalls. Repairs will be performed as needed.
- Building Maintenance – The entire inside of the facility will be power washed or dry cleaned (Planner details frequency).

Examples for Floor-Raised Poultry with Litter Manure Handling Systems:

- Moisture Control – Water delivery system and drinkers will be checked daily for leaks. Repairs will be performed as needed. The height of the nipple waterers will be inspected and adjusted as needed (Planner details frequency) to ensure that birds are always reaching up to the waterers. Bell drinkers (when used) will be checked for leakage, overflow and adjusted for height as needed (Planner details frequency).
- Litter Maintenance – Litter will be caked out if needed, (Planner details frequency). Litter will be tilled (Planner details frequency)

Examples for High-Rise Layer Houses:

- Moisture control – Water delivery system and drinkers will be checked for leaks (Planner details frequency). Repairs will be performed as needed. In high-rise houses, the manure pit will be walked (Planner details frequency) to watch for wet spots as indicators of water leakage.

Examples for all Layer Facilities:

- Monitor for Egg Jams – Facilities will be inspected (Planner details frequency) for broken eggs. For systems using egg belts, seams will be monitored (Planner details frequency) for failure. Broken eggs should not be discarded in the manure pit of high rise houses.

- Clean Egg Conveyors – Components of the egg conveyors will be cleaned (Planner details frequency), including the egg belt, the rod conveyor, and escalators and de-escalators.

<u>Examples for Dairy:</u>

- Moisture Control – Water delivery system and drinkers will be checked (Planner details frequency) for leaks. Repairs will be performed as needed.
- Controlling Accumulated Manure – **(Planner selects applicable systems)**
    - Conventional Bedding Systems – When sawdust, straw, corn fodder or similar materials are used for dry cows, lactating cows, and young stock, sufficient bedding will be added on a daily basis to minimize excess manure from sticking to cows. A cleaning schedule will be established to keep bedding free of manure. For some young stock housing systems, manure may be removed (Planner details frequency).
    - Sand Bedding Systems – Sufficient amounts of sand in lying areas will be provided to allow cows to lie comfortably and to minimize manure from sticking to cows. Free stalls will be inspected for accumulated manure (Planner details frequency).
    - Bedded Pack Systems – Animals will be monitored for cleanliness and sufficient bedding will be added to keep at least 80% of exposed manure covered at all times. When bedded pack volume interferes with animal movement or when animals can no longer be kept clean, the bedded pack will be removed and replaced with fresh bedding. This includes bedded material in and around individual calf hutches.
    - Scraper Systems – Manure scrapers will be run at least (Planner details frequency).
    - Flush Systems – Flush gutters will be flushed at least (Planner details frequency).
- Calf Hutch Management – Calf hutches will be cleaned and moved to new locations at least (Planner details frequency).

____

4. Mortalities will be removed daily and managed appropriately. (Applicable to all species and manure handling systems.) **(Planner describes specific method of mortality collection and disposal).**

____

5. Feed nutrients will be matched to animal nutrient requirements to avoid excess nutrient excretion. **(Planner specifically describes how this will be accomplished)**

Example for all species:

- Professional nutritionist formulates diets to match animal nutrient requirements.

Examples for Swine:

- Phase Feeding – For Nursery and Grow Finish, nutrient content in the diet will be closely matched to the weight and age of the pigs.

Examples for meat-producing birds:

- Phase feeding – Diet formulation will be matched to bird weight and age.

Manure Storage Facilities Related Odor BMPs

6. Manage Manure Storage Facilities to reduce exposed surface area and off-site odor transfer. **(Planner specifically describes how this will be accomplished)**

Example for Solid Manure Storages – All Species:

- Minimize Storage Volume – Minimize or eliminate solid manure storage through frequent manure application or export (Planner details frequency).
- Manage Surface Water –
    - Keep surface water from entering manure storage area - Grade surrounding area to avoid run on.
    - Keep surface water from leaving the manure storage area - Manage to avoid runoff of liquid from bottom of the stack by covering or mixing in dry material to absorb rainwater.
- Manure Storage Area Cleanliness - A visual inspection of the manure storage area will be completed (Planner details frequency) to ensure that any manure scattered during transport activities is cleaned up in a timely manner.

Examples for Liquid Manure Storage – All applicable Species

- Reduce Exposure to Air - Liquid manure added from the bottom of the storage or through a drop pipe to below liquid level.
- Encourage Surface Crust Formation - Use high-fiber feeds (dairy / sows), or bedding.
- Minimize Agitation Odors - Minimize length and duration of manure agitation periods.
- Manure Storage Area Cleanliness - A visual inspection of the manure storage area will be completed (Planner details frequency) to ensure that any manure scattered during transport activities is cleaned up in a timely manner.

Level II Odor BMPs

Level II Odor BMPs are additional, specialized Odor BMPs that provide additional technology, practices, standards and strategies for odor management commensurate with additional potential for odor impacts. For OSI scores of 100 or higher, the operation must implement all applicable Level I Odor BMPs. In addition, they must implement Level II Odor BMPs to address the identified odor source(s) on the operation as determined by the planner in conjunction with the operator, and as approved by the State Conservation Commission.

The plan writer in conjunction with the operator must determine which individual Level II Odor BMP(s) to install and operate based on those which are expected to be effective and feasible from a practical and economic perspective. Only those Level 2 Odor BMPs that are necessary to address the potential offsite impacts of odors associated with the facility under review are required to be included in the odor management plan under Act 38.

Animal Housing Facilities Related Odor BMPs

Air Scrubbers – *Air scrubbers remove a portion of the odorous gases and dust from air exhausted from livestock facilities.*

1. Multi-pollutant Scrubbers for Removal of Ammonia, Odor, and Particulate Matter from Animal House Exhaust Air. 2011. eXtension. https://articles.extension.org/pages/24026/multi-pollutant-scrubbers-for-removal-of-ammonia-odor-and-particulate-matter-from-animal-house-exhau

Bedded Pack Systems – *Composted bedded pack systems utilize an aggressive mixing system to maintain the bedded pack as an active compost. This keeps bacteria aerobic and reduces odorous emissions.*

1. Composted Bedded Pack – MN
   Endres, M. and K. Janni. 2007. Compost Bedded Pack Barns for Dairy Cows. University of Minnesota Extension Service. https://extension.umn.edu/dairy-pastures-and-facilities/compost-bedded-pack-barns-dairy-cows

2. Additional reference material:
   - http://pubs.ext.vt.edu/442/442-124/442-124.html.

Biofiltration– *Fan Biofilters use a moist organic substrate that allows aerobic bacteria to thrive on the surfaces and reduce odors from exhaust air streams by metabolizing odorous compounds.*

1. Fan Biofilter Design – MN
   Janni, K., R. Nicolai, S. Hoff, and R. Stenglein. 2011. Biofilters for Odor and Air Pollution Mitigation in Animal Agriculture. Publication Mitigation Strategies: Biofilters. University of Minnesota Extension.
   http://www.extension.org/sites/default/files/BiofiltersforOdor%20FINAL_0.pdf

2. Additional reference material:
   - http://www.ipic.iastate.edu/reports/01swinereports/asl-1785.pdf
   - https://lib.dr.iastate.edu/cgi/viewcontent.cgi?referer=https://www.google.com/&httpsredir=1&article=1019&context=swinereports_2001

Electrostatic Particle Ionization (EPI) – *Dust and odor reductions have been documented.*

1. Electrostatic Particle Ionization
   Baumgartner Environics, Inc. 2013.
   http://epiair.com/why-epi/epi-data-certifications/

2. Additional reference material:
   http://www.cabdirect.org/abstracts/20103078570.html;jsessionid=662E220BAD3F8AE6089DB6AFE3B57F2B

Feed Management Plan – *Precision feed management monitors nutrient excretion via a fecal and milk sampling protocol. Dairy and Beef Only. Must be USDA NRCS approved & fully implemented.*

1. Feed Management Plan
   USDA NRCS. 2013.
   http://www.nrcs.usda.gov/wps/portal/nrcs/main/pa/technical/ (Ecological Sciences – Feed Management)

2. Feed Management Code 592
   USDA NRCS. 2011.
   https://efotg.sc.egov.usda.gov/references/public/NE/NE592.pdf

Oil Sprinkling – *Periodic oil sprinkling on the surfaces of pens and equipment inside livestock facilities helps to prevent odorous compounds from being emitted from accumulated manure and dust.*

1. Oil Sprinkling
   Goodrich, P.R. and G. Shurson. 2001. Best technologies for reducing odor emissions from curtain-sided, deep pit swine finishing buildings. Final report to Minnesota Pork Producers Association.

http://www.ontariopork.on.ca/portals/0/Docs/Research/Environment/11-01-2001_best%20technologies_fo_reducing_odour.pdf

2. Additional reference material:
   Schmidt, A. M. and A. J. Heber. Dust, Odor and Gas Control in Swine Finishing Barns Through Oil Sprinkling. University of Missouri Extension.
   https://extension2.missouri.edu/g2530

Poultry Litter Amendments – *Addition of litter amendment to poultry houses reduce ammonia*

1. Poultry Litter Amendments.
   Sanjay, S, P. Westerman and J. Parsons. 2006. Poultry Litter Amendments. North Carolina Extension
   https://pdfs.semanticscholar.org/575f/e9c3713d26d80f53e8c0ee45757752cbe739.pdf

Sulfur Removal from Drinking Water – *Some research has shown that animals consuming water containing high sulfate or sulfide levels in drinking water may excrete manure with more offensive odor characteristics.*

1. Sulfates and Hydrogen Sulfide
   Oram, B., Water Research Center, and B.F. Environmental Consultants Inc. Sulfates and Hydrogen Sulfide: That Rotten Egg / Sulfur Smell, Sulfate Reducing Bacteria (SRB)
   http://www.water-research.net/sulfate.htm.

2. Additional reference material:
   - http://www.water-research.net/odor.htm
   - https://www.extension.purdue.edu/extmedia/WQ/WQ-7.html

Windbreak Wall/ Air Dams – *Designs have proven effective in reducing both downwind dust particle concentrations and odor concentration.*

1. Windbreak Wall / Air Dam
   Liang, Y., K. W. VanDevender, and G. T. Tabler. 2010. Field Evaluation of Windbreak Effect on Airflow Downwind of Poultry Housing Tunnel Fans. International Symposium on Air Quality and Manure management for Agriculture Conference Proceedings. Dallas, TX.
   https://elibrary.asabe.org/abstract.asp?aid=32656&t=1

2. Additional reference material:
   http://www.scribd.com/doc/11508605/Give-Me-a-Break-A-Windbreak

Windbreak Shelterbelts – *Windbreak shelterbelts are multiple rows of trees and fast-growing vegetation planted near the exhaust stream from livestock facilities. This serves to increase turbulence and mixing with fresh air to help dilute odorous compounds before they travel downwind from the facility, and the foliage on some species has been shown to absorb certain compounds, including ammonia.*

1. SCC approved Vegetative Buffer Standard (Version 1, 2019)

2. Additional reference material:
   - VEB Tool-Kit. A Guide to Vegetative Environmental Buffers for Tunnel-Ventilated Chicken Houses. Delmarva Poultry Industry, Inc. http://www.dpichicken.org/VEB/docs/VEB-manual-2017-edition.pdf
   - Windbreak Shelterbelt. USDA NRCS. electronic Field Office Technical Guide (eFOTG) County Locator webpage: http://efotg.sc.egov.usda.gov/efotg_locator.aspx
     Section IV; Conservation Practices; Windbreak/Shelterbelt Establishment (FT) (380):
     - PA 380 Establishment Standard
     - Technical Note 1 - Plant Species for Odor Management around Poultry Production Facilities
     - PA 380 Conservation Practice Job Sheet

Ultraviolet (UV) Light – When UV light is applied to volatile organic (odorous) compounds through the titanium oxide-coated filter, the odorous compounds are oxidized through various chemical reactions to odorless CO2 and water.

1. Koziel, J., X. Yang, T. Cutler, S. Zhang, J. Zimmerman, S. Hoff, W. Jenks, Y. Laor, U. Ravid, R. Armon, and H. Van Leeuwen. 2008. Mitigation of Odor and Pathogens from CAFOs with UV/TiO2: Exploring the Cost Effectiveness. In: Mitigating Air Emissions from Animal Feeding Operations Conference Proceedings. Iowa State University, Ames, IA. p. 169-173.
   http://www.agronext.iastate.edu/ampat/animalhousing/uvlight/homepage.html

Manure Storage Facilities Related Odor BMPs

Aeration – *Aeration systems mix air into the manure to increase aerobic bacteria and reduce odor emissions.*

1. Mechanically Aerated Lagoons
   Merkle, James A. 1981. Managing Livestock Wastes. pp 234-245.
   http://www.google.com/search?sourceid=navclient&ie=UTF-8&rlz=1T4GFRC_enUS215US216&q=avi+publishing+company+merkel+managing+livestock+wastes.

Solid Manure Systems Odor BMPs

Manure Combustion – *Manure may be directly burned, typically for electricity generation or to heat water.*

1. Combustion of Manure
   Chesapeake Bay Program. 2008. CBP/TRS-289-08. Turning Chesapeake Bay Watershed Poultry Manure and Litter into Energy.
   http://www.chesapeakebay.net/documents/cbp_17018.pdf

2. Additional reference material:
   http://tammi.tamu.edu/ (Manure to Energy: Understanding Processes, Principles and Jargon E428)

Manure Composting – *Composting manure involves mixing manure with a dry material with a high carbon: nitrogen ratio and keeping the material aerobic to reduce odor emissions. – Including records of temperature increase and turning*

1. Composting Manure and Other Organic Materials
   Wortmann, C.S., and C. A. Shapiro. 2012. Composting Manure and Other Organic Materials. Publication G1315. University of Nebraska.
   http://www.ianrpubs.unl.edu/epublic/live/g1315/build/g1315.pdf.

Solid Manure Storage Systems Management – *Manure storage enclosed by three walls to prevent wind stripping and covered with a roof or tarp to prevent precipitation from soaking the pile.*

1. Manure Storage Systems.
   Jones, D. and A. Sutton. 2007. CAFOs Manure Storage Systems. Publication ID-352. Perdue University.
   www.extension.purdue.edu/extmedia/ID/cafo/ID-352.pdf

2. Additional reference material:
   http://www.lpes.org/ (Minimizing Odor Generation Lesson 41 – Emission Control Strategies for Building Sources)

Liquid Manure Systems Odor BMPs

Anaerobic Digestion – *Anaerobic digestion removes some of the volatile organic compounds from manure and converts them to methane (biogas).*

1. EPA AgSTAR Digester Program

Office of Air and Radiation. 2002. Managing Manure with Biogas Recovery Systems; Improved Performance at Competitive Costs. Publication EPA-430-F-02-004. Environmental Protection Agency. http://www.epa.gov/agstar/documents/manage.pdf.

2. Additional reference material:
    - http://www.manuremanagement.cornell.edu/Pages/Topics/Anaerobic_Digestion/AD-Fact_Sheets.html
    - http://pubs.cas.psu.edu/freepubs/pdfs/G77.pdf
    - https://attra.ncat.org/attra-pub/summaries/summary.php?pub=307
    - http://extension.psu.edu/natural-resources/energy/waste-to-energy/biogas

Manure Covers – *Biocovers work very much like biofilters. Organic material is applied to the surface of a liquid manure storage. Aerobic bacteria thrive on the surfaces and reduce odors by metabolizing the compounds that are volatilized from the surface of the liquid manure. – Permeable covers allow gases and water to pass through a membrane. – Impermeable non-biological covers trap odorous gasses for electricity production or flaring.*

1. Biocovers
   Lorrimor, J. and E. Edwards. 1998. Biocovers. Iowa State University Extension. http://www.extension.iastate.edu/Publications/PM1754C.pdf.

   Biochar biocovers:
   https://agresearchfoundation.oregonstate.edu/sites/agresearchfoundation.oregonstate.edu/files/kleber_arf_2015-17_final_0.pdf

2. Permeable & Impermeable Non-Biological Covers for Manure Storages
   Nicolai, R. and S. Pohl. 2004. Covers for manure storage units. South Dakota State University. FS 925-D.
   https://openprairie.sdstate.edu/cgi/viewcontent.cgi?article=1106&context=extension_fact

3. Additional reference material:
    - http://www.extension.iastate.edu/Publications/PM1754C.pdf
    - http://www.ext.colostate.edu/pubs/livestk/01631b.html

Urine / Feces Segregation (Non-poultry species) – Feces contain an enzyme urease which releases ammonia from urea in urine. Segregating feces and urine prevents urease from releasing ammonia.

1. Manure and Feces Handling – Urine/Feces Segregation
   Iowa State University
   http://www.agronext.iastate.edu/ampat/storagehandling/uf/homepage.html

Manure Additives – *Manure additives are intended to reduce the production of odorous compounds, usually by enzymatic or bacterial action.*

1. Evaluation of Commercial Manure Additives
   Johnson, Jack. 1997. Final Report "Evaluation of Commercial Manure Additives". Agriculture Utilization Research Institute.
   http://agrienvarchive.ca/bioenergy/download/manadeva.pdf

2. Odor Solutions Initiative
   Heber, Albert et. al. 2001. Odor Solutions Initiative. National Pork Producers Council.
   www.alken-murray.com/EZ5pitadditives_purdue.pdf

3. A review of microbiology in swine manure odor control – *This article provides a comprehensive summary of what we know about bacterial populations in manure systems and our limitations in altering those populations.* Zhu, Jun. 2000. Agric. Ecosystems and the Environment. 78:93-106
   http://www.prairieswine.com/pdf/3415.pdf

4. Practices to reduce ammonia emissions from livestock operations – *Although ammonia is a relatively small contributor to odor from livestock facilities, this article provides information on how ammonia emissions can be reduced.* Powers, Wendy 2004.
   Iowa State University Extension. Ames, IA. Available at:
   http://www.extension.iastate.edu/Publications/PM1971a.pdf.

5. Swine Manure Odor Reduction Efficacy of a Humic Amendment – *Specific manure additive (ManureMax- JDMV Holdings, Inc.) with bench top data indicating odor reduction potential. Field trials in progress.*
   R.C. Brandt, E.F. Wheeler, H.A. Elliott, and R.E. Mikesell Jr. 2011. Swine Manure Odor Reduction Efficacy of a Humic Amendment. Abstract for American Chemical Society 242nd ACS National Meeting and Exposition: AGRO Division, Denver CO. Session: Agriculture and Air Quality: Emission Measurements and Models
   http://www.agrodiv.org/documents/denver11/Agriculture%20and%20Air%20Quality/Ag%20Air%20Qual_Brandt-Robin.pdf

6. Zeolite poultry litter amendment:
   L. Cai, J. A. Koziel, Y. Laing, At. T. Nguyen, and H. Xin. 2007. Evaluation of zeolite for control of odorants emissions from simulated poultry manure storage. Iowa State University Animal Industry Report 2007.
   https://lib.dr.iastate.edu/cgi/viewcontent.cgi?referer=https://www.google.com/&httpsredir=1&article=1250&context=ans_air

7. Soybean peroxidase and calcium peroxide:

D. L. Maurer, J. A. Koziel, K. Bruning, and D. B. Parker. 2017. Farm-scale testing of soybean peroxidase and calcium peroxide for superficial swine manure treatment and mitigation of odorous VOCs, ammonia, and hydrogen sulfide emissions. Iowa State University Digital repository https://pdfs.semanticscholar.org/c0c5/303548d8b175056dd91d8b608b0d5f287ce4.pdf

Solids Separation for Manure – *Separating solids from manure provides opportunities for further treatment or handling of this odorous component of manure.*

1. Liquid Manure Separation. eXtension. https://articles.extension.org/pages/8862/solid-liquid-manure-separationSolid

2. Odor Control Demonstration Project. Solids Separation
Lorimor, Jeff, Elaine Edwards, and Tracy Peterson. 1998. Iowa State University Extension.
http://www.extension.iastate.edu/Publications/PM1754I.pdf.

Note: All products and technologies listed here have been evaluated by independent, 3rd party sources. Scientific data are available to prove odor reduction. Additional products and technologies will be added as independent data becomes available. Companies interested in evaluating and obtaining independent data on new products or technologies should contact Dr. Mike Hile (814-863-7960) at the Penn State Odor Lab for further information.

Dr. Mike Hile
PSU, Department of Ag and Biological Engineering
246 Ag Engineering Building
University Park, PA 16802-1908
(814) 863-7960
mlh144@psu.edu

COMMONWEALTH OF PENNSYLVANIA
STATE CONSERVATION COMMISSION

Agenda Item B.2.c.ii

DATE: February 20, 2019

TO: State Conservation Commission Members

FROM: Frank X. Schneider
Director, Nutrient and Odor Management Programs

Karl Dymond
Odor Management Coordinator

THROUGH: Karl G. Brown
Executive Secretary, State Conservation Commission

REFERENCE: Odor Management Program - Vegetative Buffer Standard

The State Conservation Commission (SCC) and the Pennsylvania State University (PSU) have developed an Odor Management (OM) Vegetative Buffer Standard.

Vegetative Buffers are plantings of grasses, trees and/or shrubs that are strategically located around animal housing facilities and/or manure storage facilities on poultry and livestock operations. Vegetative Buffers filter and trap dust, odor, particulate matter, and ammonia from the odor plume. Vegetative Buffers also serve as a means of disruption of the odor plume. This allows heavier odorous molecules and odor-carrying material to settle out in areas of decreased air velocity and 'dead spots'. Lighter molecules may lift up and away.

Vegetative Buffers are considered Level II Odor Best Management Practices (Odor BMPs). Since the Odor Management Program was established, the SCC looked to the Soil and Water Technical Guide(eFOTG) maintained by the Natural Resources Conservation Service (NRCS) and utilizes the eFOTG standard and specifications for buffers, etc. Seeing that the eFOTG is based on soil and water and the buffers needed for OM are similar, but also somewhat different, SCC and PSU staff believes a standalone Vegetative Buffer Standard for Odor Management is warranted.

