

Farms for the Future

Balmer Family Stoney Path Farm Transformation Team Case Study



*Farms for the Future Project
Funded Through a USDA Grant*



CENTER FOR
DairyEXCELLENCE

Balmer Family Stoney Path Farm

Table of Contents:

• Farm History and Executive Summary	Page 3
• Business Plan	Page 4
• Modernization and Technology	Page 5
• Site Survey	Page 8
• Conservation and Environmental Stewardship	Page 9
• Animal Care and Comfort	Page 11
• Other Unique Components	Page 13
• Succession Plan	Page 31
• Risk Management	Page 33
• Resources and Contact Information	Page 36
o Blueprints	
o Contacts	

Farm History and Executive Summary

Jeff and Jesslyn Balmer, and their four children, operate 140-acre Stoney Path Farm, located in Lititz, Lancaster County. Prior to their Transformation Team project, the couple milked approximately 50 cows in a tie-stall barn. The 10 year lease agreement with Jeff's mother was expiring, and an option to purchase the farm was presented. It was an ideal time to consider their future in dairy. In a quest to improve cow comfort, business profitability and quality of life, the Balmers began researching parlor and robotic milking systems.

Led by their nutritionist, the Transformation Team helped the Balmers analyze their expansion plans, comparing the feasibility of both milking systems and the appropriate benchmarks for their business. Ultimately, the family decided on two robotic milking units and doubling their herd size to 100 cows. They also executed a succession plan, purchasing the farm from Jeff's mother.

In August of 2011, the Balmers broke ground on their new facility and purchased an additional herd of cows from another Lancaster County farm. Once again, the Transformation Team was instrumental in helping Jeff manage the herd health issues associated with incorporating new animals into an existing herd. They also remodeled their existing tie-stall barn to accommodate young stock.

Today, herd management relies more on data collected from robots and observation, instead of previous hands on/clinical observations. The Balmers adjust dairy cow rations to help cow flow to the robot and achieve optimal production. They see more standing heats in the herd and have an activity monitor in the identification collars that alert them to possible heats.

Thanks to this robotic technology, the Balmers also actively participate in their children's school and extracurricular activities, as milking schedules no longer dictate family life.



Business Plan

Situation Overview:

- A. *Why did the farm need a business plan?* The need for a business plan was spurred by the downturn in the dairy economy in 2009. We recognized that to sustain the farm, changes would need to occur for us to remain profitable. Past financial information and records were utilized to create the business plan to accommodate future business planning.
- B. *Does the farm have a mission statement?* Yes. Stoney Path strives to produce quality milk at a profit by:
- Raising our family to understand the value of working together to achieve our goals while caring for animals and crops, both on the farm and with the public.
 - Utilizing our God given talents and resources to care for the animals and land in a sustainable and environmentally conscious manner.
 - Breeding our cows for longevity with functional type traits that will be both appealing and marketable.
 - Providing an educational opportunity for other producers and the community to see technological advancements in dairy farming.

Actions:

- C. *What are the key components to the final plan?* Cash flow, balance sheet, loan amortizations, production goals and mission statement were all components of the final plan.

Results:

- D. *What benefits, if any, has your farm dairy operation derived from engaging in a business planning process?* We placed more concrete numbers on the business of dairy farming and the need to evaluate and think forward in the planning process.
- E. *How did the business planning process help the family make better decisions?* We had the information needed when applying for a loan(s). All the information was in one place.
- F. *How often will the farm update the business plan, in the future?* It's a continuous process, but we plan to take a hard look every five years.
- G. *Was there anything uncovered during the business planning process that helped family members to better understand other members of the family?* The process helped us to clearly express our personal and business goals. This is sometimes difficult to do, and this process forced us to become more comfortable with doing it.