The OM Vegetative Standard was developed in order to provide consistent program guidance to be utilized in the development, review, and implementation of odor management plans. The SCC standard incorporates concepts of the USDA NRCS eFOTG conservation practice standards for Windbreak Shelterbelt (380) and Hedgerow Plantings (422).

The main audience for this standard consists of those Pennsylvania certified odor management specialists who will be developing, reviewing, or assisting with implementing plans to meet the requirements and intent of Pennsylvania's Act 38 Odor Management program. The secondary audience would be Operators that need to implement their plans.

The proposed vegetative buffer standard includes:

a. Overview
b. Design Plans and Specification
c. Implementation Specification
d. Operation and Maintenance specifications
e. Design – Plant Material Selection
f. Example OMP
g. References

Attached you will find a draft of the OM vegetative buffer standard for your review.

The NMAB passed a motion to recommend approval of the Vegetative Buffer Standard at their January 17, 2019 meeting. At this time, SCC staff is asking for an approval action

ATTACHMENTS:

- Draft SCC Vegetative Buffer Standard

LEVEL II ODOR BEST MANAGEMENT PRACTICE (BMP) GUIDE FOR VEGETATIVE BUFFER ESTABLISHMENT

I. OVERVIEW

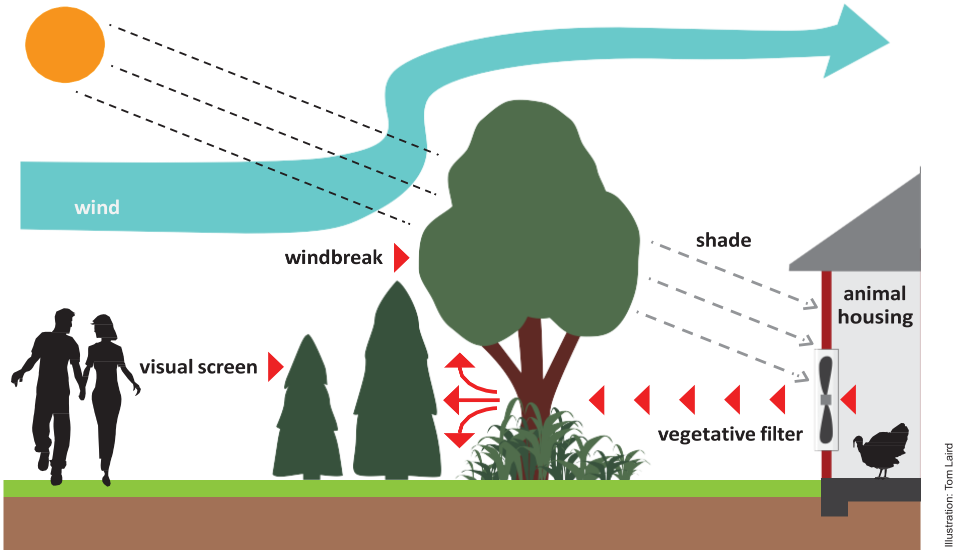
Vegetative Buffers are plantings of grasses, trees and/or shrubs that are strategically placed around animal housing facilities and/or manure storage facilities on poultry and livestock operations for different purposes. When designed to reduce odor transport through filtering and buffering, Vegetative Buffers are considered Level II Odor Best Management Practices (Odor BMPs) and are specifically established to address potential odors from the animal housing facilities and manure storage facilities being evaluated in an Act 38 Odor Management Plan (OMP). Additionally, when used for their Visual Screening capacity, Vegetative Buffers may be located along property lines, or other locations on the poultry or livestock operation. Vegetative Buffers filter and trap dust, odor, particulate matter, and ammonia from the odor plume.

When used for their Vegetative Bio-Filtering and Windbreak capacities, Vegetative Buffers serve as a means of disruption of the odor plume. This allows heavier odorous molecules and odor-carrying material to settle out in areas of decreased air velocity and 'dead spots'. Lighter molecules may lift up and away. Turbulence allows fresh air from above to mix with odorous air, diluting the concentration of odorous molecules toward or below odor detection thresholds.

<u>Vegetative Filtering and Buffering Concept</u> – Vegetative Buffers, when used for their Vegetative Bio-Filtering and Windbreak capacities, are plantings of multiple rows of grasses, trees and/or shrubs that are strategically located around animal housing facilities and/or manure storage facilities on poultry and livestock operations. This active filtering helps to reduce the odor transport.

<u>Visual Screening Concept</u> – Vegetative Buffers, when used for their Visual Screening capacity, are plantings of single or multiple rows of grasses, trees and/or shrubs. Attractive trees and shrubs visually screen farm management activities and can serve as landscape plants to beautify the barn and farm. Research concludes that farms judged as "attractive" have fewer odor complaints.

Figure 1. Vegetative Filtering & Screening



Vegetative Buffers have a direct impact on odor transport and odor perception in the odor generation-transport-perception continuum.

Additionally, Vegetative Buffers can provide other useful benefits for the farm setting such as:

- Slow and buffer roof, road / lane, and barnyard runoff in addition to filtering nutrients and sediment.
- Protect animal housing facilities from winter winds.
- Act as a living snow fence by strategically depositing snow in acceptable locations.
- During hot weather, shade trees block solar load on barns, improving animal comfort and reducing energy expense.
- Trees provide nesting habitat for wild birds and ground level habitat for wild animals.
- When grown for Biomass, can be harvested and used as animal bedding or combusted as a renewable, carbon-neutral source of heat for animal housing facilities.

This odor management guide is consistent with the general criteria of the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Field Office Technical Guide (Pa Tech Guide) conservation practice standards for Windbreak/Shelterbelt Establishment (380) and Hedgerow Planting (422). Additional purposes and design criteria for these practices may need to be met for funding site-specific installations to meet the conservation goals and objectives of the operation. Filter Strips (393) and Riparian Forest Buffers (391) practices are other common vegetative buffers to consider in designing a holistic treatment of air and water pollution and providing shade, biomass, and habitat.

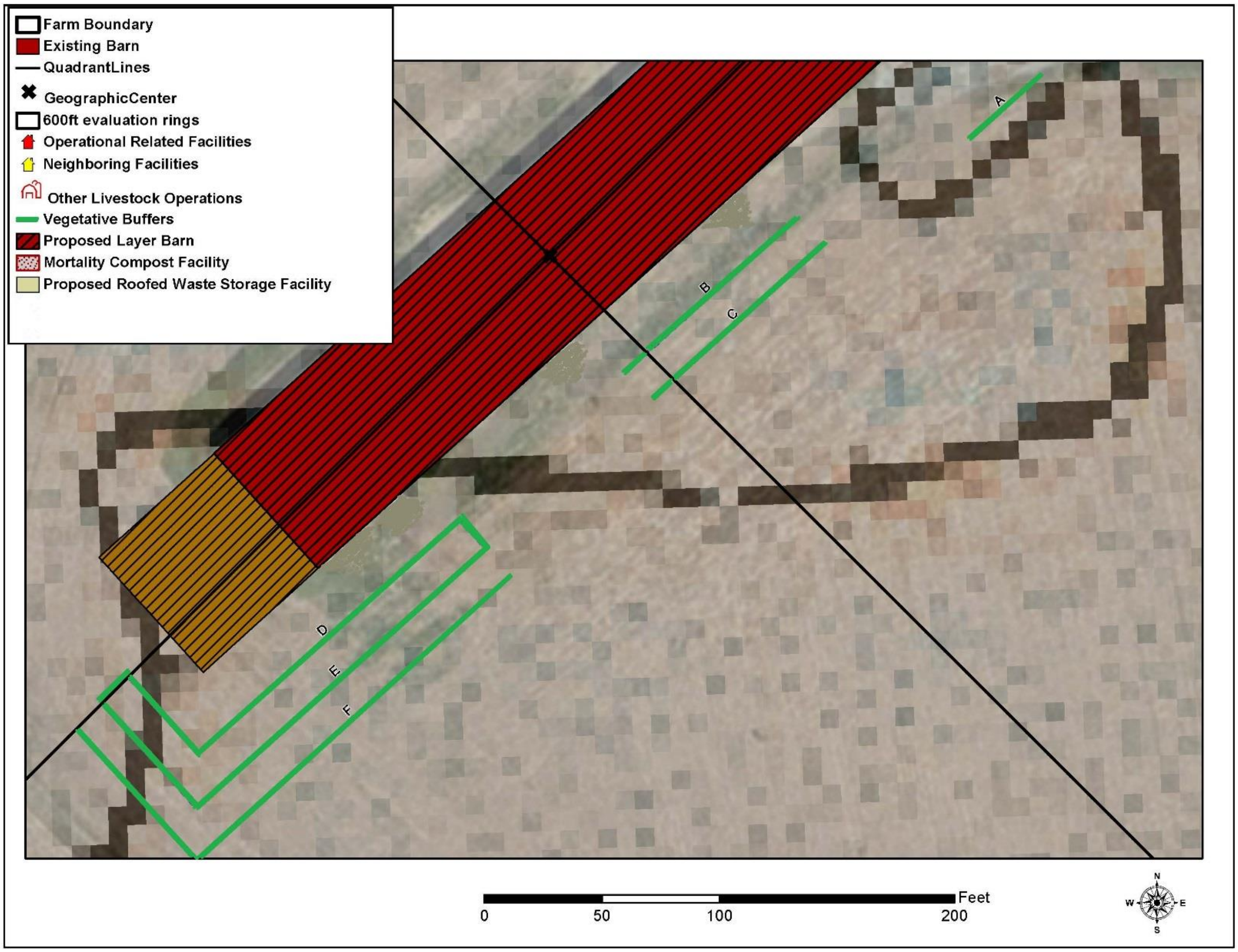
II. DESIGN PLANS AND SPECIFICATIONS

Procedures, technical details, and other information listed below provide additional guidance for carrying out selected components of the Vegetative Buffer Odor BMP Establishment.

For selecting woody plants suitable for placing general purpose Vegetative Buffers in most places on a poultry operation, refer to 'Windbreak Plant Species for Odor Management around Poultry Production Facilities', USDA MD PMC Technical Note 1(2007). For grasses, trees, and shrubs with best survival results when placed in front of poultry facility exhaust fans, refer to 'Plants Tolerant of Poultry House Emissions in the Chesapeake Bay Watershed' USDA MD PMC (2015).

LOCATION & LAYOUT

Figure 2. Example Location & Layout Map



Location & Layout Map. A Location & Layout Map must be included to visually show where the Vegetative Buffer will be located and how it will be laid out. Alternatively, this information can be added to the Odor Management Plan (OMP) Site Map, provided that all of the required information can easily be seen and interpreted.

Effectiveness for intercepting particulates and odors improves when rows are oriented perpendicular to prevailing winds. Wider (deeper) and taller plantings are more effective than narrower, shorter ones. Rows positioned closer to the odor source, e.g. poultry house, manure storage facility, etc., contain or limit dispersion of more emissions than those further away. Long, uninterrupted rows (at least 10 times as long as high) are more effective than shorter ones with gaps.

The closer the row is located to the odor source, e.g. poultry house, manure storage facility, etc., the more effectively the odor and dust will be trapped and dispersed. Particulate trapping efficiencies may be significantly reduced beyond 100 feet, depending on height of trees, wind speed/direction, and atmospheric conditions. Proximity of the plants for trapping efficiency must be balanced with plant survival, which decreases the closer the plants are to the ventilation fans.

A. VEGETATIVE FILTERING

To reduce odor transport, the vegetative buffer must be situated so that the odor plume (from a concentrated source like the fans or manure storage) must pass through the buffer before reaching the odor receptor. In most cases, this means that the vegetation should concentrate around fans or outdoor manure storage structures. A vegetative buffer expected to reduce odor transport must be at least 3 layers deep. The layers should consist of one row of fast-growing grasses or shrubs (positioned nearest the odor source), one row of fast-growing deciduous trees or shrubs, and finally a row of evergreens planted furthest from the fans. NRCS practice standard Hedgerow Planting (422) is used for this purpose and location directly in front of exhaust fans. Refer to Conservation Practice Hedgrerow Planting (422) Fact Sheets for Trees and Shrubs for Poultry Houses and Warm-Season Grasses for Poultry Houses for specific instructions to establish and manage each type of vegetation when applying to NRCS for financial assistance with establishing this practice for this purpose and location.

Plant Materials

Multiple row plantings (> 2 rows) should contain a variety of species to lessen the chance of loss due to species specific insects or disease. In multiple row plantings containing more than 3 rows, the leeward rows may be planted in groups or segments containing 5 or more plants of one species in a series to enhance wildlife values.

See the Plant Materials section (V. Design – Plant Materials Selection) for information on individual plant materials.

Rows

First Row Placement. Remember to account for changes in the site topography, e.g., you would not typically plant in a depression. Every poultry house will differ as to the location of ventilation fans, access roads, drainage ditches, etc., so each planting design will need to accommodate these features. Where vehicle access is needed, locate the first row a minimum of 50 feet from the sidewall fans and 80 feet from the end wall fans of the poultry house. If the house does not have tunnel ventilation and has a south or west exposure, use a minimum setback of 100 feet to provide for air movement.

Plantings in fan impact areas. For plant survival in fan impact areas, the nearest row of plantings must be set back from the fans by a distance that is at least 10 times the exhaust fan diameter. (For example, if the ventilation fan has a diameter of 4 feet, then the first line of plants needs to be planted at least 40 feet away.) Where multiple fans are used in one location, this planting distance formula may be increased a minimum of 5 feet for each fan, depending on the number of fans that are likely to be running at the same time (e.g., bank of two 4-ft. diameter fans may need a 50-foot setback, four fans may need a 60-foot setback, etc.).

Length of Rows. Length of the buffer should be a minimum of 10 feet longer, at each end, then the odor source. For a single 48-inch sidewall fan, the buffer should be 24-feet long, centered at the mid-point of the fan. For a bank of fans spanning the entire end of a 40-foot building, the buffer should be 60 feet long. All individual fans and fan banks must be fitted with a vegetative buffer to meet the requirements of this standard.

Spacing Between Rows

Spacing between adjacent rows can vary or be uniform. Plan the between-row spacing wide enough for maintenance equipment to operate freely between rows. Usually this requires about 4 additional feet to allow mower access during the establishment period. Alternatively, Weed Control Barriers may be used, e.g. landscape fabric and woody mulch, etc.

Maximum between-row spacing should depend on site conditions and planned vegetative buffer function but should not exceed 20 feet. Exceptions to these between-row spacing include the use of vegetation as a living snow fence and when the landowner plans to remove every other row prior to excessive crowding.

Row Types/Heights	Spacing Between Rows
Between shrubs less than 10 ft. tall	10 feet
Between shrubs and small trees (10 to 25 ft.) tall	12 feet
Between small trees less than 25 ft. tall	12 feet
Between small and tall trees (> 25 ft.) in height	16 feet
Between tall trees > 25 ft. tall	16 feet
Between any wide-crowned species and conifers	20 feet
Between faster growing species and conifers	20 feet

Spacing Within Rows

Where plantings exceed the minimum number of rows, a plant-to-plant spacing of up to 20 feet in those additional rows may be planned for any appropriate tree/shrub species.

Closer spacing’s result in protection in the shortest time. Where appropriate, plantings with narrow spacing’s can be designed with future thinning required to achieve the ultimate required spacing and density.

Plant types at 20-year heights	Spacing Within Rows
Shrubs < 10 feet tall	3 to 6 feet
Shrubs and trees (10 – 25 ft.) tall	5 to 16 feet
Trees > 25 ft. tall	8 to 16 feet

Vegetative Filtering Exception

In the case of an animal housing facility that uses both side-wall fans and end-wall fans (tunnel fans), the individual fans (side-wall fans) may use less than 3 rows of plant material **only when** there are also 3 or more rows of Vegetative Filtering being used to address the end-wall fans or tunnel fans.

B. VISUAL SCREENING

Since the goal of visual screening is not explicitly to filter odors and dust, the plant material requirements are lessened. One or two rows of plant material are sufficient to visually enhance and beautify the facility. For year-round visual screening, use at least one row of evergreen trees. NRCS practice standard Windbreak/Shelterbelt Establishment (380) is typically used for this purpose.

Plant Materials

See the Plant Materials section (V. Design – Plant Materials Selection) for information on individual plant materials.

C. PLANT MATERIAL CALCULATIONS

Vegetative Filtering:

Example Scenario: End-Wall Fan Buffer Plant Material Needs

Number of rows planned ___3_____ (Note, Vegetative Filtering requires 3 rows)

Distance from Fan to Row 1 ______

Row 1 (Nearest the fan)

Species ___________ (A) (Select from Shrubs and Grasses, e.g. Streamco Willow)

Buffer length (feet) _______ (B)

Distance Between plants _______ (C)

Number of plants needed = (C / D +1) = _________

Distance between Row 1 and Row 2 to accommodate mowing _______

Row 2 (Second row from the fans)

Species ___________ (A) (Select from Deciduous Trees, e.g. Hybrid Poplar or Sycamore)

Buffer length per fan (feet) _______ (B)

Distance Between plants _______ (C)

Number of plants needed = (C / D +1) = _________

Distance between Row 2 and Row 3 to accommodate mowing _______

Row 3 (Row furthest from the fan)

Species ___________ (A) (Select from Evergreen Trees, e.g. Arborvitae or Spruce)

Buffer length per fan (feet) _______ (B)

Distance Between plants _______ (C)

Number of plants needed = (C / D +1) = _________

<u>Vegetative Filtering Exception:</u>

Example Scenario: Individual Fan Buffer Plant Material Needs

Number of rows planned ________ (Note, may be 1, 2, or 3 rows if additional Vegetative Filtering is planned)

Distance from Fan to Row 1 ______

Row 1 (Nearest the fan)

Species ___________ (A) (Select from Shrubs and Grasses, e.g. Streamco Willow)

Number of fans ________ (B)

Buffer length per fan (feet) _______ (C)

Distance Between plants _______ (D)

Number of plants needed = (C / D +1) x B = _______

Distance between Row 1 and Row 2 to accommodate mowing _______

Row 2 (Second row from the fans)

Species ___________ (A) (Select from Deciduous Trees, e.g. Hybrid Poplar or Sycamore)

Number of fans ________ (B)

Buffer length per fan (feet) _______ (C)

Distance Between plants _______ (D)

Number of plants needed = (C / D +1) x B = ________

Distance between Row 2 and Row 3 to accommodate mowing _______

Row 3 (Row furthest from the fan)

Species ____________ (A) (Select from Evergreen Trees, e.g. Arborvitae or Spruce)

Number of fans _________ (B)

Buffer length per fan (feet) ________ (C)

Distance Between plants ________ (D)

Number of plants needed = (C / D +1) x B = _________

Visual Screening:

Plant Material Needs for Visual Screening only (not odor control)

Number of rows planned _________ (may be 1, 2, or 3 rows)

Distance from Fan to Row 1 _______

Row 1 (Nearest the fan)

Species ____________ (A) (Select from Shrubs and Grasses, e.g. Streamco Willow)

Buffer length (feet) ________ (B)

Distance Between plants ________ (C)

Number of plants needed = (C / D +1) = __________

Distance between Row 1 and Row 2 to accommodate mowing ________

Row 2 (Second row from the fans)

Species ____________ (A) (Select from Deciduous Trees, e.g. Hybrid Poplar or Sycamore)

Buffer length per fan (feet) ________ (B)

Distance Between plants ________ (C)

Number of plants needed = (C / D +1) = __________

Distance between Row 2 and Row 3 to accommodate mowing ________

Row 3 (Row furthest from the fan)

Species ____________ (A) (Select from Evergreen Trees, e.g. Arborvitae or Spruce)

Buffer length per fan (feet) ________ (B)

Distance Between plants _______ (C)

Number of plants needed = (C / D +1) = _________

Total Plant Material Needs:

Species ___________________ Number of plants _____________

Species ___________________ Number of plants _____________

Species ___________________ Number of plants _____________

The results of these planning details are to be entered into the Plant Materials Information Chart, which will be used in the OMP.

PLANT MATERIALS INFORMATION CHART:

Species/cultivar by row number	Kind of stock[1]	Planting dates[2]:	Distance between plants within row (ft.)	Total number of plants for row	Distance (ft.) from this row to next row[3]
1.					
2.					
3.					
4.					
5.					
6.					
7.					

[1] Bareroot, container, cutting, balled and burlapped (B&B), etc. Include size, caliper, height, and age as applicable.
[2] Date: Month & Year
[3] Adjusted for width of maintenance equipment.

III. IMPLEMENTATION SPECIFICATIONS

Containerized and balled-and-burlapped (B&B) plants are usually available throughout the year. The preferred planting times are in the fall or spring, but plants can also be installed during the summer months and irrigation must be used. Planting during the dormant period (winter and early spring) is also an option if the ground is not frozen. Ask your plant supplier for recommendations.

The site should be flagged to identify exactly where each plant will be placed.

A. Site Preparation

Follow Conservation Practice Hedgrerow Planting (422) Fact Sheet for Trees and Shrubs for Poultry Houses and Warm-Season Grasses for Poultry Houses for specific instructions to prepare challenging sites along poultry facilities for establishing trees and shrubs.

Remove debris and control competing vegetation to allow enough spots or sites for planting and planting equipment. Prepare supplemental moisture (irrigation) materials for installation if required by trees and/or shrubs.

Because vegetative buffers can take years to become large enough to reach full effectiveness, good site planning will establish the plants as soon as possible. It is recommended that plant establishment occur prior to construction where possible. Good site planning and construction management will make efforts to leave soil undisturbed in the areas where the buffer will be established. Prior to establishment, the site should be limed in accordance with a soil test recommendation. Disturbed sites around a newly constructed livestock facility often have poor fertility. Soil quality remediation should be accomplished as far in advance of planting as possible.

Appropriate site preparation will be sufficient for establishment and growth of selected species and suitable for the site. Perform necessary site preparation at a time and manner to support the survival and growth of planted species.

Avoid sites that have had recent applications of pesticides harmful to woody species. If pesticides are used apply only when needed, and handle and dispose of properly within federal, state and local regulations. Follow label directions and precautions listed on containers.

Always check for utility lines (gas, water, cable, electricity) before planting. Avoid planting on top of buried utility lines or under low-hanging overhead lines. Contact Pennsylvania One Call or Call 811 before you dig.

B. Irrigation

Installation of a trickle or emitter irrigation system is highly recommended for all plantings. Drip irrigation lines should be installed prior to planting.

Grasses – Between rows of grasses, use ½-inch polypropylene irrigation line with 0.5 gallon per hour emitters placed every 12–18 inches, or 15 mil thickness drip tape with 12-inch dripper spacing.

Shrubs & Trees – For the irrigation line, use ½-inch polypropylene with 0.5 gallon per hour emitters placed at each tree and shrub. A 15-mil thickness drip tape with 12-inch dripper spacing may be appropriate for closely spaced plantings.

C. Weed Control Barriers

Weed control will be part of the required maintenance activities. To ease weed control, place a layer of landscape fabric/ weed barrier cloth over the planting area.

Wood products, such as shredded or chipped hardwood bark, pine bark, bark chips, and wood chips, can be used as mulch around the plants, but will not provide long- term weed control unless more mulch is periodically added. Apply mulch to a depth of 3 to 4 inches. Use a minimum of a 3-foot wide strip of mulch in the planting row, or a 3-foot diameter circle of mulch around each plant.

Black polyethylene sheeting (6 mil thickness) or woven plastic landscape fabric can also provide an effective weed barrier. Black poly is generally cheaper than landscape fabric and works well if trickle or emitter irrigation is also implemented. Be aware that woven plastic fabric can be difficult to remove after plants are established because roots will grow into the material. Additional drawbacks to these artificial weed control barriers include increased soil temperatures that may limit beneficial microbial activity, and the inconvenience of disposing of the materials when they are no longer needed.

Treatment of the site with a pre- and post-emergent herbicide before planting is also helpful for controlling weed growth.

Natural or synthetic fabric weed mats may also be used around individual tree and shrub plantings to suppress weeds and conserve soil moisture. Mats should be at least 3 feet square, or 3 feet in diameter if round, and installed according to the manufacturer’s instructions.

D. Temporary Storage Instructions for Planting Stock

Planting stock that is dormant may be stored temporarily in a cooler or protected area. For stock that is expected to begin growth before planting, dig a V-shaped trench (heeling-in-bed) sufficiently deep and bury seedlings so that all roots are covered by soil. Pack the soil firmly and water thoroughly.

E. Planting Methods

Refer to the NRCS Conservation Practice Standard for Tree/Shrub Establishment (612) for planting criteria for establishing trees and shrubs. Criteria concerning, planting stock, stock handling, survival rates, planting dates and all other criteria for establishing woody plants are found in this standard.

For container and bareroot stock, plant stock to a depth even with the root collar in holes deep and wide enough to fully extend the roots. Pack the soil firmly around each plant. Cuttings are inserted in moist soil with at least 2 to 3 buds showing above ground.

Plant Materials. Unless written approval is obtained from State Conservation Commission staff and documented in Appendix 5 of the Odor Management Plan, the plant material must come from the approved lists in the V. **Design – Plant Materials Selection** section. All plant material options are proven to withstand dust accumulation and thrive near livestock fans.

Rows should be staggered so that plants in row #2 are planted-in adjacent to the gaps in row #1. See figure 3 in the V. **Design – Plant Materials Selection** section.

IV. OPERATION & MAINTENANCE SPECIFICATIONS

Perform the following actions to ensure that this practice functions as intended throughout its expected life. These actions include normal repetitive activities in the application and use of the practice (operation) and repair and upkeep of the practice (maintenance):

A. Inspections

Year 1. Inspect the Vegetative Barrier twice a month from spring until fall. Identify areas damaged by heavy rainfall, animals, chemicals, tillage, or equipment traffic, and any other areas where the vegetation is not adequate to achieve the intended purpose of the practice. Replant during the growing season.

Years 2 – 4. Inspect the Vegetative Barrier monthly during the growing seasons. Identify areas damaged by heavy rainfall, animals, chemicals, tillage, or equipment traffic, and any other areas where the vegetation is not adequate to achieve the intended purpose of the practice. Replant during the growing season. A higher level of care is required until 3 years after plant establishment.

Years 5 and on. Inspect the windbreak at least annually. Identify areas damaged by heavy rainfall, animals, chemicals, tillage, or equipment traffic, and any other areas where the vegetation is not adequate to achieve the intended purpose of the practice. Replant during the growing season.

B. Maintenance Activities

Pruning. Thin or prune the rows of plantings to maintain its function only after trees and shrubs are established. Refer to Use NRCS Conservation Practice Standards Tree/Shrub Pruning (PA660), and Forest Stand Improvement (PA666) and for these maintenance activities.

Fertilize. Apply nutrients periodically as needed after the first year, but only if needed to maintain plant vigor and at a rate based on soil test results.

Protect from damage. Protect the planting from wildfire and damage from livestock, wildlife, and equipment, to the extent feasible. Refer to the NRCS Conservation Practice Standards Access Control (PA472) or Fencing (PA382).

Weed Control. Control undesirable plants by pulling, mowing, or spraying with a selective herbicide. Replace woody mulch; reapply mulch to a depth of 3 to 4 inches. Refer to NRCS Conservation Practice Standards Brush Management (PA314) and Herbaceous Weed Treatment (PA315).

Irrigation. Provide supplemental water to plantings via a localized or drip irrigation during the growing season for the first 3-years' post-establishment. Ensure irrigation equipment is properly working; replace components as needed. Refer to NRCS Conservation Practice Standard Irrigation System, Micro-irrigation (PA 441).

V. DESIGN – PLANT MATERIALS SELECTION

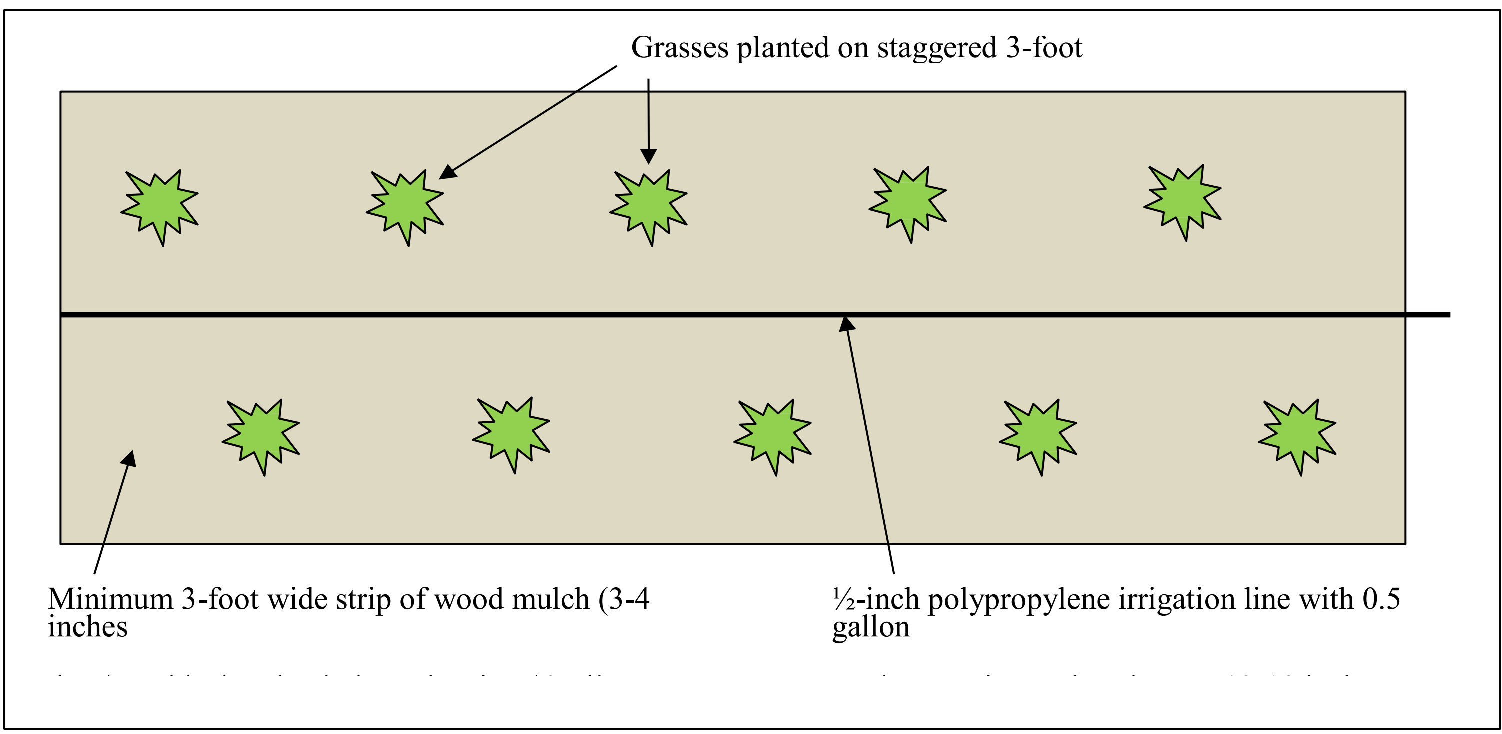
This standard includes four groups of plant materials; Grasses, Shrubs, Deciduous Trees, and Evergreen Trees.

Mixed Species Note – Since dust (particulate matter) carries odors, incorporating a mixed species of native plants in the plant design is encouraged. By using a mixed species of plant material, there will be a higher chance of the Vegetative Buffer filtering out the different sizes of Particulate Matter, i.e. $PM_{2.5}$ & PM_{10}, which in turn helps to disrupt the odor transport pathway. Additionally, incorporating a mixed species planting should provide for better plant health – more diversity equals a more resilient stand of plants, or at least minimize monocultures by mixing up the cultivars if you're planting a buffer of just willow, for example.

Invasive Species Note – Invasive species need to be avoided! Highly invasive species examples – *Ailanthus* (Tree of Heaven), Bradford or Callery Pear, Privet, Autumn Olive, Honeysuckle, Japanese Barberry, Multiflora Rose, and *Euonymus*. Please refer to other plant resource sources such as the Invasive Plant Atlas of the United States (https://www.invasiveplantatlas.org/index.html) for more information.

Plant Materials Selection Note – This section V. Design – Plant Materials Selection will be updated as more research and plant species recommendations emerge. The below plant material recommendations are based off of research current at the time of the publication of this standard.

Figure 3. Grass planting layout.



A. Grasses

Preferred Plant Materials Selection:

1. ***Warm Season Grasses***: Switchgrass (Panicum virgatum) and Coastal Panicgrass (Panicum amarum). Note: While Giant Miscanthus (Miscanthus giganteus) does well to control odors but the risk for transport of this plant to a natural water body where it can displace native plants is too high to recommend its use in these locations.

2. ***Cool Season Grasses***: Prairie Cordgrass (Spartina pectinate)

Planting Methods Note –

Use containerized plants (1-quart containers or larger) that have well-developed root systems. Plants of this size will be able to survive better in the harsh conditions near the ventilation fans than smaller plants or seedlings. In ventilation fan impact areas, planting 1-quart container stock in the spring, along with irrigation and good weed control, should produce the best results for plant survival and growth.

Spacing Within & Between Rows –

Plant the grasses 3 feet apart on center within and between rows, with a staggered planting arrangement between rows (see Figure 3). It also is advisable to use more than one species or variety of grass so that a single insect or plant pathogen won't devastate the entire planting.

Table 1. Recommended grasses for planting near poultry house ventilation fans.

Common Name	Scientific Name	Cultivar	Mature Size (width x height)	Remarks
WARM SEASON GRASSES				
PANICGRASS, COASTAL	*Panicum amarum* var. *amarulum*	'Atlantic' or 'Dewey Blue'	3' x 6'	Quickest to establish, but not as stiff-stemmed as others on this list. 'Dewey Blue' has especially attractive bluish leaves. Do not plant Coastal Panicgrass on wet sites.
SWITCHGRASS	*Panicum virgatum*	'Kanlow'	5' x 7'	Vigorous lowland switchgrass, typically used for biofuel production. Especially good for moist soils.
SWITCHGRASS	*Panicum virgatum*	'Northwind'	2' x 6'	Does not spread as much as other cultivars. Useful for planting closest to the ventilation fans if space is limited
SWITCHGRASS	*Panicum virgatum*	'Thundercloud'	4' x 8'	Tallest switchgrass cultivar on this list. If using multiple rows, can be planted downwind of shorter plants. Also, can be placed at greater distances from ventilation fans due to taller height.
SWITCHGRASS	*Panicum virgatum*	Timber Germplasm	5' x 7'	Vigorous lowland switchgrass, typically used for biofuel production. Especially good for moist soils; lodges a little less than 'Kanlow.' Commercial availability of container plants may be limited.
COOL SEASON GRASSES				

CORDGRASS, PRAIRIE	*Spartina pectinata*	Common	6’ x 8’	Prefers wet sites (e.g., swales between poultry houses), but also tolerates dry sites and saline environments. Can spread rapidly by rhizomes, up to 2 feet in a growing season, to make a dense mat.

B. Shrubs

Preferred Plant Materials Selection:

Streamco Willow, Redosier Dogwood, Gray Dogwood, Dwarf Hackberry, Northern Bayberry, Japanese Holly

Planting Methods Note –

In ventilation fan impact areas, planting 1- to 2-gallon container stock in the spring, along with irrigation and good weed control, should produce the best results for plant survival and growth. 1- to 2-gallon container plants are recommended because they generally survive better in fan impact areas than seedlings or balled-and-burlapped plants.

If the tree/shrub planting distance will be less than 40 feet from the ventilation fans, use at least one row of stiff-stemmed warm-season grasses in front of the trees/shrubs.

Table 2. Recommended shrubs for planting near poultry house ventilation fans.

Plant Names	Height at 20 Years 1/	Growth Rate 2/	Density 3/ Summer	Density - Winter	Planting Distance from Fans	Remarks
SHRUBS- General						
WILLOW, PURPLEOSIER 5/ *Salix purpurea* 'Streamco'	15 ft.	Fast	Medium to High	Low	≥40 feet	Shrub/small tree. 'Streamco' is a male clone, does not root sucker, and does not spread readily beyond the planting site. Proven effective for odor control (passive ammonia absorption).
HACKBERRY, DWARF *Celtis pumila*	25 ft.	Fast	High	Low	≥30 feet	Deciduous shrub/small tree. Adapted to a wide range of soil and site conditions. Fruits are attractive to birds.
DOGWOOD, REDOSIER *Cornus sericea*	15 ft.	Fast	Medium to High	Low	≥40 feet	Tolerant of fluctuating water tables. Fruits are attractive to birds. Often used for landscaping and as a secondary plant in windbreaks. Not recommended for planting in fan impact areas.
DOGWOOD, GREY Cornus racemosa	12 ft.	Slow	Medium to High	Low	≥40 feet	Tolerates many climatic conditions. Tolerance to shade is considered intermediate. Plant in the early spring with dormant planting stock. Not recommended for planting in fan impact areas.
SHRUBS – Visual Screening Only						
BAYBERRY, NORTHERN *Morella pennsylvanica* (formerly *Myrica pennsylvanica)*	10 ft.	Moderate	Medium	Low	N/A	Semi-evergreen foliage. Need male and female plants for fruit production. Salt tolerant (0-20 ppt.) Suckers to form colonies. Suitable for visual screens and similar uses. Not recommended for planting in fan impact areas.

HOLLY, JAPANESE 5/ *Ilex crenata* 'Steeds'	8 ft.	Fast	High	High	N/A	Evergreen. Need male and female plants for fruit production. Fruits are attractive to birds. Tolerates partial shade. Suitable for visual screens and similar uses. Not recommended for planting in fan impact areas.

C. Deciduous Trees

Preferred Plant Materials Selection:

Red Maple, Common Hackberry, Honey Locust, Black Locust, Hybrid Poplar, Tulip Poplar, Sycamore, Bald Cypress, American Elm, Osage-Orange, Dawn Redwood, Hybrid Willow

Planting Methods Note –

In ventilation fan impact areas, planting 1- to 2-gallon container stock in the spring, along with irrigation and good weed control, should produce the best results for plant survival and growth. 1- to 2-gallon container plants are recommended because they generally survive better in fan impact areas than seedlings or balled-and-burlapped plants.

If the tree/shrub planting distance will be less than 40 feet from the ventilation fans, use at least one row of stiff-stemmed warm-season grasses in front of the trees/shrubs.

Table 3. Recommended trees and shrubs for odor control, visual screening, shade, and shelter around poultry houses.

Plant Names	Height at 20 Years 1/	Growth Rate 2/	Density 3/ - Summer	Density - Winter	Planting Distance from Fans	Remarks
DECIDUOUS TREES						
CYPRESS, BALD *Taxodium distichum*	30 ft.	Fast	Medium to High	Low	≥25 feet	Naturally occurring on streambanks and in swamps. Fine-textured leaves are highly efficient for trapping dust and odors.
ELM, AMERICAN *Ulmus americana* 'New Harmony' and 'Valley Forge'	35 ft.	Fast	Medium to High	Low	≥30 feet	Prefers moist soil but will tolerate drier sites. The New Harmony and Valley Forge cultivars are Dutch Elm disease-resistant. Careful pruning is recommended to insure upright growth.
HACKBERRY, COMMON *Celtis occidentalis*	35 ft.	Fast	High	Low	≥30 feet	Adapted to a wide range of soil and site conditions. Fruits are attractive to birds. Proven effective for odor control (passive ammonia absorption).
HONEYLOCUST *Gleditsia triacanthos* var. *inermis*	40 ft.	Fast	Low to Medium	Very Low	Use formula 4/	Prefers well-drained sites but will tolerate brief inundation. Drought-resistant and somewhat tolerant of salinity. Small leaves are highly efficient for trapping dust and odors. Proven effective for odor control (passive ammonia absorption).

LOCUST, BLACK *Robinia pseudoacacia* Steiner Group	30 ft.	Fast	Low to Medium	Very Low	≥30 feet	Adapted to a wide range of soil and site conditions, except very wet. Small leaves are highly efficient for trapping dust and odors. The Steiner Group of black locust consists of three cultivars: ‘Appalachia,’ ‘Allegheny,’ and ‘Algonquin.’ Tolerant of locust borers.
MAPLE, RED *Acer rubrum*	35 ft.	Fast	Medium to High	Low	≥30 feet	Adapted to a wide range of soil and site conditions. Extremely variable growth rate.
OSAGE-ORANGE *Maclura pomifera* ‘White Shield’	20 ft.	Moderate	High	Low	Use formula 4/	Adapted to a wide range of soil and site conditions. Trunk is usually short and divides into several prominent limbs. Fruits are messy, so select male plants. 'White Shield' may be the most thorn-free cultivar.
POPLAR, HYBRID *Populus deltoids x Populus nigra*	45 ft.	Very Fast	Medium		Use formula 4/	Thrives under a wide range of soil and climatic conditions, and resists insects and diseases.
POPLAR, TULIP *Liriodendron tulipifera*	50 ft.	Very Fast	Medium		Use formula 4/	It does best on moderately moist, deep, well drained, loose textured soils; it rarely grows well in very dry or very wet situations.
REDWOOD, DAWN 5/ *Metasequoia glyptostroboides*	35 ft.	Fast	High	High	≥30 feet	Prefers moist soil but will tolerate drier sites. Similar in appearance to bald cypress. Fine-textured leaves are highly efficient for trapping dust and odors. <u>Test data are from sidewall fans only</u>.
SYCAMORE *Platanus occidentalis*	50 ft.	Fast	High	Low	Use formula 4/	Best growth on moist, rich soil. Often found on moist bottomlands along streams and rivers. Tolerant to a wide range of soil conditions. Susceptible to anthracnose during wet years.
WILLOW, HYBRID 5/ *Salix matsudana x alba* ‘Austree’	60 ft.	Very Fast	Medium to High	Medium	Use formula 4/	Sterile hybrid. Due to its extremely fast growth (>3 ft./yr.), can provide visual screen in 1 – 2 years. Dense branch structure. Proven effective for odor control (passive ammonia absorption).

D. Evergreen Trees

Preferred Plant Materials Selection:

Arborvitae, Eastern Red Cedar, Norway Spruce, Atlantic White Cedar, Eastern White Pine, American Holly, Nellie Stevens Holly

Planting Methods Note –

In ventilation fan impact areas, planting 1- to 2-gallon container stock in the spring, along with irrigation and good weed control, should produce the best results for plant survival and growth. 1- to 2-gallon container plants are recommended because they generally survive better in fan impact areas than seedlings or balled-and-burlapped plants.

If the tree/shrub planting distance will be less than 40 feet from the ventilation fans, use at least one row of stiff-stemmed warm-season grasses in front of the trees/shrubs.

Table 4. Recommended evergreen trees for planting near poultry houses and ventilation fan impact area.

Plant Names	Height at 20 Years 1/	Growth Rate 2/	Density 3/ Summer	Density - Winter	Planting Distance from Fans	Remarks
EVERGREEN TREES						
ARBORVITAE *Thuja occidentalis*	25 ft.	Slow	Very High	Very High	Use formula 4/	Frequently planted statewide as an ornamental. Prefers moist, well-drained soil, but tolerates a wide range of conditions. Prone to bagworms.
ARBORVITAE 5/ *Thuja plicata x standishii* 'Green Giant'	40 ft.	Fast	Very High	Very High	Use formula 4/	Prefers well-drained soil, but tolerates a wide range of conditions. Bagworms are potential pests. Proven effective for odor control (passive ammonia absorption).
CEDAR, ATLANTIC WHITE *Chamaecyparis thyoides*	25 ft.	Moderate	Very High	Very High	Use formula 4/	Prefers moist soil. Similar to Arborvitae in growth form.
CEDAR, EASTERN RED *Juniperus virginiana*	20 ft.	Moderate	Very High	Very High	Use formula 4/	Growth rate and size is site dependent and can be variable. Should not be planted near apple orchards; alternate host of cedar- apple rust. Proven effective for odor control (passive ammonia absorption).
HOLLY, AMERICAN *Ilex opaca*	20 ft.	Slow	High	High	N/A	Need male and female plants for fruit production. Fruits are attractive to birds. Shade tolerant; very slow-growing. Suitable for visual screens and similar uses. Not recommended for planting in fan impact areas.