Modernization and Technology

Situation Overview:

- A. *Detail the farm's reasoning behind the decision to pursue a modernization plan.*
1. Our tie stall barn needed updated and was causing cow comfort issues.
 2. A 10 year rental lease was about to expire, with an option to purchase the farm. We could house animals, but then how do we milk them? There was a robot versus parlor discussion. We wanted the daily schedule freedom that robots offered. There is less labor with robots, as compared to a parlor system.
- B. *List the key variables that impacted the decision to move ahead with the plan.* We compared the financial feasibility of robots versus parlor milking systems. We liked that robots also allowed a flexible schedule for our family that includes four young children. It's a family farm, with family members managing the day-to-day work; neighbors help in a pinch.
- C. *The following modernization areas apply to our farm and describe the incorporation of technology.*
- Young stock facilities – Remodeling old tie stall for young stock.
 - Milking cow facilities – Two robotic milking units.
 - Manure management and storage – No additional storage. Tank holds 4 – 5 months.
 - Manure handling – Chain link, not cable, scraper systems with tube gutter keeps alleys drier, pump through transfer line.
 - Feed Storage – In March 2013, we started pasteurizing waste milk for our calves. Low quality milk is separated and collected by the robot to be pasteurized.
 - Ventilation – Built a three row barn. Natural prevailing winds for cross ventilation. AutoVent system controls curtains and fans and has a detector that reads wind and indoor/outdoor temperatures. Humidity and precipitation sensors change curtains based on weather conditions; curtains are opened and closed more often with sensors, as compared to manual operation.

Challenges and Opportunities:

- D. *What were the different options the Transformation Team considered as they worked together to pursue this plan? Please describe.* The Transformation Team helped us consider one robot, versus two, and also keeping the same herd size, versus doubling our herd size. Ultimately, we decided on two robots, doubling the herd size. This decision also changed our cropping and manure handling systems. Our break-even price dropped by \$1.

Modernization and Technology...continued

E. *Did any barriers, or bottlenecks, occur during the project, and if yes, how did the team overcome those issues?* Yes. Tropical Storm Lee was the biggest construction obstacle. For project financing, all three loans were contingent on the other. We needed one lender to go first.

Actions:

F. *How did the work done on a business plan or feasibility study impact the farm's final decisions?* Once we gathered our estimates and our financial numbers matched, we moved forward with our plan.

G. *How long did the project take, start to finish?* Two years.

Timeline:

- Late winter/early spring 2010: Rental agreement for the farm was coming to a close
- July 2010: First meeting of the Transformation Team
- January 2011: Financed with the bank
- April 2011: Bank approved
- August 2011: Construction began
- December 14, 2011: Cows moved into the new barn

Results:

H. *How did the modernization and new technology change the business as it relates to profitability?* We would not have purchased the farm and remained in dairy without the modernization plan.

I. *Can the farm quantify labor savings, energy savings or environmental impact?* Our herd is a little more than double the original size, and we can finish our chores in equal or less time without additional hired labor. Chores no longer revolve around the strict 2x per day milking schedule.

J. *Did the modernization and new technology change management practices on the farm?* Herd management relies more on data collected from the robot and observation, instead of all hands on / clinical observations. Rations for the dairy cows have been fine tuned to help cow flow to the robot, and achieve optimal production. We now see more standing heats in the herd and have an activity monitor in the identification collars that alert us to possible heats.

Modernization and Technology...continued

K. *Have you learned anything that has influenced future decision making about technology or given you new enthusiasm for some aspect of modernization?* The completed project continues to be a work in progress for us. There were computer glitches in the beginning, but we didn't begin this project expecting everything to be perfect. We had great support to help fix those glitches.

Other than the routine/schedule maintenance to rebuild, calibrate, etc., we haven't had a service person on the farm for more than six months.

Reproductive performance was fantastic from January through March, after the initial move to the facilities. Breeding on standing heat and conception rate was excellent and new for us having moved from a confined housing, stall barn environment.