PINE, EASTERN WHITE *Pinus strobus*	50 ft.	Fast	High	High	Use formula 4/	Grows on a variety of soils ranging from light, sandy, to heavy soils.
SPRUCE, NORWAY 5/ *Picea abies*	35 ft..	Fast	High	High	Use formula 4/	Fast growth rate when young, slows down with age. Prefers moderately moist, well- drained soil. Fine-textured leaves are highly efficient for trapping dust and odors. Proven effective for odor control (passive ammonia absorption).
Evergreen Trees – Visual Screening Only						
HOLLY, NELLIE STEVENS 5/ *Ilex cornuta x aquifolium* 'Nellie Stevens'	20 ft.	Fast	High	High	N/A	Shrub/small tree. Need male and female plants for fruit production. Fruits are attractive to birds. Tolerates partial shade. Plants may be multi-stemmed or pruned to have one main stem when young. Suitable for visual screens and similar uses. Not recommended for planting in fan

Tables # 2 – 4 Notes:

1. **Height at 20 Years:** Actual height may be shorter than the potential height on an optimal site, especially in fan discharge areas.
2. **Growth Rate:** Slow = less than 1 ft./year; Moderate = 1–2 ft./year; Fast = 2-3 ft./year; Very Fast = more than 3 ft./year.
3. **Density:** For an individual plant species, defined as the amount of space that is occupied by foliage, twigs, and branches and can be estimated by the amount of light that can be seen through the plant. Low density – 25-35% of space occupied by plant material (with 65-75% open space through which air can travel); Medium density – 40-60% of space occupied by plant material; High density - 60-80% of space occupied by plant material; Very High – more than 80% of space occupied by plant material. The overall density of a hedgerow is affected by the species selected, number of rows, and spacing between plants.
4. **Planting Distance from Fans:** As a general rule for plant survival in fan impact areas, the nearest row of tree/shrub plantings must be set back from the fans by a distance that is at least 10 times the exhaust fan diameter. (For example, if the ventilation fan has a diameter of 4 feet, then the first line of plants needs to be planted at least 40 feet away.) Where multiple fans are used in one location, this planting distance formula may be increased a minimum of 5 feet for each fan, depending on the number of fans that are likely to be running at the same time (e.g., bank of two 4-ft. diameter fans may need a 50-foot setback, four fans may need a 60-foot setback, etc.).
5. **Non-native plant;** not considered to be invasive.

Plant Reference Materials:

Shrubs

Willow, Purpleosier https://plants.sc.egov.usda.gov/factsheet/pdf/fs_sapu2.pdf

Hackberry, Dwarf https://plants.usda.gov/core/profile?symbol=CEPU10

Dogwood, Redosier https://plants.usda.gov/plantguide/pdf/cs_cose16.pdf

Dogwood, Grey https://plants.usda.gov/factsheet/pdf/fs_cora6.pdf

Bayberry, Northern http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=e310

Holly, Japanese https://www.hortmag.com/plants/plants-we-love/steeds-japanese-holly-for-foundation-plantings-and-entrys

Deciduous Trees

Maple, Red https://plants.usda.gov/plantguide/pdf/pg_acru.pdf

Hackberry, Common https://plants.usda.gov/plantguide/pdf/pg_ceoc.pdf

Locust, Honey https://plants.usda.gov/plantguide/pdf/pg_gltr.pdf

Locust, Black https://plants.usda.gov/factsheet/pdf/fs_rops.pdf

Poplar, Hybrid http://www.missouribotanicalgarden.org/

Poplar, Tulip https://plants.usda.gov/factsheet/pdf/fs_litu.pdf

Sycamore http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=a891

Cypress, Bald https://plants.usda.gov/plantguide/pdf/pg_tadi2.pdf

Elm, American http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=a922

Osage-Orange https://plants.usda.gov/factsheet/pdf/fs_mapo.pdf

Redwood, Dawn http://conifersociety.org/

Willow, Hybrid https://will.illinois.edu/images/tvPrograms/AustreeBittersweet.pdf

Evergreens

Arborvitae, Eastern https://plants.usda.gov/plantguide/pdf/cs_thoc2.pdf

Arborvitae, Western https://plants.usda.gov/plantguide/pdf/cs_thoc2.pdf

Cedar, Atlantic White https://plants.usda.gov/plantguide/pdf/pg_chth2.pdf

Cedar, Eastern Red https://plants.usda.gov/plantguide/pdf/cs_juvi.pdf

Holly, American https://plants.usda.gov/factsheet/pdf/fs_ilop.pdf

Holly, Nellie Stevens http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=c822

Pine, Eastern White https://plants.usda.gov/factsheet/pdf/fs_pist.pdf

Spruce, Norway http://www.mortonarb.org/trees-plants/tree-plant-descriptions/norway-spruce

VI. EXAMPLE OMP

The following is an example of a Vegetative Buffer write-up in an Act 38 Odor Management Plan (OMP). The certified OM Specialist plan writer will detail this information in the OMP. The plan writer will indicate if the Vegetative Buffer was a Required Level II Odor BMP or a Supplemental Level II Odor BMP, by selecting the appropriate checkbox.

Plan Summary

C. Odor BMP Implementation, Operation & Maintenance Schedule

Level II Odor BMPs to be Implemented:

Select each check-box that applies; if more than one category applies, clearly detail the respective Level II Odor BMPs criteria with each
respective category. Detail below all Level II Odor BMPs criteria addressing the following:

1. *the general construction and implementation criteria*
2. *the corresponding timeframes of when each Odor BMP will be implemented*
3. *all operation and maintenance procedures for each Odor BMP along with the corresponding timeframes for carrying out those procedures*
4. *the lifespan of each Odor BMP.*

☐ **Required Level II Odor BMP:**

☒ **Supplemental Level II Odor BMP:**

Vegetative Buffers

Vegetative Buffers are plantings of grasses, trees and/or shrubs that are strategically located around animal housing facilities and/or manure storage facilities on poultry and livestock operations. Additionally, when used for their Visual Screening capacity, Vegetative Buffers may be located along property lines, or other locations on the poultry or livestock operation. Vegetative Buffers filter and trap dust, odor, particulate matter, and ammonia from the odor plume.

I. IMPLEMENTATION

Site Preparation

Follow the NRCS Conservation Practice Standard Tree/Shrub Site Preparation (490) for site preparation guidance. Remove debris and control competing vegetation to allow enough spots or sites for planting and planting equipment. Prepare supplemental moisture materials for installation.

Check for utility lines (gas, water, cable, electricity) before planting. Contact Pennsylvania One Call or Call 811 several working days before you dig or install the plant material.

Location & Layout Map

Refer to the Location & Layout Map for the placement (location) of the individual rows of plant material.

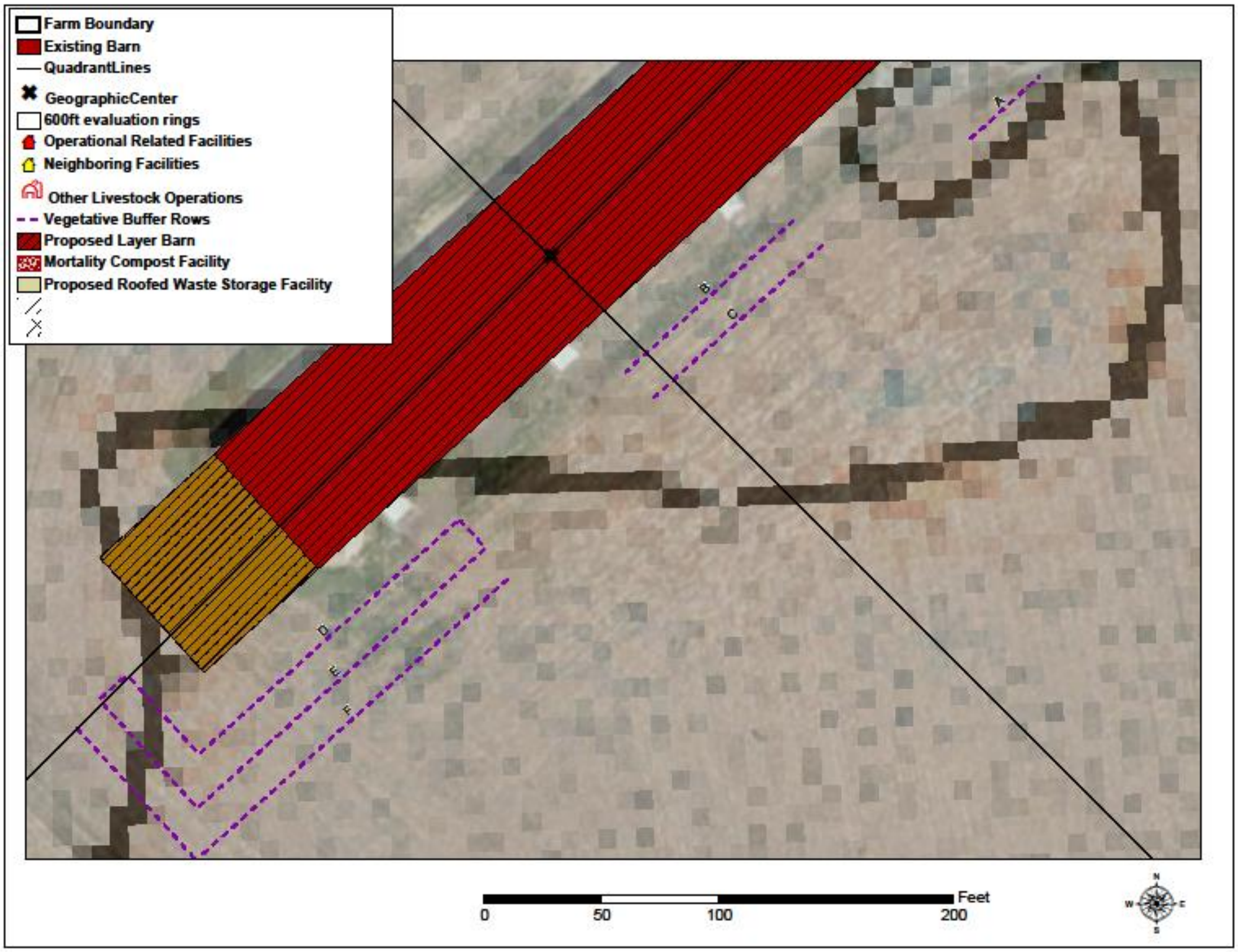
Planting Methods

Refer to the Plant Materials Chart. For container, bareroot, and balled & burlapped stock, install the plant stock to a depth even with the root collar in holes deep and wide enough to fully extend the roots. Pack the soil firmly around each plant and water; repack any voids found from watering. Cuttings are inserted in moist soil with at least 2 to 3 buds showing above ground.

Visual Screening**,** Rows A, B, & C. These rows are creating visual screening for portions of the layer barn. Rows B & C should be staggered so that plants in row C are planted in adjacent to the gaps in row B.

Vegetative Filtering. Rows D, E & F. These rows are addressing the odor plume from the tunnel ventilation blowing into the roofed, 3-walled manure storage facility. Rows D, E & F should be staggered so that plants in row E are planted in, adjacent to the gaps in rows D & F.

Location & Layout Map



Plant Materials Information Chart

Species/cultivar by row number	Kind of stock[4]	Planting dates[5]:	Distance between plants within row (ft.)	Total number of plants for row	Distance (ft.) from this row to next row[6]
1. Row A – Evergreen: Green Giant Arborvitae	4' – 5' high B&B	May 2019	10'	5	55' from Facility
2. Row B – Evergreen: Green Giant Arborvitae	4' – 5' high B&B	May 2019	10'	5	40' from Facility
3. Row C – Evergreen: Green Giant Arborvitae	4' – 5' high B&B	May 2019	10'	3	18' from Row B
4. Row D – Deciduous: Mix of American Elm, Red Maple, Common Hackberry, Black Locust, & Hybrid Willow Beech	10' high B&B	May 2019	15'	10	40' from Facility
5. Row E – Evergreen: Green Giant Arborvitae	4' – 5' high B&B	May 2019	10'	5	18' from Row D
6. Row F – Evergreen: Green Giant Arborvitae	4' – 5' high B&B	May 2019	10'	18	18' from Row E
7. Row B – Shrubs: Streamco Willows	Cuttings	May 2019	10'	7	40' from Facility
8. Row C – Shrubs: Streamco Willows	Cuttings	May 2019	10'	8	18' from Row B
9. Row E – Shrubs: Streamco Willows	Cuttings	May 2019	10'	20	18' from Row D
10. Row F – Shrubs: Streamco Willows	Cuttings	May 2019	10'	2	18' from Row E

Weed Control Barriers

Place a layer of black polyethylene sheeting (6 mil thickness) over the planting area. Place wood product mulch (such as shredded or chipped hardwood bark, pine bark, bark chips, and wood chips) around the plants. Apply mulch to a depth of 3 to 4 inches. Use a minimum 3-foot wide strip of mulch in the planting row, or at least a 3-foot diameter circle of mulch around each plant.

Irrigation

Install a trickle or emitter irrigation system with the drip irrigation lines to cover the rows of plants.

[4] Bareroot, container, cutting, balled and burlapped (B&B), etc. Include size, caliper, height, and age as applicable.
[5] : Date: Month & Year or Season & Year
[6] Adjusted for width of maintenance equipment.

II. OPERATION & MAINTENANCE

Inspections

Year 1. Inspect the Vegetative Barrier twice a month from spring until fall. Shape areas damaged by heavy rainfall, animals, chemicals, tillage, or equipment traffic, and any other areas where the vegetation is not adequate to achieve the intended purpose of the practice. Replant during the growing season.

Years 2 – 4. Inspect the Vegetative Barrier monthly during the growing seasons. Shape areas damaged by heavy rainfall, animals, chemicals, tillage, or equipment traffic, and any other areas where the vegetation is not adequate to achieve the intended purpose of the practice. Replant during the growing season. A higher level of care is required until 3 years after plant establishment.

Years 5 and on. Inspect the Vegetative Barrier at least annually. Shape areas damaged by heavy rainfall, animals, chemicals, tillage, or equipment traffic, and any other areas where the vegetation is not adequate to achieve the intended purpose of the practice. Replant during the growing season.

Maintenance Activities

Pruning. Thin or prune the rows of plantings to maintain its function only after trees and shrubs are established.

Fertilize. Apply nutrients periodically as needed after the first year, but only if needed to maintain plant vigor and at a rate based on soil test results.

Protect from damage. Protect the planting from wildfire and damage from livestock, wildlife, and equipment, to the extent feasible.

Weed Control. Control undesirable plants by pulling, mowing, or spraying with a selective herbicide. Replace woody mulch; reapply mulch to a depth of 3 to 4 inches.

Irrigation. Provide supplemental water to plantings via a localized or drip irrigation during the growing season for the first 3-years' post-establishment. Ensure irrigation equipment is properly working; replace components as needed.

D. Documentation Requirements

The following information will be documented by the Operator for each Odor BMP to ensure compliance with the plan. Documentation is needed to demonstrate implementation of the plan as well as for corrective actions taken for significant maintenance activities needed to return an Odor BMP back to normal operating parameters.

Level II Odor BMP Documentation Requirements

Select each check-box that applies; if more than one category applies, clearly detail each documentation criterion.

☐ **None Required – *(NOTE: Delete the Level II Quarterly Observation Log)***

☒ **Level II Odor BMP Documentation Criteria:**

The Operator will complete the Level II Odor BMPs Quarterly Observation Log, at least on a quarterly basis, detailing the proper implementation of the Odor BMPs as identified in the Implementation, Operation

& Maintenance Schedule. The Operator will also complete the Level II Odor BMPs Quarterly Observation Log upon any of the following occurrences:

1. Implementation – Document the initial implementation dates of the plant materials. After the initial planting, document quarterly that the Vegetative Buffer is still actively being implemented.
2. Inspections – Document that you inspected the Vegetative Buffer in accordance with the OMP Plan Summary, C. Odor BMP Implementation, Operation & Maintenance Schedule details, and document any corrective actions taken.
3. Pruning, Fertilize, & Protect from Damage – Document when you pruned, applied fertilizer to, and/or protected the plants in the Vegetative Buffer from damage, in accordance with the OMP Plan Summary, C. Odor BMP Implementation, Operation & Maintenance Schedule details.
4. Weed Control – Document that you provided weed control activities for the Vegetative Buffer, in accordance with the OMP Plan Summary, C. Odor BMP Implementation, Operation & Maintenance Schedule details.
5. Irrigation – Document your irrigation activities for the Vegetative Buffer, in accordance with the OMP Plan Summary, C. Odor BMP Implementation, Operation & Maintenance Schedule details.

Level II Odor BMPs – Quarterly Observation Log YEAR ________

*(**NOTE**: The operator will record observations relating to 1) the implementation of each Level II Odor BMP at least on the first day (approximately) of each quarter of the year or in accordance with the Implementation, Operation & Maintenance Schedule, and 2,) for mechanically related maintenance activities, as soon as possible upon the observation that maintenance is needed, or upon **each occurrence of any corrective actions taken.)***

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Select Quarter:	☐ **1st Quarter (January)**	☐ **2nd Quarter (April)**	☐ **3rd Quarter (July)**	☐ **4th Quarter (October)**

LEVEL II ODOR BMP NAME: VEGETATIVE BUFFER

List ACTIVITIES	***DATE***	***NOTES***
Implementation		
Maintenance Activities: Inspections		
Pruning, Fertilize & Plant Protection		
Weed Control		
Irrigation		

VII. REFERENCE MATERIALS

1. Belt, S.V., M. van der Grinten, G. Malone, P. Patterson and R. Shockey. 2007. Windbreak Plant Species for Odor Management around Poultry Production Facilities. Maryland Plant Materials Technical Note No. 1. USDA-NRCS National Plant Materials Center, Beltsville, MD. 21p. https://www.nrcs.usda.gov/Internet/FSE_PLANTMATERIALS/publications/mdpmctn7166.pdf

2. Belt, Shawn. 2015. Plants Tolerant of Poultry House Emissions in the Chesapeake Bay Watershed. Maryland Plant Materials Final Report. USDA-NRCS Norman A. Berg National Plant Materials Center, Beltsville, MD. https://www.nrcs.usda.gov/Internet/FSE_PLANTMATERIA LS/publications/mdpmcsr12671.pdf

3. USDA-NRCS Field Office Technical Guide (FOTG). (Select a state for documents; Section IV). 2018. https://efotg.sc.egov.usda.gov/#/

4. USDA-NRCS Conservation Practice Standard Hedgerow Planting (422). 2018. https://efotg.sc.egov.usda.gov/references/public/PA/Hedgerow_(422)_standard_(PA_revision_2018).pdf

5. USDA-NRCS Conservation Practice Standard Windbreak/Shelterbelt Establishment (380). 2018. https://efotg.sc.egov.usda.gov/references/public/PA/PA380Windbreak_Shelterbelt_Establishment_PA_August_2018.pdf

6. VEB Tool-Kit, A Guide to Vegetative Environmental Buffers for Tunnel-Ventilated Chicken Houses. 2017. http://www.dpichicken.org/VEB/docs/VEB-manual-2017-edition.pdf

COMMONWEALTH OF PENNSYLVANIA
STATE CONSERVATION COMMISSION

DATE: February 27, 2019

TO: Members
State Conservation Commission

FROM: Larry G. Baum, Conservation Program Specialist I
State Conservation Commission

THROUGH: Karl G. Brown, Executive Secretary
State Conservation Commission

SUBJECT: 2019 Appointment to the Nutrient Management Advisory Board

Action Requested
Action is requested to approve the following individual to the Nutrient Management Advisory Board (Board):

- Fausto Solis De Los Santos

The appointment has been made by the Commission Chairperson and is provided to the Commission for final approval.

Background

- The term for Marvin E Zimmerman, Feed Industry Representative, to the board expired June 30, 2018. Mr. Zimmerman declined reappointment for a three-year term. Fausto Solis De Los Santos has been nominated and is employed by Wenger Feeds, Rheems PA, as a nutritionist.

The Nutrient and Odor Management Act of 2005 requires board members to be appointed by the Commission Chairperson, and approved by a 2/3 vote of the Commission.

This appointee now requires a formal vote of the Commission in order to be placed on the Board for a 3-year term.

Thank you for your consideration of these appointments.

Attachments:

- Fausto Solis De Los Santos Biography

Curriculum Vitae

Fausto Solís De Los Santos

1031 West Main Street, Apartment I, Mount Joy, PA17552
E-mails:fausto.solis@gmail.com, fsolisd@gmail.com, fsolis@wengerfeeds.com
Cell Phone number: 717-917-7545

EDUCATION

2005-2008 — **Ph.D. Poultry Science, GPA 3.95**
Department of Poultry Science
University of Arkansas, Fayetteville, AR
Advisor: Dr. Dan Donoghue
Dissertation title: Caprylic acid supplemented in feed reduces *Campylobacter jejuni* colonization in broiler chickens.

2003-2005 — **M. Sc. Poultry Science, GPA 4.0**
Department of Poultry Science
University of Arkansas, Fayetteville, AR
Advisor: Dr. Ann M. Donoghue
Master thesis title: Influence of hypobaric hypoxia on gastrointestinal morphology in chicken with ascites.