L. *Has the farm shared the new facilities or technology (milking facilities, manure management, etc.) with others in the community? If yes, what was the response from the community?* Many farmers have stopped to see the new facilities and robots in action. Curious neighbors that visit are amazed by the robots! Non-agriculture visitors often ask us when we start milking. Our answer – “we milk 24/7!”

In August of 2012, we hosted state and federal inspectors from the Northeast, who were convening in Pennsylvania to discuss milking equipment with a focus on robotics. It was an enlightening experience for us and some of the inspectors/regulators who had not previously seen a robot in action.

A group of European educators also came to the barn through Penn State Cooperative Extension. Due to our proximity to a local equipment dealer, farmers often stop in who are “driving by” and want to look at the facility. Other Lely dealers have brought tours of prospective buyers from Virginia, New York, Michigan, Indiana, Ohio, etc.



Site Survey

Situation Overview:

- A. *How did the team analyze potential sites for construction?* We consulted with Transformation Team members, along with the building contractors and other experienced individuals to weigh the pros and cons of each construction site option.
- B. *What variables did the team consider as they reviewed sites?* The major variable was avoiding the property line between the two preserved farms. In addition, the new barn needed 100 – 150 foot setback from the existing structures. The barn design also impacted the site survey.

Actions

- C. *How long, from start to finish, was the site survey process?* 3-4 months
- D. *Approximately, how much did the site survey work cost?* Not including permits, engineering fees were approximately \$12,000+ from start, through meetings, and final inspection by the engineering firm.

Results

- E [See the resources section of this case study for the project blueprint.](#)



Conservation and Environmental Stewardship

Situation Overview:

A. *How does this farm view their environmental responsibilities for both the farm and land? Please describe.* We want to be good stewards of the land realizing that matching nutrient needs and nutrient availability will both reduce need for purchased fertilizer and maximize yield potential. It also should reduce excess runoff that could affect the township water supply and other entities “downstream.”

B. *What conservation and environmental best management practices (BMPs) have been incorporated into the farm plan during the last 5-10 years?*

- Crop residue management
 - o No-till
 - o Conservation till
- Contour farming
- Contour strip cropping
- Filter strip
- Conservation buffers
- Crop rotations
- Cover crops
- Grassed waterways
- Animal Trails/Walkways
- Structure for water control
- Barnyard runoff controls/Heavy use area protection
- Water (manure) storages/Manure Stacking
- Animal mortality handling facility
- Milk house waste
- Roof runoff management
- Precision feeding/Feed management
- Integrated pest management

C. *Does the farm have a Nutrient Management Plan (NMP) or Manure Management Plan? Yes. Did this project change the way the farm handles animal manure? Please describe.* We have had a NMP for a number of years because of a partnership with the local township wellhead protection program. An updated plan and modified crop rotation with expansion has changed the manure application rates and timing.

D. *Is manure applied in the winter months (generally December – February)? Is the manure applied in winter due to not enough storage or for other reasons such as timing, field conditions in spring, etc.? [if yes, for what particular reason(s):]* We try to avoid winter application, but only one field has restrictions. All others allow winter application with cover crop. We do haul onto rye if field conditions and storage allow.

E. *Does the farm have a conservation plan or an agricultural erosion and sedimentation control plan? If yes, what are the key components?* The key components in our conservation plan is crop rotation and reduced tillage practices.

Conservation and Environmental Stewardship...continued

F. *Can the farm quantify the environmental impact of the project? Please describe.* No, but the retention pond certainly does control the flow of rain runoff from buildings, drive, etc.

G. *What is the most significant environmental/conservation improvement made on this operation within the last 5 years, and what improvement(s) did it result in?* For our farm, it's a combination of collecting barnyard runoff into manure pit and controlling (attempting to infiltrate) storm water into the retention pond. The result is cleaner water leaving the property during a storm event.