2001-2003 — **M.Sc. Generation and Transfer of Agricultural Technologies, GPA 4.0**
Department of Animal Science
Universidad ISA, Santiago, Dominican Republic
Advisor: Dr. Rafael Amable Vásquez
Master thesis title: Evaluation of four Fertilizer levels and three Cut Frequencies on yield of the pasture *Digitaria decumbens cv. transvala*

1989-1993 — **Animal Science Engineer (B.Sc.), GPA 3.8**
Department of Animal Science
Universidad ISA, Santiago, Dominican Republic
Advisor: Lic. Amarely Santana, M. Sc.
BS thesis title: *In vivo* Digestibility of Rumen cannulated Dairy Cattle

SPECIAL TRAINING

2019	International Scientific Forum (ISF) and International Production and Processing Expo (IPPE), 2018. February 11 to 14th, 2019. World Congress Center, Atlanta, Georgia.
2018	BIOMIN World Nutrition Forum 2018; Cape Town, South Africa; October 2 to 6.
2018	**The 2018** Penn State University Poultry Sales and Services meeting. Pennsylvania State University, September 9th-10th, 2018, Pennsylvania, USA.
2018	**The Global Leadership Summit**; August 9th and 10th 2018, at the Live Changed By Christ (LCBC) Church, Manheim, PA, USA
2018	**Poultry Science Association (PSA): annual scientific meeting**; San Antonio, Texas, July 22 to 26, 2018.
2018	International Scientific Forum (ISF) and International Production and Processing Expo (IPPE), 2018. January 27 to 30th, 2018. World Congress Center, Atlanta, Georgia.
2018	**American Society of Animal Science (ASAS): Annual Scientific Meeting** of the Midwest Branch, Omaha, Nebraska, March 12th to 14th, 2018.
2018	Phileo-Lesaffre Animal Health Tour Visit (training in Yeast Nutrition) at Red Star Yeast Plant facility, Cedar Rapids, Iowa 52404.
2017	**American Society of Animal Science (ASAS): Annual Scientific Meeting** of the Midwest Branch, Omaha, Nebraska, March 13th to 15th, 2017.
2017	**Challenges of Poultry Production, past and future**; Poultry Management and Health Seminar; Lancaster Farm and Home Center, Lancaster, Pennsylvania, May 8th, 2017.
2017	**The 2017 Penn State Dairy Cattle Nutrition Workshop; November 15th-16th, 2017** at the Holiday Inn Hotel in Grantville, Pa.,USA.
2017	**The 2017 Pennsylvania Poultry Sales & Service** Conference - and - 89th Northeastern Conference on Avian Diseases. September 12th-13th, 2017, Pennsylvania, USA.
2017	The 2017 Arkansas Nutrition Conference; September 6th-9th,

2017; Embassy Suites Northwest Arkansas 3303 Pinnacle Hills Parkway, Rogers, AR 72758, Phone: 479.254.8400

2017 **Litter and manure management in Poultry Production; and effect of particle size on pullets and layer performance.** Poultry Management and Health Seminar; Lancaster Farm and Home Center, Lancaster, Pennsylvania State University, May 8th, 2017.

2017 **Diamond V Egg Solution Visit (training in Yeast Nutrition)** at Diamond V production facility, 2575 60th Avenue SW, Cedar Rapids, IA 52404, May 15th-16th, 2017.

2017 **North Carolina State University Pork Report–DSM Pork Nexus:** why sows leave the herd? North Carolina State University, Raleigh, NC, May 17th –18th, 2017.

2017 **International Phytase Summit 3 (IPS3),** technical symposium, the Westin Hotel, casino and spa, 160 E. Flamingo Road, Las Vegas, NV89109, April 5th to 7th, 2017.

2016 **Penn State Dairy Nutrition** Workshop; November 8th-10th, 2016; Grantville, Pennsylvania, USA

2016 **Cornell Nutrition Conference**; Department of Animal Science, Cornell University, October 17th-21st, 2016, Double tree hotel, Syracuse, New York, USA

2016 **Penn State University Poultry** Sales and Services meeting. Pennsylvania State University, September 17th-18th, 2016, Pennsylvania, USA.

2016 **VII International Scientific Conference** about Agricultural Development and Sustainability (Agrocentro, 2016). Villa Clara, Cuba, April 5 to 9, 2016.

2015 **Swine Pathology Course**, 2nd Lecture "Dr. Pedro Hansen"., April 21-22, 2015, United States Soybean Export Council (USSEC), Hodelpa Garden Court Hotel, Santiago, Dominican Republic.

2015 "Development of a Regional Master Programme in **Pig Production** and **Food Safety** in Caribbean Countries" 2st international meeting at the Universidad ISA, Santiago, Dominican Republic, 1st – 7th of March 2015.

2014	**Laying hens management skills (Hy-Line W-36).** 5th Technical School of Hy-Line in the Dominican Republic". October, 23, 2014, Santiago, Dominican Republic.
2014	RAPCO **Feed Manufacturing Certification** (August 12 to October 19, 2014) and (November 2 to November 7, 2014). International Grain Program, and the United States Soybean Export Council (USSEC), Kansas State University, Manhattan, Kansas, United States of America.
2014	RAPCO Course in **Feed Manufacture**. United States Soybean Export Council (USSEC), September 9-11, 2014. At Hodelpa Garden Court Hotel meeting room, Santiago, Dominican Republic.
2014	"Development of a Regional Master Programme in **Pig Production** and Food Security in Caribbean Countries" 1st international meeting at the University of Leipzig, Germany, 1st – 7th of September 2014.
2013	**Intensive Update in Poultry Nutrition** 2013. RAPCO course in Poultry Nutrition. United State Soybean Export Council (USSEC), July 19-24, 2013. Kansas State University, Manhattan, Kansas State, United States of America.
2013	**Laying hens management skills (Hy-Line W-36).** 4th Technical School of Hy-Line in the Dominican Republic". October, 29, 2013, Santiago, Dominican Republic.
2013	**International Market of Distiller's Dried Grains with Solubles (DDGS).** U. S. Grains Council. June 10-12, 2013. Riu Panamá Plaza, Panamá city, Panamá.
2008	**Alternatives for Exporting Agro Industrial Products to the United States under DR-CAFTA Workshop**. Center for Intercultural Education and Development. Georgetown University. May 21st, 2008.
2008	**Diagnostic of Superior Agricultural Education Competences.** Montpellier SupAgro, Universidad ISA y Veterinary faculty of Haiti. June 23rd and 24th, 2008 at Universidad ISA auditorium.
2012	**Laying hens management skills (Hy-Line CV-22).** 3rd Technical School of Hy-Line in the Dominican Republic". October, 17, 2012, Santiago, Dominican Republic.
2010	**HACCP certification:** As the manager of Agricultural Service

	Department of Nestle, it was necessary to be HACCP certified in order the company received the QMS and HACCP certification. Suprema Quality at Dominican Nestle.
2010	**ISO 22000 certified:** As the manager of Agricultural Service Department of Nestle, it was necessary to be certified in order the company receive the ISO22000 certification. Suprema Quality at Dominican Nestle.
2002	**Pig farms sanitation**. "Central Veterinary Laboratory" (LAVECEN by its acronym in Spanish). November 12 and 13, 2002.
2002	**International workshop "Conservation and Improvement of the Local Genetic Breeds to have a sustainable rural development"**. Program of Science and Technology for the Development (CYTED), and the Spanish Agency of International Cooperation (AECI). May, 2002, **Antigua, Guatemala**.
2001	**Intensive professional update as prerequisite to pursue a master degree in Generation and Agricultural Technology.** From May 2nd to April 27, 2001. Universidad ISA, CEDAF and CONIAF.
2000	**Intensive Update in Dairy Cattle Nutrition.** Latin American Nutrition Center (LANCE). American Soybean Association (ASA) and United Soybean Board (USB). Center American Livestock School, September, 2000, **Alajuela, Costa Rica.** Alajuela, Costa Rica.

PROFESSIONAL EXPERIENCE

July 2016-current	**Nutrition Services Manager** Wenger Feeds 101 West Harrisburg Ave. Rheems, Pennsylvania, USA Phone numbers: Ofic 717-361-4211, cell phone: 717-917-7545 fsolis@wengerfeeds.com Responsible for all aspects of corporate nutrition, including: creation and management of feeding programs; internal and external technical support; feed and additive research; and new product development. Create and maintain feeding programs based on customer objectives and sales parameters, and responsible for

managing the new product development process from the input of ideas to the launch of new products, including original and combination ingredients.

2011-2016 **Nutritionist and Nutrition Division Director,**
Instituciones Pecuarias Dominicanas (IPD), S. A. km 1, Cruce de Estancia Nueva, Moca, Espaillat Province, Dominican Republic. Phone 809-578-4816

IPD is an integrated company of 25 other poultry, swine, dairy and meat processing companies in the Dominican Republic. The market share of IPD is 60%, 45%, 25% and 10%, of the entire Dominican Republic swine, egg layers, broilers and dairy production, respectively.

As nutritionist, i lead the nutrition analysis laboratory and the supplement, and the premix and base mix manufacturing plant.

2009-2011 **Agricultural Services Department Manager**
Nestle, S. A.

Responsible for leading the Agricultural Service Department Team and the major roles were milk collection, technical assistance and project development with farmers in the country. It was my responsibility to manage the budget and establishing performance evaluation (PE) and KPI (key performance indicators) to each Agricultural Service Department regional extension agent.

2001- 2016: **Professor-researcher**:
Animal Science Department, Universidad ISA, Santiago, Dominican Republic.
Instructor of the following subjects:
Poultry Nutrition
Animal Nutrition,
Poultry production,
Poultry biology
Statistics (descriptive and inferential),
Experimental design,
Broilers meat and egg processing technology,
Genetics and genetic improvement
Scientific research methodology
Vitamin and mineral metabolism (UASD University)
Physiological biochemistry (UASD University)

UASD= Universidad Autonoma de Santo Domingo (Santo Domingo Autonomous University); it is the official university in the Dominican Republic (Land-grant university).

Major advisor of research projects including theses and master theses for Veterinary Medicine and Animal Science Students (for more details, please see the major advisor section of this CV).

2003-2008 **Graduate Research Assistant**,
University of Arkansas, USA.
Center of Excellence for the Poultry Science:
Agricultural Research Service (ARS-USDA-University of Arkansas facilities).

2001-2003 **Animal Production Manager**
Universidad ISA,
Santiago, Dominican Republic. Phone: 809-247-2000. The facilities include Broiler, layers, Swine, sheep and goat, fish, dairy, rabbits, etc.

1994-2001 Dairy **Extension Specialist**
Nestle, S. A.
Agricultural Service Department
Technical advice to dairy farmers in Nutrition, management, and milk quality

1992-1994 Manager of the Quality Assurance and Production Department
Acero del Cibao, S. A. La Herradura, Santiago, Dominican Republic

PUBLICATIONS

Degree Theses

Master Thesis. 2005 Influence of hypobaric hypoxia on gastrointestinal morphology in broiler chicken with ascites.
Advisor: Dr. Ann M. Donoghue. University of Arkansas.

Ph.D. Dissertation. 2008 Caprylic acid supplemented in feed reduces *Campylobacter jejuni* colonization in broiler chickens. Advisor:
Dr. Dan Donoghue, University of Arkansas.

PEER-REVIEWED PAPERS

1. Nathaniel Barrett, GS, Paul Patterson1, Fausto Solís, John Boney. 2019. The effect of dietary inclusions of guanidinoacetic acid on broiler performance and carcass yield; *the Pennsylvania State University; Wenger Feeds; 2019 International Scientific Forum, February 11-12, Abstract No. M78; page 25.*

2. Marcos Tavarez and **Fausto Solis de los Santos**. 2016. Impact of genetics and breeding on broiler production performance: a look into the past, present, and future of the industry. Animal frontier Journal, Vol. 6, No. 4.

3. Díaz-Sanchez, S., Moscoso., F. Solís de los Santos., A. Andino., and I. Hanning. 2015. **Antibiotic Usage in Poultry: A Driving Force for Organic Poultry Production.** *Food* Protection Trends Vol 35, No. 6, p. 440–447.

4. Moscoso, S., **F. Solís De Los Santos**, A. G. Andino, Sandra Diaz-Sanchez, And I. Hanning. 2015. Detection of Quinolones in Commercial Eggs Obtained from Farms in the Espaıllat Province in the Dominican Republic. Journal of Food Protection, Vol. 78, No. 1, 2015, P. 214–217

5. Silfrani, O., Caba, R., **Solís de los Santos, F**. and Hanning, I. 2013. Detection of Quinolones in Poultry Meat Obtained from Retails Centers in Santiago Province, the Dominican Republic. Journal of Food Protection 2(2) 352-354.

6. Moyle, J. R. **F. Solis de los Santos**, G.R. Huff1, W.E. Huff, N.C. Rath, M. Farnell, A.C. Fanatico, S.C. Ricke, C. Enders, U. Sonnenborn, D.J. Donoghue and A.M. Donoghue. 2012. The Probiotic *Escherichia coli* Nissle 1917 Enhances Early Gastrointestinal Maturation in Young Turkey Poults. International Journal of Poultry Science 11 (7): 445-452

7. Vivian F. Aguiar, A. Donoghue, K. Arsi, I. Reyes-Herrera, J. Metcalf, **Solís de los Santos, F.**, P. Blore and D. Donoghue. 2013. **Targeting Motility Properties of Bacteria in the Development of Probiotic Cultures Against *Campylobacter jejuni* in Broiler Chickens.** Foodborne Pathogens and Diseases 10(5):435-441

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INVITED SEMINARS, SYMPOSIA/WORKSHOPS WITH PRESENTATIONS:

2018 Oral Presentation	Foodborne Pathogens and their Link with Animal Nutrition given to Wenger Feeds employees. Lunch & Learn session; June 21, 2018 at Rheems Training Center, Rheems, PA, USA.
2018 Oral Presentation	Prevention and Control of Foodborne Pathogens with Medium Chain Fatty Acids, given to customers and technicians at the Biomin-Wenger Feeds Technical Seminar; Rheems Training Center, Rheems, PA, February, 27th, 2018.
2018 Oral Presentation	Research trial update, given to the sales and marketing team of Wenger Group at the Rheems Training Center, February 12th, 2018.
2017 Oral Presentation	Basics of Nutrition, given to Animal Production students at the Lancaster County Career &

	Technology Center, Lancaster, PA, December 7th, 2017
2017 Oral Presentation	**Update in Animal Nutrition Research**, given to Animal Production students of the Lancaster County Career & Technology Center at Rheems Training Center, Wenger Feeds, Rheems, PA, May 30th, 2017
2017 Oral Presentation	**Update in Vitamins Nutrition;** Wenger Feeds, Rheems, PA, April 24th, 2017
2016 Oral Presentation	**Update in Animal Nutrition,** Lancaster County Career & Technology Center, 1730 Hans Herr Drive, Willow Street, PA 17552, December 22nd, 2016.
2016 Oral Presentation	**Update in Mineral Nutrition, Wenger** Feeds, Rheems, PA, November 21st, 2016
2016 Oral Presentation	**Gut Health and the Use of Prebiotics and Probiotics** in Animal Nutrition. Rheems Training Center at Wenger Feeds, Rheems, Pennsylvania, USA., September 13th, 2016.
2016 Oral Presentation	Antibiotics Growth Promoters and their Alternatives in Animal Nutrition. Melia Hotel Convention Center, Villas Claras, Cuba. April 5 to 9, 2016.
2015 Oral Presentation	**"Competitive Exclusion in Poultry Nutrition: a global overview",** at the auditorium of the Technology University of Santiago (UTESA= Universidad Tecnológica de Santiago, October, 30, 2015, Santiago, Dominican Republic.
2015 Oral presentation	**Swine Nutrition: a general review** 1ra Northeast Agricultural Regional Fair, livestock city convention center, October, 29, 2015, San Francisco de Macoris, Dominican Republic.
2015 Oral Presentation	**"Competitive Exclusion in Swine Nutrition: a global overview**" XII center American and Caribbean Swine Congress, Bávaro Convention Center, Punta Cana,

Dominican Republic. September 2-5, 2015

2015 Oral Presentation | **Nutrition and management of the chicks in the pre-starter phase.**
At the X Annual symposium of Instituciones Pecuarias Dominicanas (IPD), S. A. June 26, 2015, Hodelpa Garden Court Hotel meeting room, Santiago, Dominican Republic.

2015 Oral Presentation | **Quality control and Good Manufacturing practices (GMPs) in animal feed plant**.
May 21, North Poultry Corporation (COAVE for its acronyms in Spanish).

2015 Oral Presentation | **Swine Nutrition update in the Dominican Republic.**
At the 2nd International Meeting of Edulink Project to develop a Regional Master Degree Program in Pig Production and Food Safety. March 3, 2015. Universidad ISA, Dominican Republic.

2014 Oral Presentation | **Universidad ISA experience in Continuing Education**
At the 2nd International Meeting of Edulink Project to develop a Regional Master Degree Program in Pig Production and Food Safety. September 5, 2014. **University of Leipzig, Leipzig, Germany**

2014 **Oral Presentation** | **Use of Dietary Fibers in Monogastric Nutrition**
At the IX Annual symposium of Instituciones Pecuarias Dominicanas (IPD), S. A. May 22, 2014, Hodelpa Garden Court Hotel meeting room, Santiago, Dominican Republic.

2013 **Oral Presentation** | **Antibiotic Growth Promoters and Their Alternatives in Animal Nutrition**
At the VIII Annual symposium of Instituciones Pecuarias Dominicanas (IPD), S. A. Jun 15, 2013, Hodelpa Garden Court Hotel meeting room, Santiago, Dominican Republic.

2012 **Oral Presentation** | **Use of Lipids as Sources of Energy in Animal Nutrition**
Presentation at the VII Annual symposium of Instituciones Pecuarias Dominicanas, S. A.

		November 18, 2012, Hodelpa Garden Court Hotel meeting room, Santiago, Dominican Republic.
2011	**Oral Presentation**	**Use of Exogenous Enzymes in Animal Nutrition** At the VI Annual symposium of Instituciones Pecuarias Dominicanas, S. A. September 9, 2011, Hodelpa Garden Court Hotel meeting room, Santiago, Dominican Republic.
2008	**Oral Presentation**	**Poultry Early Nutrition and the use of the Competitive Exclusion concept.** At the IV Annual International Symposium in Animal health and Nutrition of Instituciones Pecuarias Dominicanas, S. A. Proauni auditorium, Moca, Provincia Espaillat, Dominican Republic.
2014	Attendee	International Pork Expo, Des Moines, IOWA, USA
2014	Attendee	International Poultry and Production Expo (IPPE), Atlanta, Georgia, USA
2013	Attendee	“ “ “ “
2012	Attendee	“ “ “ “
2005	Attendee	“ “ “ “
2006	Attendee	“ “ “ “
2010	**Oral Presentation**	Mexican Nestle Milk Sourcing Workshop 2010. Aguascalientes, Mexico.
2011	**Attendee**	Premier Pig Program (growing and finishing of Swine) workshop. Sponsored by Alltech Latin-American. September 8th, 2011 at Gran Almirante Hotel, Santiago, Dominican Republic.
2009	**Oral Presentation**	Latin-American Nestle Milksourcing Workshop 2009. Goiania, Goias, Brazil.
2008	**Oral Presentation**	Competitive Exclusion concept in Humans and Animal Nutrition. 10th Anniversary of the Biotechnology and Innovation Research Institute (IIBI by its letters in Spanish). At the IIBI auditorium, Santo Domingo city, Dominican Republic.
2008	**Oral Presentation**	Ascites and gut integrity in broilers. Presentation given at the “ Laringotracheitis vaccines, immune system, and gut integrity workshop” avian consulting group, December 5th, Santiago city, Dominican Republic.

2008 **Oral Presentation**	Avian Influence Disease and its potential impact on human and animal health. Presented at Universidad ISA auditorium. Presentation given to alert population and farmers due to the 2008 Avian Influence outbreak in the country.
2007 **Oral Presentation**	Scientific presentation **“**Caprylic Acid as a Dietary Supplement has Therapeutic Efficacy Against Enteric *Campylobacter jejuni* in Chickens” at the 14th International Workshop on *Campylobacter, Helicobacter* and Related Organisms (CHRO) 2-5 September 2007, Beurs **World Trade Center, Rotterdam, The Netherlands.**
2007 **Poster Presentation**	Scientific presentation **“**Mannan-oligosaccharide yeast extract supplementation enhances early gut development in turkey poults” at the 16th European Symposium on Poultry Nutrition, August 26-30, 2007, **Strasbourg, France**.
2007 **Poster Presentation**	Scientific presentation “*Campylobacter jejuni* Colonization Alters Mucin Dynamics And Gut Architecture In Broilers” at the ADSA. PSA. AMPA. ASAS. 2007 Joint Annual Meeting. **San Antonio, Texas, USA**.
2006 **Poster Presentation**	Scientific presentation “Gastrointestinal maturation is accelerated in turkey poults supplemented with a mannan-oligosaccharide yeast extract (Alphamune)” at the 95th annual meeting of the Poultry Science Association, From July 16-19, 2006. **University of Alberta, Edmonton, Canada**.
2006 **Oral Presentation**	Scientific presentation “Yeast extract (Alphamune™) supplementation enhances early gut development in turkey poults. International Poultry Scientific Forum, **Georgia World Congress Center/ Atlanta, Georgia**.
2004 **Oral Presentation**	Scientific presentation “Effects of Aspergillus meal prebiotic on gut development and ascites mortality” at the 92 Annual meeting of the Poultry Science Association, July, 2004, **St. Louis, Missouri**.
2002 **Poster Presentation**	Scientific presentation “Effect of sweet potatoes as partial substitute of the commercial concentrated

feed in the diet of growing rabbits" at the Pan-American Congress of Veterinarian Sciences (PANVET), Nov, 2002, **La Habana, Cuba**.