Animal Care and Comfort

Situation Overview:

A. *Can you determine if cow comfort or care was limiting the productivity or profitability of your dairy operation? Yes. If yes, please list animal factor(s) that needed to be improved.* Stall design was a major limiting factor to cow comfort. After construction, we realized that air quality also was limiting cow productivity and profitability. With a new ventilation system, we can move more air through the barn, circulating through fans, which is good for our cows. Sprinklers also can be added to the system, if needed, at a later date.

B. *If you determined that cow comfort or care was a limiting factor, did you make structural and/or management changes to address the deficiencies? Yes. Please list structural and/or management changes.* We used Penn State University numbers for stall size. Upon first moving into the new barn, we adjusted the brisket pipe.

The cows are cleaner in the new barn. Their tails are up under them, not in the alley way. The barn features a tube gutter. The chain is out of site, with no cables, which leads to less cable damage to cows' hooves.

C. *Relative to animal care, what have you learned from this project that you believe would have broad application to the dairy industry? What would you do the same and what would you do differently?* We have moved the solid neck rail pipe forward to maintain strength/support of the loop stall while adding a yellow tie down strap where the pipe was originally installed. We observed that cows would stand up and hit the pipe near the point of shoulder. We also noticed cows would end up too far front in the stall, or for some reason have trouble getting up, resulting in hurting the cows' topline/back. After seeing a cow temporarily stuck and seeing a photo in *Hoard's Dairyman*, we implemented the strap. It still keeps the cows standing back far enough in the stall, but is also flexible in a way that is not hard on the cows' shoulder/back/topline.

D. *What is your farm's approach to administration and documentation around the use of standard operating procedures (SOPs) for animal care?* We have a verbal checklist, but know that we need to work on written SOPs, especially for people who may help with barn chores. In April 2013, through Ag Vet Associates and a grant through Beef Quality Assurance program, we participated in a SOP workshop which provided templates to establish SOPs for our farm. Good record keeping and a written checklist for anyone helping out while we are away, will help assure that we continue to provide a safe product for consumers.

E. *Have you enrolled in a formal animal care program? Yes. If so, what have you learned that's been beneficial to your operation?* To date, any efforts in an animal care program have been led by our cooperative, Mount Joy Farmer's Cooperative, and local vet practice. The animal care program focuses on the following areas: (1) nutrition, (2) animal health, (3) environment and facilities, and (4) handling, movement, and transportation.

Animal Care and Comfort...continued

F. *What is the vision for animal care at Stoney Path Farm?* We believe that our cows should be cared for with the utmost respect and follow the quote of W.B. Hoard about “treating them like a mother.” The cows in a robotic system are very calm because they can do everything they need to do (eat, drink, milk, walk, lie down, scratch their back and socialize with herd mates) and can do it on their own schedule. Through data from the system and personal observation and interaction, we strive to stay ahead of any problem hindering a cow’s performance. A happy healthy cow is a more productive cow, resulting in more milk sold from our farm.



Other Unique Components

Situation Overview:

- A. *Please detail additional areas that were part of the farm's project.* As part of the project, we needed to approximately double our herd size. We were blessed to be able to find a herd for sale with owners who were willing and able to continue taking care of the herd until the barn was complete and ready for move-in.
- B. *How was the team instrumental in helping you think through available options?* Some of the team members were familiar with the previous herd owners and highly recommended the acquisition because of the known herd health history. This option was preferred over buying animals (most likely heifers) from various herds and hoping that no new herd health issues would be introduced to our farm/herd.
- C. *Did any of these additional components result in added profitability or a change in management style?* The additional cows were required for the cash flow to work. The additional cows increased the number of calves and heifers on the farm. We remodeled the old bank barn and had to change the ages of animals that the existing pens held. Raising our own replacements helps to control introduction of herd health issues into the herd.
- D. *Before and After the Project:*
- 48+ cows milking plus dry cows for a total of approximately 55 before the project plus heifers to equal 100 animals.
 - 105+ cows milking plus dry cows for a total of 120 cows with potential to milk 120 and total up to 135 cows plus 100 heifers kept on farm with potential to sell excess heifers.
 - Acres before project is 110 acres rented plus 25 acres grass rented nearby. Raised corn for silage and grain, soybeans double cropped with barley, and alfalfa for haylage/dry hay.
 - After project, own 110 acres and still rent 25 acres of grass nearby. We have an agreement with a neighbor to haul excess manure per NMP and able to purchase corn for grain. We now double crop farm with corn for silage and a cereal grain silage, with approximately 10 acres of soybeans after direct cut barley.
 - Total forage before filled a 20x60 silo with corn silage and a 8x100 bag with corn silage. Haylage filled a 20x70 structure during the year from 1st to 5th cuttings, and HMSC filled a 20x50 structure half full. Grass hay was about 60 tons.
 - After the project approximately 1,600 tons of corn silage, 250 tons of small grain silage, and now 125 tons of grass hay are produced.
 - Storage structures before and after 20x70, 20x60 and 20x50 silos. The use has changed for the 20*70 from haylage only to small grain silage and topped off with corn silage in the fall. The 20*60 remains corn silage. The 20x50 converted from HMSC to corn silage and/or small grain silage. In 2014, we made two ag bags of corn silage, 10 x 300 and one 8x150.

Other Unique Components...continued

Odor Management Plan

SCC Odor Management Program Technical Manual / December 3, 2008 Act 38 of 2005, Odor Management Plan

Odor Management Plan

Prepared For:

Jeffrey Balmer

572 Millway Road

Lititz, PA 17543

717-629-6601

Prepared By:

Devin Gerlach

Certification #12 OMC

TeamAg Incorporated

120 Lake Street

Ephrata, PA 17522

717-721-6795



Date of Plan Submission: _____

Date of Plan Approval: _____

Date(s) of Plan Updates (not requiring board action): _____

Other Unique Components...continued

Odor Management Plan

SCC Odor Management Program Technical Manual / December 3, 2008 Act 38 of 2005, Odor Management Plan

Table of Contents

Planner and Operator Commitments & Responsibilities	1
Plan Implementation Requirements	1
Planner Signature	1
Operator Signature Addendum	2
Plan Summary	3
A. Operation Summary (see Appendix 1 to view complete Operation Information)	3
B. Odor Site Index Summary (see Appendix 3 to view complete Index)	3
C. Odor BMP Implementation, Operation & Maintenance Schedule	3
Level I Odor BMPs to be Implemented	3
Level II Odor BMPs to be Implemented:	4
D. Documentation Requirements	5
Level I Odor BMP Documentation Requirements	5
Level II Odor BMP Documentation Requirements	5
Level I Odor BMPs – Quarterly Observation Log YEAR	6
Level II Odor BMPs – Quarterly Observation Log YEAR	7
LEVEL II ODOR BMP NAME	7
Appendix 1: Operation Information	8
General Information:	8
Part A: Odor Source Factors	8
Part B: Site Land Use Factors	9
Part C: Surrounding Area Land Use Factors	9
Appendix 2: Operational Maps	10
Appendix 3: Plan Evaluation – OSI	11

Other Unique Components...continued

Odor Management Plan

SCC Odor Management Program Technical Manual / December 3, 2008 Act 38 of 2005, Odor Management Plan

Planner and Operator Commitments & Responsibilities

Plan Implementation Requirements

This odor management plan has been developed to meet the requirements of the following programs addressing the following farm type:

- ☒ Pennsylvania Act 38 of 2005 Concentrated Animal Operation (CAO)
- ☐ Pennsylvania CAFO (Concentrated Animal Feeding Operation (CAFO) program
- ☐ Volunteer Animal Operation (VAO)
- ☐ Other program (explain): _____

Plans developed under these this Act 38 of 2005 (Nutrient and Odor Management Act) programs are required to be implemented as approved in order to maintain compliance with the specific law or program. Implementation includes adherence to installation of listed Odor BMPs within implementation schedule timeframes and conditions; maintenance the Odor BMPs consistent with the operation and maintenance schedule timeframes and conditions contained in this plan; and record keeping obligations of the program.