<u>HONORS, AWARDS AND SCHOLARSHIPS</u>:

2008	**Outstanding Ph.D. Student of the year 2007-2008**. Poultry Science Department, University of Arkansas, USA, April, 17, 2008.
2008	**Alltech Manuscript Award at the International Scientific Forum** **Georgia, Atlanta, January 2008** The wining manuscript was "Solis de los Santos, F., A.M. Donoghue, M.B. Farnell, G.R. Huff, W.E. Huff, and D.J. Donoghue. 2007. Gastrointestinal maturation is accelerated in turkey poults supplemented with a mannan-oligosaccharide yeast extract (Alphamune)". Poult. Sci. 86: 921-930.
2007	**Student Certificate of Excellence for Outstanding Presentation** in the Animal Health Section at the Poultry Science Association (PSA)'s 96th Annual Meeting, July 11, 2007, **San Antonio, TX, USA.**
2006	**Student Certificate of Excellence for Outstanding Presentation** in the Physiology, Endocrinology, and Reproduction Section at the Poultry Science Association (PSA)'s 95th Annual Meeting, July 19, 2006, Edmonton, **Alberta, Canada.**
2006	**Outstanding Research Presentation Award** in recognition for an outstanding student research presentation at the annual meeting of the Southern Poultry Science Society. International Poultry Scientific Forum. U. S. Poultry and Egg Association. January 23-24, 2006., **Atlanta, GA., U. S. A.**
2005-2008	**Graduate Assistantships to pursue a Ph.D. program** in food safety using the poultry Science as model, Poultry Science Department, **University of**

	Arkansas, USA.
2003-2005	**Fulbright Scholarship to pursue a Master's degree in Poultry Science**. University of Arkansas, Fayetteville, **Arkansas, U. S. A.**
2003	**Fulbright Scholarship to pursue an intensive academic English training** for seven months (January to August) at the Center for English as Second Language (CESL), **Tucson, Arizona, U. S. A.**
2001-2003	**Scholarship to pursue a Master's degree** in Generation and Transference of Agricultural Technologies granted by the Center for the Investigation and Development of the Agriculture in Dominican Republic (CEDAF). Natural Resources Department, Universidad ISA, **Santiago, Dominican Republic**
1998-1999	**Member of the Outstanding Working Team of the Year**, Dominican Nestlé, San Francisco de Macorís, Dominican Republic
1989-1993	**Graduated Summa Cum Laude (GPA 3.8 out of 4.0)** of Animal Science Engineer. Instituto Superior de Agricultura (ISA), Santiago, Dominican Republic
1986-1989	**Honor Roll Student**, Instituto Superior de Agricultura (ISA), Santiago, Dominican Republic (three consecutive academic years, 1986-1987, 1987-1988, 1988-1989)
1986-1987	**Medals of conduct**, High School program, Universidad ISA, Santiago, Dominican Republic
1986-1987	**Medals of agriculture**, Universidad ISA, Santiago, Dominican Republic

<u>TEACHING AND RESEARCH EXPERIENCE:</u>

Teaching: Lecturer of the following subjects

Monogastric Nutrition
Avian Production
Avian Diseases

Swine Production
Microbiology
Biochemistry Physiology
Genetics
Genetic Improvements
Descriptive and Inferential Statistics
Experimental Design
Pastures and Forages
Dairy Production
Animal Science Department,
Universidad ISA,
Km 51/2 Avenida Antonio Guzmán Fernández
Santiago, Dominican Republic
809-247-2000 ext 253

Research: Major advisor of the following BS and Master's theses

2016 Nathaly Hernandez and Scarlet. 2016. Comparison of the liquid methionine versus dry methionine in broiler chicken performance and profitability. Thesis required for the degree of DVM. Universidad ISA., Santiago, Dominican Republic.

2016 Johaniel e Ivan Leiva. 2016. Comparison of the Chloride dioxide, Chloride oxide and antibiotic in the microbial control and growth promotion of broiler chickens. Thesis required for the degree of DVM. Universidad ISA., Santiago, Dominican Republic.

2015 Ernesto Valentín Jiménez and Raquel Fernández Viñas. 2015. Effect of several emulsifiers supplemented in feed energetically reduced on performance, meat quality and profitability of broiler chickens.

2015 Pedro Rafael Pantaleón Batista and Robert Henry García. 2015. Effect of a yeast extract compound and vitamins with amino acids supplemented in water on performance, microbiology count and profitability of broiler chickens. Thesis required for the degree of DVM. Universidad ISA., Santiago, Dominican Republic.

2015	Domingo Tavares. 2015. Effect of different feed supplemented yeast extract doses and an antibiotic growth promoter on performance, and profitability of broiler chickens. Thesis required for the degree of Animal Science Engineer (BS). Universidad ISA., Santiago, Dominican Republic.
2015	Reynaldo Mora y Lisbeck Cruz. 2015. Effect of different feed supplemented Fiber (Arbocel) doses on performance, and profitability of broiler chickens. Thesis required for the degree of DVM. Universidad ISA., Santiago, Dominican Republic.
2015	Juan Tomás Rodríguez and Vidal Ferreiras. 2015. Effect of an integral feed diet based on *Moringa oleífera* meal with Palm oil on performance and meat quality of Rabbits. Master Thesis required for the degree of Master of Science (M. Sc) in Food Technology, Universidad ISA., Santiago, Dominican Republic.
2015	Alcibíades Féliz González. 2015. Evaluation of an antibiotic, a prebiótic (Mannan Oligosacárido) and a probiótic (*Bacillus subtilis*) and the combination of a pre and a probiotic on the performance of broilers. Thesis required for the degree of Master in Animal Nutrition. Autonomous University of Santo Domingo (UASD for its acronyms in Spanish).
2014	Nathalie Coupet Toussaint and Lendy Campos Silvestre. 2014. Effect of supplementing fermented Soybean meal in feed on performance, microbiology enumeration and profitability of broiler chicken production.
2014	Cesar Nicolás González and Carlos Mirokys Then Rodríguez. 2014. Effect of water supplementation of a *Moringa olieifera* liquid extract on hematology parameters, performance and profitability of broiler chickens. Thesis required for the degree of DVM. Universidad ISA., Santiago, Dominican Republic.
2014	Ricardo Gabriel Gutiérrez and Vivaldi José Pichardo. 2014. Validation of the effect of chelated minerals in the performance and profitability of

broiler chickens. Thesis required for the degree of DVM. Universidad ISA., Santiago, Dominican Republic.

2013 Sandy Moscoso. 2013. Detection of Quinolonas in commercial eggs from laying hen's farm in the province of Espaíllat, Dominican Republic. Thesis required for the degree of Master in Animal Epidemiology. Universidad ISA, Santiago, Dominican Republic.

2013 Margarita Peñaló Martínez and Jhonny Alexander Beard. 2013. Effect of the methionine exchange by betaine in the performance, incidence of coccidian and profitability of broiler production. Thesis required for the degree of DVM. Universidad ISA., Santiago, Dominican Republic.

2013 Idelvi Mariel Ramos Bencosme and Juan Francisco Thomas Jiménez. 2013. Evaluation of the butiric acid (Sodium butirate) supplementation in the performance, salmonella incidence and rentability of broiler production. Thesis required for the degree of DVM. Universidad ISA., Santiago, Dominican Republic.

2013 Víctor Pérez and Luis Medrano. 2013. Effect of suplementing quelated minerals in the performance and rentability of Hy-line W-98 egg laying hens in the final stage of the growing period (17 weeks) and early laying period (18-33 weeks). Thesis required for the degree of Engineer in Animal Production. Universidad ISA., Santiago, Dominican Republic.

2012 Jefrey Arismendy Javier Rincón and Juan Pablo Mejía Beato. 2012. Effect of Supplementing essential oils from oreganum, Tomillo and Eucaliptus in the performance and economy of broilers. Thesis required for the degree of Engineer in Animal Production. Universidad ISA., Santiago, Dominican Republic.

2012 Gervasio Antonio Peña Grullón and Máximo Amario Batista. 2012. Evaluation of a multienzimatic complex in the performance of layers of breed HY-Line (w-98) in the final phase of growing and in the early egg laying period.

Thesis required for the degree of Engineer (BS) in Animal Production. Universidad ISA., Santiago, Dominican Republic.

2012 René de Jesús Rodríguez Bencosme and Víctor Nicolás Brito. 2012. Evaluation of the enzyme Phytase in the performance of laying hens breed Hy-line (w-98) in the final phase of growing period o (17-20 weeks) and in the early egg laying period (20-31 weeks). Thesis required for the degree of Engineer in Animal Production. Universidad ISA., Santiago, Dominican Republic.

2010 José Luis Guichardo Marte, and Carlos César Durán. 2010. Validation of the effect of dairy cows udder dipers in the milk production, microbiology counting, somatic cells, and mastitis incidence in dairy cattle. Thesis required for the degree of Engineer in Animal Production. Universidad ISA., Santiago, Dominican Republic.

2009 Luis Alfredo Ayala Marte and Erick Mancebo de León. 2010. Comparing an open diet vs several nutritional base mixes (nucleous) diets with base mix in the performance and economy of broilers. Thesis required for the degree of Engineer in Animal Production. Universidad ISA., Santiago, Dominican Republic.

2010 Silfrany Rafael Ovalles Estrella and Ramón Emilio Caba Paulino. 2010. Detection of Quinolonas antibiotic residues in retail broiler meat in Santiago Province, Dominican Republic . Thesis required for the degree of DVM. Universidad ISA., Santiago, Dominican Republic.

2010 María José López Espinal and Sandy Miguel Moscoso. 2009. Influence of the fasting post hatch and the feed withdrawal period previous slaughter on the performance and microbiology in broilers. Thesis required for the degree of DVM. Universidad ISA., Santiago, Dominican Republic.

2009 Sandra Natalia Henao Lee and Ramona del Carmen Mercedes Sánchez. 2009. Efect of a multienzimatic complex (Feedzyme Premium) in the performance of broilers. Thesis required for the degree of DVM. Universidad ISA., Santiago, Dominican Republic

2009 Ramón De Jesús Torres and Yael Ramírez Tiburcio. 2009. Effect of the supplementation of an enzyme phytase in the performance of broilers. Thesis required for the degree of Engineer in Animal Production. Universidad ISA., Santiago, Dominican Republic.

SPECIAL SKILLS

1. Feed or ration formulation
2. Feed manufacture
3. Products and Projects development (R & D) experience
4. Design of experiments to test natural feed additive to use with or to substitute the use of antibiotic growth promoters.
5. Scientific publications review prior to launch an experiment.
6. Statistical analysis software to analyze the research (SAS, JUMP, and SPSS)
7. Management of Near InfraRed (NIR)
8. Management of feed formulation software Brill, Feedsoft formulation software, Concept 5 and AMTS software.
9. Feed Manufacturing certified
10. HACCP certified
11. ISO 22000 certified
12. Laboratory analysis
    - ✓ Feed mycotoxin determination by ELISA
    - ✓ Wet chemistry feed analysis (Wendy analysis routine)
    - ✓ DNA and RNA extraction
    - ✓ PCR management (Molecular biology
    - ✓ Histology samples processing and reading
    - ✓ Management of the Globe and SAP administration softwares

PRODUCTS AND PROJECTS DEVELOPMENT

- The upmost project developed at IPD is the vitamins, minerals, aminoacids and antibiotic formulation and packaging. In this project, we formulated powder products to be packaged in envelopes of 150, 200, 500 and 1000 g; these products are water soluble at farm level.

- The introduction of the NIR services at IPD Nutritional Laboratory, including the idea, paperworks, procedures, installation and running the equipment/software. This is a very valuable service that allows accurate feed formulation with total and digestible aminoacids.

- An insoluble fiber from Germany used in the nutrition of poultry and swine species was researched, and tested in field trials, then developed in the Dominican Market, right now is a successful product in the market.

- A prebiotic (Mannan-oligosacides MOS) and a probiotic (*Bacillus subtilis*) were researched, registered, promoted and developed for the Dominican Market, then a formulation to blend a symbiotic which is now distributed and used in the market.

- Two natural mycotoxin binders, one from Brazil and the other from United States were sought and developed in the Dominican Republic Market; both products are well known and successfully used.

- The procedure to test mycotoxins in feed was developed and put in place at IPD Nutrition Laboratory. The equipments and ingredients to run the test were sought and bought. The procedure in running very well and farmers are actively using the services.

- Raw milk Antibiotic residues testing to implement a traceability system required for the HACCP and ISO 22000 certifications at Nestle, S. A. in the Dominican Republic.

- At Nestle several projects were developed such as wells perforation project in coordination with government to supply water to people and dairy farmer associations.

PROFESSIONAL SOCIETIES AND MEMBERSHIPS

1. American Society of Animal Science, USA
2. Poultry Check-off, Penn State University, PA, USA
3. Poultry Science Association, USA
4. Arkansas Alumni Association, University of Arkansas, USA
5. Fulbright Alumni Association, USA and Dominican Republic
6. ISA Alumni Association, Universidad ISA, Santiago, Dominican Republic
7. Member of the Technical Commission to eradicate the Avian Influenza and Newcastle Diseases in the Dominican Republic
8. Member of the Technical Committee for the Pork Center-American Congress to be held in the Dominican Republic on September 2-5, 2015.

9. Member of the Editorial board of the Sodiaf journal; Dominican Society of Researchers in Agriculture and Forestry. Santo Domingo, Dominican Republic.
10. Member of the Fishery Journal (revista pescado); Universidad ISA, Santiago, Dominican Republic.

COMMONWEALTH OF PENNSYLVANIA
STATE CONSERVATION COMMISSION

Date: **February 27, 2019**

To: **State Conservation Commission**

From: **Roy Richardson, Dirt and Gravel Roads Program Coordinator**

Through: **Karl G. Brown, Executive Secretary**

RE: **Recommended Policy for Unspent Funds Under Old Conservation District DGLVR Agreement (July 1, 2013 - June 30, 2018)**

Background - The Dirt, Gravel, and Low Volume Roads Maintenance Program (DGLVR) provides funding to conservation districts through a series of 5 year agreements. The current agreement (new agreement) covers the period from July 1, 2018 through June 30, 2023. The previous agreement (old agreement) covers the period from July 1, 2013 through June 30, 2019. Please note there is an intentional one (1) year overlap in these two program funding agreements that is explained below.

By the fall of 2016, it became clear that conservation districts would have difficulty using all the funds allocated to them under the old agreement by the end of the agreement in June of 2018. This was due mainly to the large increase in funding, from $4 million annually to $28 million annually. Districts appreciated the increased funding, but needed time to develop the capacity to properly utilize the funds. As a result, Commission staff worked with the Comptroller's office to obtain a one-year extension to the old 5-year agreement as follows:

- Conservation districts were given until June 30, 2018 to enter into contracts with eligible entities.
- Conservation districts were given until June 30, 2019 to complete the contracts.

Based on the provisions of the DGLVR Program enabling statute, and Commission DGLVR Program policy for allocations, advance payments and reimbursements, all funding ($116 million) under the old agreements with conservation district has been transferred from Commonwealth's DGLVR Program Fund account to county conservation districts accounts over the life of these contracts. Collectively, conservation districts currently hold $14.6 million (12.6%) that remains to be spent by June 30, 2019 under the old agreement.

The DGLVR Program maintains an online GIS system that allows staff to track financial data in near real-time. As of 2/27/2019, this system shows $36.2 million committed to active projects, of which $14.6 million (40 %) is from the old 5-year agreement. Based on historical data and program experience, it is likely that significant portion of the $14.6 million under the old agreement will be spent by June 30, 2019. Despite that, it is also likely that there will be some conservation districts that will not meet the spending requirements.

There are two ways that a conservation district could fail to meet the spending requirements established by the Commission:

- They could fail to commit the funds from the old agreement to contracts.
- They could commit the funds from the old agreement to contracts, but fail to complete the contracts by the June 30, 2019 extended deadline.

It should be noted that several districts have contacted staff about the possibility of requesting another extension of the old program contract. Given the fact that that the comptrollers have already worked with us to extend the existing contract from 5 to 6 years to allow for implementation of projects, staff does not believe this would be an appropriate request.

Recommendation – SCC and Penn State Center for Dirt and Gravel Road Studies (CDGRS) staff have met with the Policy and Planning Workgroup to develop three recommendations for the close out of old program agreements (July 1, 2013 – June 30, 2019). These recommendations include the following:

1. Conservation districts should be given until May 24, 2019 to enter all their contract information into the GIS system. After that date, conservation districts that have not committed all their funds under the old agreement **shall not be eligible for a new allocation** (FY 2019-20). These conservation districts may be eligible for an allocation in FY 2020-21 if they meet the spending requirements at that time.

2. Conservation districts that do not have all their funds under the old agreement spent by June 30, 2019 should have their FY 2019-20 allocations reduced by the amount of unspent funds remaining in their old agreement.

3. Any funds that are not allocated to conservation district, as per recommendations 1 & 2 above, would be reallocated to other eligible conservation districts for FY 2019-20.

Summary – Ensuring that state funds that are made available to the DGLVR Program are committed to eligible, high quality projects, and that these projects are designed and implemented on the ground in a timely fashion, is a high priority for the Commission and participating conservation districts. Program staff believe that the above recommended close out procedures and fund allocation process recognize the need for flexibility under the contracting process, while stressing our commitment to contract funds and implement projects in a timely fashion.

February 26, 2019

To: Members
State Conservation Commission

From: Karl G. Brown
Executive Secretary

RE: Spotted Lanternfly Suppression Program and Pilot Program Update

Additional information pertaining to this agenda item will be provided at our March 12, 2019 Commission Meeting.

GOVERNOR WOLF

SCHOOLS THAT TEACH • JOBS THAT PAY • GOVERNMENT THAT WORKS

FOR IMMEDIATE RELEASE
February 14, 2019
View Online

Governor Wolf Unveils Historic Funding Proposal for PA Agriculture

Harrisburg, PA – Governor Tom Wolf today joined Secretary of Agriculture Russell Redding to unveil the PA Farm Bill, an historic proposal to provide support for and continued investments in the commonwealth's agriculture industry. The proposal, which has already gained bipartisan support, was modeled after the governor's six-point plan to cultivate future generations of Pennsylvania's agriculture industry.

"Pennsylvania has a long, proud history of agriculture, and this comprehensive package of funding opportunities and resources will help expand this important industry," said Governor Wolf. "The PA Farm Bill allocates $24 million in additional funding to chart a real path for a dynamic and prosperous farming economy in Pennsylvania. It's about providing more opportunities to our farmers by creating more jobs, more income, and more hope."

The PA Farm Bill will provide for business development and succession planning, create accommodations for a growing animal agriculture sector, remove regulatory burdens, strengthen the ag workforce, protect infrastructure, and make Pennsylvania the nation's leading organic state.

"Pennsylvania's story can't be told without agriculture, and the PA Farm Bill will help inspire all of the chapters yet to come," said Secretary Redding. "By further supporting the agriculture industry and investing in business operations, infrastructure, education and the workforce, we are setting the course for a future filled with increased opportunities and prosperity."

The PA Farm Bill proposal will:

Develop New Resources for Agriculture Business Development and Succession Planning

Because thoughtful planning is critical to the sustainability of farms, the PA Farm Bill proposes to establish a Pennsylvania Agricultural Business Development Center to serve as a resource for farmers to create business, transition, or succession plans to give them the best probability of success.

Create More Processing Capabilities

The PA Farm Bill will support the dairy industry by continuing to fund the Pennsylvania Dairy Investment Program, as well as the Center for Dairy Excellence, and will establish a Center for Animal Agriculture Excellence to assist poultry, swine, sheep, lamb, goat, and rabbit agriculture.

Remove Regulatory Burdens and Strengthening the State's Agricultural Business Climate

The PA Farm Bill continues cutting through the red tape by incentivizing best management practices to allow farmers to be more competitive while incorporating high-quality conservation practices on their operations – through a mix of grants, low-interest loans, and tax credits.

Increase Opportunities for Pennsylvania's Agricultural Workforce

There will be nearly 75,000 job vacancies in the agriculture and food industries over the next 10 years. The PA Farm Bill provides funding to increase awareness of and exposure to agriculture.

Protecting Agricultural Infrastructure

An ongoing need for disaster response readiness has been evident most recently with the threats of spotted lanternfly infestation and highly pathogenic avian influenza. The PA Farm Bill creates a Pennsylvania Rapid Response Disaster Readiness Account to allow for a quick response to agricultural disasters, including utilizing animal or plant health officials to contain an outbreak; or providing an immediate response to a foodborne illness.

Increasing Market Opportunities and Making Pennsylvania the Nation's Leading Organic State

The PA Farm Bill includes funding that will bolster Pennsylvania's status as a leader in food and agriculture, through increased funding for the PA Preferred program. The proposal will further enhance the growth of the organic industry by creating state-specific guidelines for marketing Pennsylvania's products to a global marketplace. The proposal also includes support for urban agriculture initiatives, and a newly created state-level specialty crop block grant program to support growing industries like hemp, hops, and hardwoods.

Many members of the legislature recognize the need to invest in such an important industry.

"Investing in agriculture means investing in small business, investing in our workforce, and investing in future generations of farmers," said Representative Martin Causer. "I look forward to working with farmers across the commonwealth, Gov. Wolf, and fellow lawmakers to address the challenges facing this industry that puts food on our tables and contributes so much to our economy."

"Agriculture is vital to Pennsylvania's economy and this investment proves that the administration recognizes that fact," Senator Judy Schwank. "This is the leadership we need for the future for agriculture in the commonwealth."