Plans developed under this program also require agricultural operations to allow access by the Commission for status reviews and inspections for complaints. Agricultural operations will commit to providing the operation's biosecurity protocols to the Commission.

Prior to Utilizing a new or expanded animal housing or manure storage facility addressed in this plan, the operation must receive written approval from the Commission confirming implementation of the plan. In order to obtain this written approval, the operator must inform the Commission upon completion of construction activities, of their desire to begin using the new or expanded facilities, and at that time the Commission will send out a representative to assess the implementation of the approved Odor Management Plan.

Plan Implementation Documentation Requirements


Plans developed under this program require agricultural operations to keep and maintain accurate records of the Odor BMPs consistent with the implementation, operation and maintenance schedule and require agricultural operations to allow access by the Commission to those records in order to determine the compliance status.

Planner Signature

The information contained in this plan is accurate to the best of my knowledge. This plan has been developed in accordance with the criteria established for the Act 38 of 2005 Odor Management Program indicated above.

Planner Name: Devin Gerlach

Certification number: 12 OMC

Signature of Planner: 

Date: 4-7-11

Date(s) Evaluation Distance Area Site Visit Conducted: 12-1-2010

Please note that the Planner's Signature and above date(s) certifies that a site visit(s) was conducted to verify the criteria within the evaluation distance area, at the time of developing the plan, specifically for the odor source(s) to locate houses, businesses and public use facilities within the evaluation distance, as well as, the site land use and the surrounding land use factors, and that the plan was not merely developed from an aerial map.

Other Unique Components...continued

Odor Management Plan

SCC Odor Management Program Technical Manual / December 3, 2008 Act 38 of 2005, Odor Management Plan

Operator Signature Addendum Section

Odor Management Plan Prepared for:

Operator's Name: Jeffrey Balmer

Site Address: 572 Millway Road

Lititz, PA 17543

Municipality: Warwick Township

County: Lancaster County

Odor Management Plan Signature Requirements

In accordance with §83.741(i), plans shall be signed by the operator of the agricultural operation indicating concurrence with the information in the plan and acceptance of responsibilities under the plan. The following signature requirements apply:

- (i) For sole proprietorships, the proprietor.
- (ii) For partnerships, a general partner.
- (iii) For corporations, a vice president or president. For any other authorized representative, the plan must contain an attachment, executed by the secretary of the corporation, which states that the person signing on behalf of the corporation is authorized to do so.

Operator Agreement

All the information I provided in this odor management plan is accurate to the best of my knowledge and I will implement the practices and procedures outlined in the odor management plan in order to manage the potential for impacts from the offsite migration of odors associated with the operation.

Indicate business entity type: Sole Proprietor ☒ Partnership/ LP/ LLP ☐ Corporation/ LLC ☐

Signature of Operator: Jeffrey C. Balmer

Date: 4/2/2011

Name of Operator: Jeffrey Balmer

Title of Operator: Owner / Operator

Other Unique Components...continued

Odor Management Plan

SCC Odor Management Program Technical Manual / December 3, 2008 Act 38 of 2005, Odor Management Plan

Plan Summary

A. Operation Summary (see Appendix 1 to view complete Operation Information)

Animal Type(s): Milk Cows

Additional AEUs (per animal type): 82 Milk Cows – 107 AEUs

AEUs per acre for the operation: 3.01

48 Milk Cows – 62

*Transferred AEUs: AEUs ☐ N/A

**Note: "Additional AEUs" are used for determining the Odor Site Index evaluation distance area. "Transferred AEUs" are used for determining significant change of the regulated facility(ies) for plan amendments. A significant change is defined as a net increase of equal to or greater than 25% in AEUs, as measured from the time of the initial plan approval, which will require a plan amendment.*