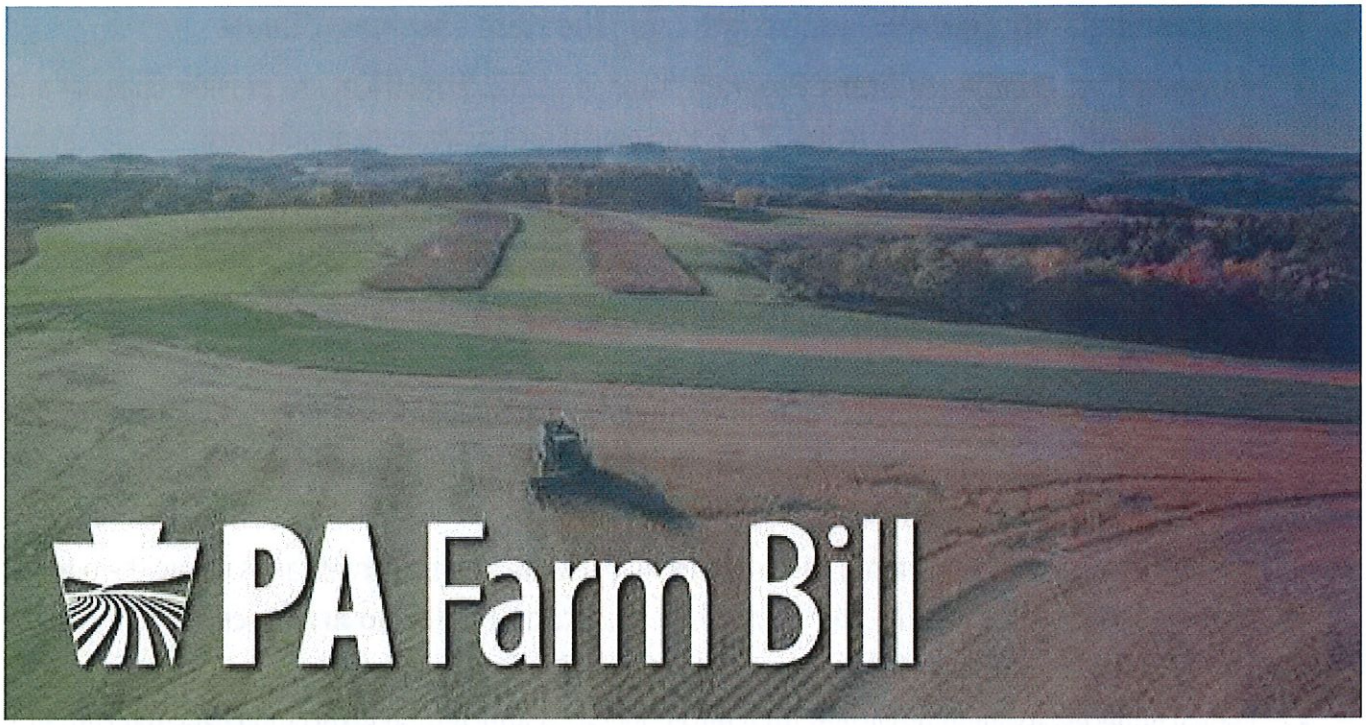
"I want to thank Gov. Wolf and his staff for working to increase support for Agriculture, Pennsylvania's largest industry, and offer my appreciation to the governor for addressing the concerns of the Ag community," said Representative Eddie Day Pashinski. "These dollars will help ensure Pennsylvania maintains the highest standards and best practices in safety and quality for the people of PA while protecting the future of agriculture in our commonwealth. "

View the full PA Farm Bill proposal here.

MEDIA CONTACTS: J.J. Abbott, Governor's Office, 717-783-1116
Shannon Powers, Agriculture, 717-783-2628

# # #

Agenda Item B.6



As the agriculture industry grows and changes, we must support the industry in new ways to ensure its future success. The Pennsylvania Farm Bill invests more than $24 million in Pennsylvania's agriculture industry to grow opportunities and resources, remove barriers to entry, and cultivate future generations of leaders within agriculture. The plan includes:

1. **Agricultural Business Development and Succession Planning**
   - **Pennsylvania Agricultural Business Development Center,** funded at **$2 million,** to serve as a resource to help every farmer create a business plan, transition plan, or succession plan to ensure the best chance of success.
   - **Realty Transfer Tax Exemption** for any transfer of preserved farmland to a qualified beginning farmer.

2. **Creating more processing capabilities to accommodate a growing animal agriculture sector**
   - **Pennsylvania Dairy Investment Program,** funded at **$5 million,** to fund research and development, organic transition assistance, value-added processing, and marketing grants in support of Pennsylvania's dairy industry.
   - **Center for Animal Agriculture Excellence**, funded at **$1 million,** to support the animal agriculture industry by expanding processing capacity, technical assistance, providing resources for food safety compliance, and assisting with the establishment of hemp as an approved animal feed.
   - **Incentivizing Access to Meat Processing Inspections**, funded at **$500,000**, to encourage access to new and expanded markets for small or new producers by reimbursing federal meat inspection costs and subsidizing the first-time purchase of equipment needed for federal compliance.

1. **Removing regulatory burdens and strengthening the state's business climate**
    - **Conservation Excellence Grant Program,** funded at **$2.5 million,** to provide financial and technical assistance to farmers to install and implement best management practices.
    - **Agriculture Linked Investment Program**, funded at **$500,000**, to re-establish this lowinterest loan program for the implementation of best management practices.
    - **Resource Enhancement and Protection Tax Credits,** expanded by **$3 million**, to increase the lifetime cap and increase availability.
    - To ensure that farmers are better able to transport agricultural products or supplies, the Farm Bill proposes to **expand the allowable width for the use of implements of husbandry on roads**, such as farm tractors and combines, from 16 feet to 18 feet.
    - To enhance diversification or transition to other ag operations for preserved farms where the original operation is no longer feasible, the Farm Bill proposes to amend the **Ag Area Security Act** to allow for subdivision of preserved farms.
    - Repeal unnecessary audit provisions from the Cooperative Agricultural Association Law that currently require agricultural cooperatives to provide certified financial audits to the department, removing an antiquated burden for existing cooperatives and a barrier for new cooperatives.

2. **Strengthening Pennsylvania's workforce to ensure the next generation is prepared to lead**
    - **Agriculture and Rural Youth Organization Grant Program,** funded at **$500,000,** to reestablish this program to fund agricultural and rural youth organizations to help increase knowledge and awareness of agricultural issues within the commonwealth.
    - **The Pennsylvania Farm to School Grant Program,** funded at **$500,000,** to improve childhood nutrition while increasing exposure to agriculture.

3. **Protecting agriculture infrastructure**
    - **Pennsylvania Rapid Response Disaster Readiness Account**, funded at **$5 million,** to allow for a quick response to agricultural disasters, including utilizing animal or plant health officials to contain an outbreak or threat, such as Spotted Lanternfly or Avian Influenza; or providing an immediate response to a foodborne illness.

4. **Increasing Market Opportunities and Making Pennsylvania the Nation's Leading Organic State**
    - **PA Preferred Organic Initiative,** funded at **$1.6 million,** to make Pennsylvania the nation's leading organic state by further enhancing the growth of the organic industry.
    - **PA Preferred Program,** funded at an additional **$1 million,** to support the overall PA Preferred program and to bolster enrollment in the Homegrown by Heroes Program.

RESTORE PENNSYLVANIA

Governor Wolf's vision for Pennsylvania includes vibrant towns and cities with new development, opportunities in rural and disadvantaged areas, and a modern, interconnected commonwealth.

Unfortunately, after decades of neglect and disinvestment, Pennsylvania is falling behind. More than 800,000 Pennsylvanians do not have access to high speed internet. Heavy rains throughout 2018 demonstrated vividly and tragically that our flood mitigation planning and infrastructure has not kept up, leaving communities and individuals throughout the state with massive cleanup costs, and few options to turn to for assistance. Our third-class cities, towns, and boroughs face blight problems that lower property values, limit new development opportunities, and discourage private investment. Businesses looking to relocate or expand in Pennsylvania struggle to find pad-ready sites to quickly build out new locations. Pennsylvania is not well positioned to take advantage of the manufacturing opportunities created by natural gas. Across the state, too many residents are impacted by contaminants from industries of the past. Many Pennsylvanians live in homes with legacy contamination issues such as lead, while others are learning of risks from recently identified contamination such as PFAS and PFOA.

It is time to make sure Pennsylvania is a leader in the 21st century. We need to position all of our communities for success. We need to connect every Pennsylvanian to high speed internet, whether you live in Sullivan County or North Philadelphia. We need to protect communities from severe flooding and other natural disasters. We need to rebuild our neighborhoods and eliminate blighted homes and vacant industrial sites so we can build new manufacturing facilities and businesses. We need to position Pennsylvania to take advantage of the natural gas beneath our feet, so that we build the next generation of advanced manufacturers right here in order to use our natural resources, not just ship them out of state. We need to provide these manufacturers and businesses the support they need to become more energy efficient and competitive.

To achieve these goals, Governor Wolf is announcing a major new infrastructure initiative, RESTORE PENNSYLVANIA, funded by the monetization of a commonsense severance tax. RESTORE PENNSYLVANIA will invest $4.5 billion over the next four-years in significant, high-impact projects throughout the commonwealth to help catapult Pennsylvania ahead of every state in the country in terms of technology, development, and infrastructure.

Encompassing new and expanded programs to address five priority infrastructure areas outlined below, RESTORE PENNSYLVANIA projects will be driven by local input about local needs. Projects identified by local stakeholders will be evaluated through a competitive process to ensure that high priority, high impact projects are funded and needs across Pennsylvania are met.

High Speed Internet Access

We increasingly live in a knowledge-driven economy, making access to high-speed internet essential to our daily lives and economy. Over 800,000 Pennsylvanians lack access to robust, reliable, high-speed internet. Over 520,000 of residents without access reside in rural areas and while another 250,000 reside in urban areas. Lack of quality internet access means businesses are not able to market themselves and conduct business online, our children miss out on learning opportunities, and health care facilities cannot share information with specialists. According to Windstream Communications, building a new fiber line can cost up to $50,000 a mile. Pennsylvania must make a significant investment in high speed internet infrastructure to connect every corner of the commonwealth.

Connecting Pennsylvanians to high speed internet is the most meaningful rural economic development initiative we can undertake today, and succeeding will require a significant investment from the commonwealth as well as partnerships with the federal government and stakeholders. Although there has been recent progress, like the commonwealth providing a $1.5 million grant to help connect 1,400 Tri-County Rural Electric Cooperative members, it is clear that we need a massive investment to make sure all Pennsylvanians are benefiting from advancements in technology. Additional investments by the state will help leverage available federal funding as well as significant private dollars.

RESTORE PENNSYLVANIA will provide funding to completely bridge the digital divide in every community in Pennsylvania, making Pennsylvania a better place to work, do business, and live. Grants will be available to support installation of infrastructure to bring high speed internet to every corner of the commonwealth. Funding will support every phase of the process from feasibility testing to connection.

Storm Preparedness and Disaster Recovery

Critical Flood Control Infrastructure

Last year was the wettest year on record in Pennsylvania, and modelling suggests that increased rain will continue. Communities across the state were impacted by record-breaking rainfall, flash flooding and river flooding across the state, from Philadelphia in the east and Allegheny County in the west to Bradford and Columbia in the north and widespread devastation in Schuylkill, Lebanon, York and Lancaster Counties in Central Pennsylvania, among others. A single storm in early August created more than $60 million in damage to transportation infrastructure alone in the middle of the state. The devastation these natural disasters leave in their wake demonstrate all too clearly that Pennsylvania's legacy infrastructure needs to be updated to handle changing weather and new development.

Many needed projects involve streambank restoration to restore flow and prevent future erosion. Other projects will be for floodplain restoration, which allows stormwater to spread out and slow down, so it can be absorbed into the groundwater, rather than flooding over streambanks. Additional critical flood control infrastructure includes dams, levees and flood walls.

RESTORE PENNSYLVANIA will provide funding for flood prevention that will protect against severe weather and save homes and businesses in flood prone areas across the state. RESTORE PENNSYLVANIA will provide funding to help towns and cities prepare for flooding and severe weather, upgrade flood walls and levees, replace high-hazard dams, and conduct stream restoration and maintenance.

Helping Families Rebuild

In the aftermath of severe storms and other disasters, homeowners who have in some cases lost everything need immediate assistance to begin to put their lives back together. While Federal Emergency Management Agency (FEMA) funding is available to assist property owners recovering from events that have been declared a Major Disaster, and funding is available from the U.S. Small Business Administration (SBA) for some smaller events, there is currently very limited help available for Pennsylvanians who experience catastrophic losses due to localized flooding or other severe weather events that were not declared a Major Disaster by the federal government.

RESTORE PENNSYLVANIA will establish a disaster relief trust fund to assist individuals who suffer losses that are not compensated by FEMA or other programs.

Stormwater Infrastructure

Across Pennsylvania, communities large and small are struggling to implement new federal requirements that they manage stormwater to prevent pollution from flowing into local streams and rivers. Nearly a thousand communities with municipal separate storm sewer systems (MS4) are currently preparing to implement a Pollutant Reduction Plan to reduce discharges from their storm sewers into local waterways. While funding this new infrastructure is a challenge, it is also an opportunity to create local jobs to construct and maintain green infrastructure that captures stormwater where it falls while also beautifying downtowns with rain gardens, parks, and streetscape improvements.

RESTORE PENNSYLVANIA will provide grants to municipalities moving forward with Pollutant Reduction Plans to help them implement creative solutions to comply with their stormwater mandates and transform their communities. Additional state funding will reduce the need for new stormwater fees, which have proven unpopular where they have been proposed. Additional incentives will be provided for communities that are working collaboratively with their neighbors to tackle the problem in the most efficient manner possible.

Downstream Manufacturing, Business Development, and Energy Infrastructure

Pennsylvania has always been an energy powerhouse. Our coal fueled the industrial revolution, our power plants keep lights on throughout the northeast. Over the past decade, Pennsylvania has emerged as a leading state in production of clean burning natural gas, and we currently outproduce every state but Texas. The first decade of development has seen a rush to build wells and pipelines to take gas to markets where it can be used. In the second decade, we need to focus on making sure we capture the benefits of this prolific resource in Pennsylvania to spur manufacturing and drive job creation in downstream industries.

Royal Dutch Shell is currently undertaking the largest development project that this commonwealth has ever seen in Beaver County northwest of Pittsburgh. This is the first major project of its kind in the United States built away from the Gulf Coast region in a generation. When this ethane cracker plant opens early in the 2020s, it will produce millions of pounds of plastic pellets, the building blocks for everything from water bottles to airplane parts. To realize the full potential of this massive investment, Pennsylvania needs to seize the opportunity to jump start advanced manufacturing facilities that will take the building blocks, and turn them into high value products, employing Pennsylvanians with well paid, family supporting jobs.

To prepare for this opportunity and assist existing manufacturers and businesses across the state to take advantage of the benefits of locally-produced natural gas to lower costs, reduce emissions, and power an advanced industrial revolution in Pennsylvania, RESTORE PENNSYLVANIA will provide funding for infrastructure that helps build manufacturing facilities and other downstream businesses for the natural gas produced in Pennsylvania while helping businesses and individuals use more of Pennsylvania's natural gas in their homes, creating jobs, lowering costs, and improving energy efficiency.

Downstream Manufacturing: Pad Development, Business Development, Site Selection, and Energy Efficiency

When businesses are looking to relocate or expand, they need move-in ready sites. Especially for larger manufacturers and company headquarters, pad development can be prohibitively expensive. Pennsylvania is a prime location for businesses, and we can make it easier for businesses to move and grow in the commonwealth.

RESTORE PENNSYLVANIA will provide funding to develop pad-ready locations in prime locations and areas ripe for development with an emphasis on downstream manufacturers and support for businesses. This funding will expand the extremely successful Business in Our Sites program which empowers communities and economic development partners to attract expanding businesses by building an inventory of ready sites. Approved projects can use the funding for any site development activities required to make the site shovel-ready. Sites can be previously utilized property or undeveloped property that is planned and zoned for development including former or underutilized industrial, commercial, military, mining, railroad, or institutional sites or buildings.

Getting Natural Gas to Businesses

While we encourage business growth and downstream manufacturing, we also need to make sure that these facilities can become more energy efficient and competitive by tapping into Pennsylvania's natural gas resources. Manufacturing and industrial businesses that convert to natural gas from other energy sources can save 50% or more in their energy costs. As these costs are frequently one of the largest for energy intensive manufacturers and industrial companies, upgrading from traditional energy sources to high efficiency combined heat and power systems can significantly improve companies' bottom lines and make Pennsylvania companies more competitive. When combined with micro-grids, these systems can help manufacturers be resilient and self-sufficient.

Since 2016, the Department of Community and Economic Development's Pipeline Investment Program has provided funding to construct the last few miles of natural gas utility lines to serve business parks, existing manufacturing and industrial enterprises. The goal of this program is to spur the creation of new jobs in the commonwealth while providing access to utility service for residents and businesses. Eligible applicants include businesses, economic development organizations, hospitals, municipalities, and school districts.

RESTORE PENNSYLVANIA will provide increased spending flexibility to ensure that more communities and businesses across the state have access to low-cost, clean-burning natural gas. RESTORE PENNSYLVANIA will also provide grants to help downstream businesses install combined heat and power and micro-grid systems at existing or new facilities.

Demolition, Revitalization, and Renewal

Blight Demolition and Redevelopment

Pennsylvania is a historic state with legacy infrastructure and hundreds of thousands of blighted buildings – industrial, commercial, and residential. Blight hurts communities in many ways. It poses serious health and safety threats, costs local governments for enforcement and maintenance, reduces property values and tax revenue, and makes communities less attractive for investment. In former industrial hubs, long abandoned buildings can prevent the consolidation and development of parcels for reuse in advanced manufacturing. In third class cities like Reading, Johnstown, Erie, and many others that lost population over the last half century but are poised for a comeback, blighted properties slow the turnaround.

The legislature has taken important steps to speed the process for getting a blighted building back on the tax rolls. Leaders like Senators Pat Stefano and David Argall have helped expand Pennsylvania's response to blight. However, there are still an estimated 300,000 blighted structures in Pennsylvania. Pennsylvania needs funding for planning, demolition, remediation, and redevelopment of blight to build on the legislature's efforts.

RESTORE PENNSYLVANIA will increase resources for addressing blight by providing financial resources at the local level to establish land banks and acquire and demolish blighted buildings in order to create new development opportunities or provide new green space. The funding will be administered by entities established by the legislature as land banks or demolition funds.

Brownfield Clean-Up

In communities across the state, underutilized and abandoned former industrial and commercial sites sit waiting for cleanup to unlock their potential as a catalyst for new manufacturing and economic development. Frequently these sites have existing infrastructure, historic buildings and close proximity to transportation that make them attractive locations for redevelopment and reuse. Revitalizing these locations improves the health and quality of life of our citizens and injects much-needed revenue into our local communities by returning once lifeless properties to the tax rolls.

Pennsylvania's land recycling program has long been lauded as a national model for the successful cleanup of brownfields, with over 6,000 sites having been successfully cleaned up and returned to productive use. With the long-anticipated phase out of the Capital Stock and Franchise Tax in 2016, which helped fund the program, there is now a need to identify funding to ensure that this critical work can continue.

RESTORE PENNSYLVANIA will provide funding to ensure the continuation of Pennsylvania's Brownfields program, ensuring that more sites can be returned to use for recreation, or returned to the tax rolls as commercial, residential, or industrial sites.

Contaminant Remediation

In addition to remaining brownfields, many residential homes and neighborhoods still face issues with contaminants like lead and Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS).

Studies continue to find elevated lead levels in blood tests of Pennsylvania's youngest residents, a result of Pennsylvania's older housing stock, 70 percent of which was built before the 1978 ban on lead paint. Long-term exposure to lead paint can have devastating developmental consequences including lowered-IQ, memory problems, and other neurological and behavioral effects. To help prevent the ongoing exposure of Pennsylvania's most vulnerable populations, we must redouble our level of effort to remediate lead paint from homes throughout the commonwealth.

There have also been recent discoveries of PFAS contaminants in numerous communities across the commonwealth, threatening the safety of residents' drinking water. The cleanup costs associated with addressing these chemicals can be significant, and without the Hazardous Sites Cleanup Fund there are few funding options available at the state level.

RESTORE PENNSYLVANIA will fund expanded efforts to remove lead and other contaminants from communities.

Green Infrastructure

Pennsylvania has long recognized the need to invest to protect open space, address maintenance needs in state parks, preserve working farms, clean up abandoned mines and restore watersheds, provide funds for recreational trails and local parks, help communities address land use, and provide new and upgraded water and sewer systems. These projects help create prosperous and sustainable communities, protect the environment, add quality of life value that attracts jobs, contribute to Pennsylvania's outdoor recreation and tourism industries, and improve public health.

Moreover, the outdoor recreational opportunities provided by our state's network of parks, trails, greenways, riverfronts and other open spaces are increasingly cited as an important factor in where residents decide to live and work, creating a major incentive to invest in creating these opportunities as a strategy to attract and retain the workforce that will power Pennsylvania's economy tomorrow.

However, significant need continues to exist. Over 19,000 miles of streams and rivers do not meet federal and state water quality standards. Nearly 200,000 acres of abandoned mine land remain across 43 Pennsylvania counties. More than 2,000 working farms remain on county waiting lists to be preserved. Over 200,000 orphaned and abandoned wells pollute our landscape. There is a significant backlog of needed infrastructure work to fix deteriorating buildings, water and sewer treatment systems and trails and roads in the state parks and state forests. The legislature in recent sessions has recognized the need to continue the success of prior initiatives to address these ongoing issues, but no consensus on a new source of funding has emerged.

RESTORE PENNSYLVANIA will provide significant new funding to enable new environmental projects and new recreational opportunities across the state, including infrastructure and maintenance in state parks, creation and revitalization of new local parks, and funding for new hiking, biking and ATV trail projects.

Transportation Capital Projects

Pennsylvania has roughly as many state-maintained road miles as New England, New York, and New Jersey combined and keeping our large system in a state of good repair requires continued investment. The American Society of Engineers' 2018 "infrastructure report card" gives Pennsylvania a D+ rating for the quality of its roads and bridges and a D for transit. A safe and reliable transportation network is essential for Pennsylvania residents, businesses, and visitors and improving and maintaining this extensive multimodal system requires stable, sufficient funding.

Increased opportunities for reliable modes of transportation help increase opportunities for employment, expand travel options for students looking for educational opportunities, and increase options to explore Pennsylvania's tourism destinations, all of which will garner increased economic impacts for every industry, community, and Pennsylvania resident.

Now is the time to formulate the strategic vision so we are prepared to seize on the opportunities ahead – another Amazon-like employer, transportation technology opportunities, and economic development opportunities, such as transit-oriented development

RESTORE PENNSYLVANIA will provide funding for local road upgrades, create new flexible funding options for businesses that need local infrastructure upgrades to enable development projects, and multimodal and large-scale capital projects for transit.

PA Back Roads

With more than 120,000 miles of state and local highways, Pennsylvania has one of the largest transportation networks in the country. This sprawling network requires continuous investment to maintain, and needs are particularly pressing for the "four digit" state routes, many of which have not received attention for too long.

In addition, Pennsylvania has more than 25,000 miles of unpaved roads, about 17,500 of which are owned by local municipalities and provide access for the state's agriculture, mining, forestry, and tourism industry as well as more than 3.6 million residents. Maintenance needs for these roads have been significantly exacerbated by heavy rain throughout 2018, which created over $125 million in floods and significant slide damage to state-maintained roads and bridges. PennDOT's Engineering District 11 in the Pittsburgh area alone is working to address damage from over 80 active landslides, including many roads that have been reduced to one lane or closed altogether. Conservation Districts across the state that administer Dirt, Gravel and Low Volume Road Programs are facing increased need caused by unprecedented rainfall.

RESTORE PENNSYLVANIA will accelerate progress of projects to resurface, repave and repair four-digit roads and provide technical assistance and funding for dirt and gravel roads throughout the state.

Business OnRamp

When businesses look to expand, they frequently need transportation infrastructure upgrades to support the increased flow of traffic associated with the expansion. While the state is sometimes able to leverage our allocation of federal Transportation Infrastructure Investment Funds (TIIF), these funds come with restrictions and red-tape that prevent them from being utilized for important projects, such as where the roads surrounding the expanding facility are locally owned.

RESTORE PENNSYLVANIA will create a flexible funding tool to enable capacity upgrades needed to support development where TIIF funding is not available.

Public Transit System Projects

Throughout the state transit systems large and small are struggling to provide upgrades required to meet the shifting needs of residents, commuters, and visitors. In some instances, transit systems were built out decades ago and have not yet caught up with the needs of shifting populations. Elsewhere rural transit systems have difficulty funding needs ranging from new bus shelters to maintenance facilities for vehicles through farebox revenues alone. In numerous communities, high priority expansion projects have been studied extensively and are ready to move forward. In many others, applications for infrastructure upgrades are waiting for funding to become available.

RESTORE PENNSYLVANIA will support new capital projects at public transit capital projects throughout the state.

PRICE BASED SEVERANCE TAX PROPOSAL

To enable the RESTORE PENNSYLVANIA plan, Governor Wolf is proposing a reasonable severance tax which will be leveraged to provide immediate benefits across Pennsylvania.

Pennsylvania remains the only gas-producing state in the country without a severance tax. With every passing year our state—the second leading producer of natural gas in the country—is losing out on the opportunity to reinvest the benefits of these resources to stimulate our economy and move Pennsylvania forward.

The proposed severance tax will be price sensitive to the natural gas sector. As producer profitability increases due to rising natural gas prices, the severance tax rate will increase as well. The following chart outlines the price-based tax structure:

Natural Gas Price Range	Tax Per Thousand Cubic Feet
$0.01-$2.99	$0.091
$3.00-$4.99	$0.109
$5.00-$5.99	$0.131
$6.00 or more	$0.157

The severance tax will not make any change to the natural gas impact fee. The impact fee has assisted local communities where natural gas is extracted to invest in infrastructure, their economies, and the health and safety of residents.

The price-based severance tax will result in the following effective rates, which are in line with other major natural gas producing states including Texas:

2019/20	2020/21	2021/22	2022/23	2023/24
4.5%	4.5%	3.8%	3.4%	3.0%

The severance tax will only apply to wells that are subject to the impact fee. The following exemptions will be allowed:

- Natural gas provided to a lessor for no consideration.
- Natural gas severed from a storage field.
- Natural gas severed, sold and delivered by a producer at or within five miles of the producing site for the processing or manufacture of tangible personal property.

The tax will be effective March 1, 2020.

COMMONWEALTH OF PENNSYLVANIA
STATE CONSERVATION COMMISSION

DATE: February 28, 2018

TO: State Conservation Commission Members

FROM: Frank X. Schneider, Director
Nutrient and Odor Management Programs

THROUGH: Karl G. Brown
Executive Secretary

RE: Nutrient and Odor Management Programs Report

The Nutrient and Odor Management Program Staff of the State Conservation Commission offer the following report of measurable results for the time-period of January / February 2019.

For the months of January and February 2019, staff and delegated conservation districts have:

1. Odor Management Plans:
    a. 4 OMPs in the review process
    b. 1 OMPs approved
    c. 3 OMP approvals rescinded

2. Reviewed and approved 142 Nutrient Management (NM) Plans in the 4th quarter of 2018.
    a. Those approved NM plans covered 24,109.08 acres
    b. Those approved NM plans included 86,754 Animal Equivalent Units (AEUs), generating 1,546,563 tons of manure.

3. Managing seventeen (17) enforcement or compliance actions, currently in various stages of the compliance or enforcement process.

4. Continue to daily answer questions for NMP and OMP writers, NMP reviewers, delegated Conservation Districts, and others.

5. Assisted DEP with various functions and as workgroup members in Federal and State settings for the Chesapeake Bay Program.

6. Continue to work on updating the following
    a. NM Technical Manual
    b. NM/MM Administrative Manual

c. OMP Program Technical manual and Program Guidance
d. OMP BMP reference List
e. OMP Vegetative Buffer
f. Handling P in NBS’s
g. Excel and Word NMP Planning Tools

COMMONWEALTH OF PENNSYLVANIA
STATE CONSERVATION COMMISSION

DATE: February 14, 2019

TO: Members
State Conservation Commission

FROM: Frank X. Schneider, Director
Nutrient and Odor Management Programs

SUBJECT: Calendar Year 2018 Nutrient Management Plan Data

Attached is the most recent Nutrient Management Plan (NMP) approval data for Calendar year 2018 (up to December 13, 2018). I would like to thank Kate Bresaw from DEP for developing this report based on the data submitted by the delegated conservation districts.

The report shows that there are a total of 1,217 Pennsylvania farms that have NMPs approved for their operations. These approved operations have a net total of 228,296 acres under plan, which does not include the acres of importing farms with developed Nutrient Balance Sheets (NBS).

The last report given to the commission was on March 29, 2018. This report, when compared to the 2017 report, shows a decrease of 814 operations with approved NMPs, and a decrease of 32,725 planned acres on these farms.

There could be several reasons for this large decrease that could include:

- Report only details active NMPs submitted to DEP prior to December 13, 2018. 4th quarter NMP data did not need to be submitted until January 25, 2019.
- Quarterly reports are being transferred from paper forms (entered into an Access database) to the PracticeKeeper system.
- This report has NMP data from both Access Database and PracticeKeeper that was manually combined.
- Data clean up from the Access Database is occurring. All plans over 3 years are no longer active, so not reported, where in the past they may have still been reported.
- There is a move from Act 38 NMPs to Chapter 91 Manure Management Plans.

ATTACHMENT

2301 NORTH CAMERON ST., HARRISBURG, PA 17110-9408 717-787-8821 (FAX) 717-705-3778

Calendar Year 2018
Active NMPs up to 12/13/18

County	CAOs	Acres	VAOs	Acres
ADAMS	18	2324	3	3554
ALLEGHENY	5	2308	0	0
ARMSTRONG	0	0	10	2335
BEAVER	0	0	0	0
BEDFORD	6	2139	2	388
BERKS	64	4170	13	4070
BLAIR	2	77	10	11940
BRADFORD	9	956	3	2077
BUCKS	7	54	0	0
BUTLER	0	0	0	0
CAMBRIA	2	23	0	0
CARBON	1	8	0	0
CENTRE	18	1403	3	245
CHESTER	20	2565	9	3701
CLARION	1	7	1	27
CLEARFIELD	4	121	6	744
CLINTON	17	410	2	5205
COLUMBIA	4	147	3	719
CRAWFORD	1	413	2	6413
CUMBERLAND	13	1670	10	4193
DAUPHIN	24	1565	3	1454
ELK	0	0	0	0
ERIE	1	237	2	489
FAYETTE	0	0	1	167
FRANKLIN	44	2727	21	14366
FULTON	7	749	0	0
GREENE	1	1	0	0
HUNTINGDON	9	1589	12	12089
INDIANA	2	6	2	102
JEFFERSON	6	183	9	3061
JUNIATA	36	1860	10	5141
LACKAWANNA	0	0	1	234
LANCASTER	269	21912	28	11499
LAWRENCE	1	11	3	1575
LEBANON	102	3645	17	5508
LEHIGH	4	136	1	152
LUZERNE	2	27	1	54
LYCOMING	12	920	8	3520
MCKEAN	0	0	4	1619

MERCER	2	136	1	712
MIFFLIN	25	1368	5	1608
MONROE	5	35	0	0
MONTGOMERY	3	105	1	42
MONTOUR	5	134	0	0
NORTHAMPTON	1	61	0	0
NORTHUMBERLAND	11	274	9	8046
PERRY	23	2470	14	6729
PIKE	0	0	0	0
PHILADELPHIA	1	3	0	0
POTTER	0	0	5	3440
SCHUYLKILL	19	2070	5	2285
SNYDER	54	7855	7	3673
SOMERSET	0	0	5	6464
SULLIVAN	1	73	0	0
SUSQUEHANNA	0	0	3	470
TIOGA	9	3070	10	3089
UNION	32	2760	9	3402
VENANGO	0	0	1	48
WARREN	0	0	0	0
WASHINGTON	2	284	2	264
WAYNE	0	0	0	0
WESTMORELAND	0	0	3	3259
WYOMING	1	6	1	46
YORK	24	993	6	2019
Totals	930	76,060	287	152,236

COMMONWEALTH OF PENNSYLVANIA
STATE CONSERVATION COMMISSION

DATE: February 15, 2019

TO: Members
State Conservation Commission

FROM: Frank X. Schneider, Director
Nutrient and Odor Management Programs

Kathryn Bresaw
DEP Bureau of Clean Water

SUBJECT: Calendar Year 2018 Chapter 91 Activities

Below is a summary of the Chapter 91 education and outreach activities performed by delegated county conservation districts during calendar year 2018.

DEP collects data, on a quarterly basis, on the Manure Management (Chapter 91.36) requirements that were added to the Nutrient Management and Manure Management Delegation Agreements in July 2012.

In calendar year 2018, delegated conservation districts performed the following activities in regards to Manure Management.

- 968 outreach events
- 11,807 outreach contacts
- 188 consultant contacts
- 250 complaints processed
- 117 instances of compliance needed
- 19 compliance issues referred to DEP

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COMMONWEALTH OF PENNSYLVANIA

STATE CONSERVATION COMMISSION

DATE: February 28, 2019

TO: Members
State Conservation Commission

FROM: Karl J. Dymond
State Conservation Commission K Dymond

SUBJECT: March 2019 Status Report on Facility Odor Management Plan Reviews

Detailed Report of Recent Odor Management Plan Actions

In accordance with Commission policy, attached is the Odor Management Plans (OMPs) actions report for your review. No formal action is needed on this report unless the Commission would choose to revise any of the plan actions shown on this list at this time. This recent plan actions report details the OMPs that have been acted on by the Commission and the Commission's Executive Secretary since the last program status report provided to the Commission at the January 2019 Commission meeting.

Program Statistics

Below are the overall program statistics relating to the Commission's Odor Management Program, representing the activities of the program from its inception in March of 2009, to February 27, 2019.

The table below summarizes approved plans grouped by the Nutrient Management Program Coordinator Areas and by calendar year (minus any rescinded plans).

	Central	NE/NC	SE/SC	West	Totals
2009	7	6	28	1	42
2010	5	7	25	2	39
2011	10	12	15	2	39
2012	9	17	16	2	44
2013	10	11	38	3	62
2014	13	16	44	2	75
2015	16	15	61	2	94
2016	19	16	59	4	98
2017	25	24	44	3	96
2018	14	13	40	1	68
2019	2	2	1		5
Total	130	139	371	22	
Grand Total					662

As of February 27, 2019, there are six hundred sixty-two **approved** plans and/or amendments, eight plans have been **denied**, sixteen plans have been **withdrawn** without action taken, fifty-eight plans were **rescinded,** and four plans and/or amendments are going through the **plan review process**.

OMP Status Report

Action	OMP Name	County	Municipality	Species	AEUs	OSI Score	Status	Amended
1/2/2019	Oberholtzer, Curvin	Union	Buffalo Twp	Broilers	74.47	62.5	Approved	A
1/15/2019	Junk-Inn Farms, LLC - C Farm	Franklin	Metal Twp	Swine	726.90	42.9	Approved	
1/18/2019	Reu-Hel Farms, Inc	Berks	Centre Twp	Duck	77.80	49.2	Approved	
1/30/2019	Martin, Darren R	Union	W Buffalo Twp	Turkey	0.00	112.5	Approved	
2/11/2019	Schrack Farms – Moyer Farm	Clinton	Logan Twp	Cattle	0.00	38.2	Approved	
2/13/2019	Shetler, Johnny D	Mercer	Salem Twp	Veal	45.60	63.0	Rescinded	
2/21/2019	Lapp, David King	Lancaster	Strasburg Twp	Cattle	0.00	17.9	Rescinded	
2/26/2019	Mains Dairy	Cumberland	W Pensboro Twp	Cattle	0.00	-11	Rescinded	

COMMONWEALTH OF PENNSYLVANIA
STATE CONSERVATION COMMISSION

DATE: February 26, 2018

TO: Members
State Conservation Commission

FROM: Frank X. Schneider, Director
Nutrient and Odor Management Programs

Karl Dymond
Odor Management Coordinator

THROUGH: Karl G. Brown
Executive Secretary

SUBJECT: 2019 Odor Management Plan Self Certification

The State Conservation Commission approved the use of an Odor Management Self Certification process on November 12, 2014.

On January 3, 2019, SCC staff mailed Odor Management Self Certification letters and forms to the following:

77 – No Odor Best Management Practice (BMP) plans
393 – Level 1 Odor BMP plans that require only the BMP Attestment Statement.

Those that received self-certification letters were given 7 weeks to return the forms.

As of this memo, the SCC has received the following self-certifications:

67 – No Odor BMP plans, an 87% return rate.
311 – Level 1 Odor BMP plans (Attestment Statement), an 79.1% return rate.

Between the two categories of self-certification sent, the following was reported:

354– No significant changes.
4 – Significant changes.
7 – Expect to make significant changes.
11 – Under construction or other.
2 - Plans Rescinded

SCC staff is in the process of contacting those that made significant changes, expect to make significant changes and others, to develop plans of action to bring those operations back into compliance.

As a side note to the self-certification process, the Odor Management Coordinator received several calls for clarification on requirement or to report that the facilities were built and post construction inspections were never performed. It is the operators' responsibility to inform us when construction is complete so we can perform the post construction inspections, but in many instances, that did not happen. SCC staff is working to bring those operations back into compliance.

COMMONWEALTH OF PENNSYLVANIA
STATE CONSERVATION COMMISSION

DATE: March 4, 2019

TO: State Conservation Commission

FROM: Johan E. Berger
Financial, Certification and Conservation District Programs

SUBJ: 2018 -2019 Program Accomplishments (January 2018 to February 2019)
Resource Protection and Enhancement Program (REAP)

REAP Program Summary

The Resource Enhancement and Protection (REAP) Program allows farmers, businesses, and landowners to earn state tax credits in exchange for the implementation of conservation Best Management Practices (BMPs) on Pennsylvania farms. REAP is a "first-come, first-served" program – no rankings. The program is administered by the State Conservation Commission and the tax credits are awarded by the Pennsylvania Department of Revenue. Eligible applicants receive between 50% and 75% of project costs in the form of State tax credits for up to $150,000 per agricultural operation.

Program Accomplishments

The FY2018 REAP application period opened on August 1, 2018. Below is a summary of the FY2017 round of REAP applications and a summary of the FY2018 round, to date (1.) and, a summary of REAP activities from January 1, 2018 to February 28, 2019 (2). Approximately twelve (12) applications received in program year 2017, representing approximately $1.1 million, could not be considered under the FY2017 allocation. These applications were held for consideration in the FY2018-19 round of applications for REAP.

(1.) FY 2017 & FY 2018

Applications		Total Cost	Other Public Funds	REAP Requests	Credits Granted
2017	307	$27.8 million	$5.6 million	$10.88 million	$7.26 million
2018	115	$10.7 million	$1.9 million	$4.4 million	$2.75 million

	FY2017	FY2018
a) REAP Request – project types		
1) Proposed	$2.40 million	$1.45 million
2) Completed Projects	$8.50 million	$2.95 million
b) No-Till Equipment	$3.85 million	$1.49 million
c) Structural BMPs	$6.4 million	$2.60 million
d) Plans (Ag E&S, Conservation, Manure Management, Nutr. Mgmt.)	$178,500	$60,000
e) Low Disturbance Residue Management Equipment	$283,000	$120,000
f) Precision Ag Equipment	$145,000	$10,200

(2.) January 01, 2018 – February 28, 2019

1. Tax Credits issued to applicants for completed projects ....10.86 million*
2. Number of BMPs completed associated with issued tax credits.. *481*
3. Number of new tax credit 'sales' completed. ....*254 sale transactions*
4. Value of new tax credits processed through 'sales'...*$4.26 million*
5. Number of site inspections conducted on completed projects *45*
6. Educational and promotional activities included one press release:

   12 speaking events

   4 mass email

   3 Press release

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Agenda Item C.2

BUILDING BRIDGES

Farmers*Municipalities*Citizens
Conservation Districts*Agribusiness

To:	Members State Conservation Commission	February 28, 2019
From:	Beth Futrick Agriculture/Public Liaison	
Through:	Karl G. Brown, Executive Secretary State Conservation Commission	
Re:	Ombudsman Program Update – Southern Alleghenies Region	

Activities: January-February 2019

- Meeting with CDE /CBE, various conservation districts, and PSU(PAOneStop) to plan 2018-2019Ag. E and S training
    - Currently working with 13 conservation districts to assist with coordinating and hosting this year's ag e/s workshops.
    - Assisting with promotional outreach
- Planning/assisting PADEP with farmer focus group meetings to assess WIP3
- Planning 2019 Nutrient Management Conference
- Preparing for speaking engagement at Farm-to-Table Western PA Conference on March 9
- Completing the Community Food Systems on-line training
- Preparing for panel discussion at Iowa State University's Community Food Conference
- Preparing to install a multi-functional riparian buffer at Natureworks Park (BCCD property)
- Assisting Penn State Extension with development of programs
    - Understanding the Dairy Business Workshop intended for technical support and economic develop organizations.
- Organizing a regional equine workshop on manure & E/S management to be hosted in Blair County

Meetings/Trainings/Events

--January 17 -Blair/Centre/Huntingdon PA One Stop Training
--January 29 – SCC/PACD Winter meeting
--January 30 – Penn State Extensions soil health workshop (Blair County)
--February 3 – Delivered a Food Systems lesson to PSU-Altoona (AG Class)
--February 27 - Penn State Extension Committee meeting (Blair County)

Conflict Issues/Municipal Assistance –

- Coordinated with Dr. Gregory Martin on development of "Fly Management" article to be published in *Der Ober Tal Brief* — this is an Amish newspaper – that reaches Plain Sect communities in Centre, Clinton, and Lycoming Co.

Reports & Grant Applications

--BCCD Board Report
-- Second revisions to NFWF grant contract (for MS4 Stormwater BMP installation)
--Revision of Growing Greener Grant contract(for MS4 Stormwater BMP installation)

Blair County Conservation District
1407 Blair Street, Hollidaysburg, PA 16648
Phone: 814-696-0877x113 Fax: 814-696-9981
Email: bfutrick@blairconservationdistric.org Website: www.paagombudsman.com
Funded through the Blair County Conservation District and the PA Department of Agriculture

BUILDING BRIDGES

Farmers * Municipalities * Citizens
Conservation Districts * Agribusiness

To:	Members State Conservation Commission	March 12, 2019
From:	Shelly Dehoff Agriculture/Public Liaison	
Through:	Karl G. Brown, Executive Secretary State Conservation Commission	
Re:	Agricultural Ombudsman Program Update	

Activities: Since late-January 2019, I have taken part or assisted in a number of events, including the following:

- working with Center for Dairy Excellence and PSU to provide more Ag E&S Plan Writing workshops in PA
- participated in monthly Mushroom Farmers of PA meetings
- Newly contracted with the South Central Task Force Agriculture Subcommittee as Planning Specialist
    - completed some on-line FEMA courses related to new responsibilities
    - working on locating grain bin rescue kits in existence in southcentral PA; and where needs still are
    - attended Exercise Working Group meeting to represent Ag in upcoming Tabletop Exercise
- Attended 2 days of PA In the Balance conference
- Working with DEP Bay Program Office to organize a farmer focus group meeting in Tioga/Bradford Counties
- met with Ag Consultant about new manure record keeping software his company has created
- attended NRCS Black History Month event at State Office
- Started 2019 Lanc Co Ag Week planning efforts
- Attended Day 1 of PACD Staff Conference
- Panelist representing agriculture/environmental careers for Jr Achievement event for teens at Lebanon Valley College
- Attended “All Bay” meeting in Selinsgrove
- Attended and assisted at Lancaster Co. Agriculture Council meeting

Local Government Interaction: I have been asked to provide educational input regarding agriculture:

York Co—asked to by farmer to review ordinance and provide educational input to him and help him consider the ACRE law

Dauphin Co—asked for input from Boro/consultant about ordinance wording

Moderation or Liaison Activities: I have been asked to provide moderation or liaison assistance with a particular situation:

None currently

Research and Education Activities:

Lancaster Co—received call about details for mortality composting for regular source of rabbit mortality

Fly Complaint Response Coordination: I have taken complaints or am coordinating fly-related issues in:

None currently

12694 Gum Tree Road Brogue, PA 17309 *Phone*: 717-880-0848 *Fax*: 717-299-9459
Email: shellydehoff@lancasterconservation.org *Website*: www.agombudsman.com
Funded through the Lancaster Co. Conservation District and the PA Department of Agriculture