B. Odor Site Index Summary (see Appendix 3 to view complete Index)

Score: 10.5

C. Odor BMP Implementation, Operation & Maintenance Schedule

Describe Odor BMPs

- All Odor BMPs will be maintained for the lifetime of the livestock facility unless otherwise noted.
- All employees will be instructed at least two times per year on operation and maintenance of the various Odor BMPs listed in this plan and required documentation for each of the practices.

Level I Odor BMPs to be Implemented

List below all Level I Odor BMPs from the PA Odor BMP Reference List that are applicable to this animal operation.

☒ *N/A (None Required)*

☐ *Level I Odor BMP Requirements:*

Other Unique Components...continued

Odor Management Plan

SCC Odor Management Program Technical Manual / December 3, 2008 Act 38 of 2005, Odor Management Plan

Level II Odor BMPs to be Implemented:

List below all Level II Odor BMPs detailing the following:

1. the general construction and implementation criteria
2. the corresponding timeframes of when each Odor BMP will be implemented in
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.

Please Note: NRCS Conservation Practice Standards and Job Sheets that are in existence for the Level II Odor BMP are encouraged to be used for construction, implementation, and operation and maintenance criteria.

☒ *N/A (None Required)*

☐ *Level II Odor BMP Requirements:*

Other Unique Components...continued

Odor Management Plan

SCC Odor Management Program Technical Manual / December 3, 2008 Act 38 of 2005, Odor Management Plan

D. Documentation Requirements

Describe what information will be documented by the Operator for each Odor BMP to ensure compliance with the plan.

Level I Odor BMP Documentation Requirements

☒ *N/A (None Required) – If N/A, the Level I Quarterly Observation Log can be deleted*

☐ **Level I Odor BMP Documentation Requirements:**

The Operator will complete the Level I 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 I Odor BMPs Quarterly Observation Log upon any of the following occurrences:

Level II Odor BMP Documentation Requirements

☒ *N/A (None Required) – If N/A, the Level II Quarterly Observation Log can be deleted*

☐ **Level II Odor BMP Documentation Requirements:**

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:

Other Unique Components...continued

Odor Management Plan

SCC Odor Management Program Technical Manual / December 3, 2008 Act 38 of 2005, Odor Management Plan

Level II Odor BMPs --- Quarterly Observation Log

(The operator will record observations relating to each Level II BMP on the first day (approximately) of each quarter of the year).

(Copy This Page For Future Use)

Select Quarter:

<input type="checkbox"/>	1 st Quarter (January)	<input type="checkbox"/>	2 nd Quarter (April)	<input type="checkbox"/>	3 rd Quarter (July)	<input type="checkbox"/>	4 th Quarter (October)
--------------------------	-----------------------------------	--------------------------	---------------------------------	--------------------------	--------------------------------	--------------------------	-----------------------------------

LEVEL II ODOR BMP NAME

Document the following activities:

- *List any activities here that are to be documented.*
- **Note:** All Maintenance activities should be completed as soon as possible upon the observation that maintenance is needed.

[illegible]

Other Unique Components...continued

Odor Management Plan

SCC Odor Management Program Technical Manual / December 3, 2008 Act 38 of 2005, Odor Management Plan

Appendix 1: Operation Information

General Information:

Operator's Name: Jeffrey Balmer

Site Address: 572 Millway Road

Lititz, PA 17543

Municipality: Warwick Township

County: Lancaster County

Farm Description

Part A: Odor Source Factors

Existing / Non-Regulated Facilities Description:

1. Existing Species/ Animal Types: Milk Cows (48) / Dry Cows (7) / Heifers (22) / Calves (18)
2. Existing Animal Equivalent Units per Species or Type: Milk Cows – 62 / Dry Cows – 9.1 / Heifers – 19.8 / Calves – 6.8
3. Site Livestock History (Maximum AEUs of Livestock at the site within the past 3 years): 97
4. Existing Animal Housing Facility(ies):
 Tie-stall Barn (will become calf barn) – 90' x 55'
 Box Stall Barn – 55' x 20'
 Calf Barn – 60' x 30'
 Heifer / Calf Barn – 70' x 30'
 Heifer / Dry Cow Barn – 100' x 40'
5. Existing Manure Storage Facility(ies):
 Circular Concrete Storage – 77' x 10'
 Rectangular Barnyard Pit – 71' x 12' x 10'

Proposed / Regulated Facility(ies) (or portions thereof) Description:

6. Additional Animal Types: Milk Cows
 Additional Animal Numbers: 82
 and Additional AEUs/ Type: 107

☐ *N/A*

Transferred Animal Types: Milk Cows

Transferred Animal Numbers: 48

and Transferred AEUs/ Type: 62

Other Unique Components...continued

Odor Management Plan

SCC Odor Management Program Technical Manual / December 3, 2008 Act 38 of 2005, Odor Management Plan

Note: "Additional AEUs" are used for determining the Odor Site Index evaluation distance area. "Transferred AEUs" are used for determining significant change of the regulated facility(ies) for plan amendments. A significant change is defined as a net increase of equal to or greater than 25% in AEUs, as measured from the time of the initial plan approval, which will require a plan amendment.

7. Proposed new or expanded animal housing facility(ies):

A new dairy free stall barn (300' x 70') with robotic milkers will be built to house a total of 130 milk cows. Approximately 48 of the cows in the new barn will be transferred from the current dairy tie stall barn. The current dairy barn will be used to house additional youngstock.

8. Proposed new or expanded manure storage facility(ies):

Manure from the proposed dairy barn will gravity flow in two gutters and be temporarily collected in a covered reception pit/manhole (6' x 10'). From the manhole the manure will be pumped into the existing circular concrete manure storage.

Is a Nutrient Management program setback waiver attached? ☒ N/A ☐ Yes ☐ No

Part B: Site Land Use Factors

(Indicate if this Agricultural Operation has any of the following status:)

1. Agricultural Security Area ☒ Yes / No ☐
2. Agricultural Zoning ☒ Yes / No ☐
3. Preserved Farm ☒ Yes / No ☐

Part C: Surrounding Area Land Use Factors

1. Indicate the types of other Livestock Operations (≥ 8 AEUs) within the evaluation distance (list the type of operation, the direction (N, S, E, W) and quadrant (distance from the facility). Also locate the operation(s) on the map in Appendix 3):
 - In the east quadrant (1200-1800') there is a beef operation with more than 8 AEUs.
2. Distance to nearest property line (measured from nearest corner of the animal housing facility or manure storage facility to the property line): 100'
3. If nearest property is less than 300' (as indicated in "2" above), is this neighboring property a Preserved Farm? ☒ Yes / No ☐ N/A ☐

Other Unique Components...continued

Odor Management Plan

SCC Odor Management Program Technical Manual / December 3, 2008 Act 38 of 2005. Odor Management Plan

Appendix 2: Operational Maps

Odor Management Plans must include a topographic map drawn to scale, identifying: the land included in the plan; operation boundaries; location of existing and proposed animal housing and manure storage facilities on the operation; location of neighboring homes, businesses, churches and public use facilities within the evaluation distance; local topography (as indicated by the topographic lines); concentric circles drawn at 600' intervals for the entire evaluation distance; identification of the various map quadrants to include North, South, East and West; the distance to nearest property line from the nearest facility; road names within the evaluation distance area; all neighboring facilities and public use facilities that are being given credit for the Intervening Topography and Vegetation Factor; and a map legend. Multiple maps may be provided to facilitate specific details.

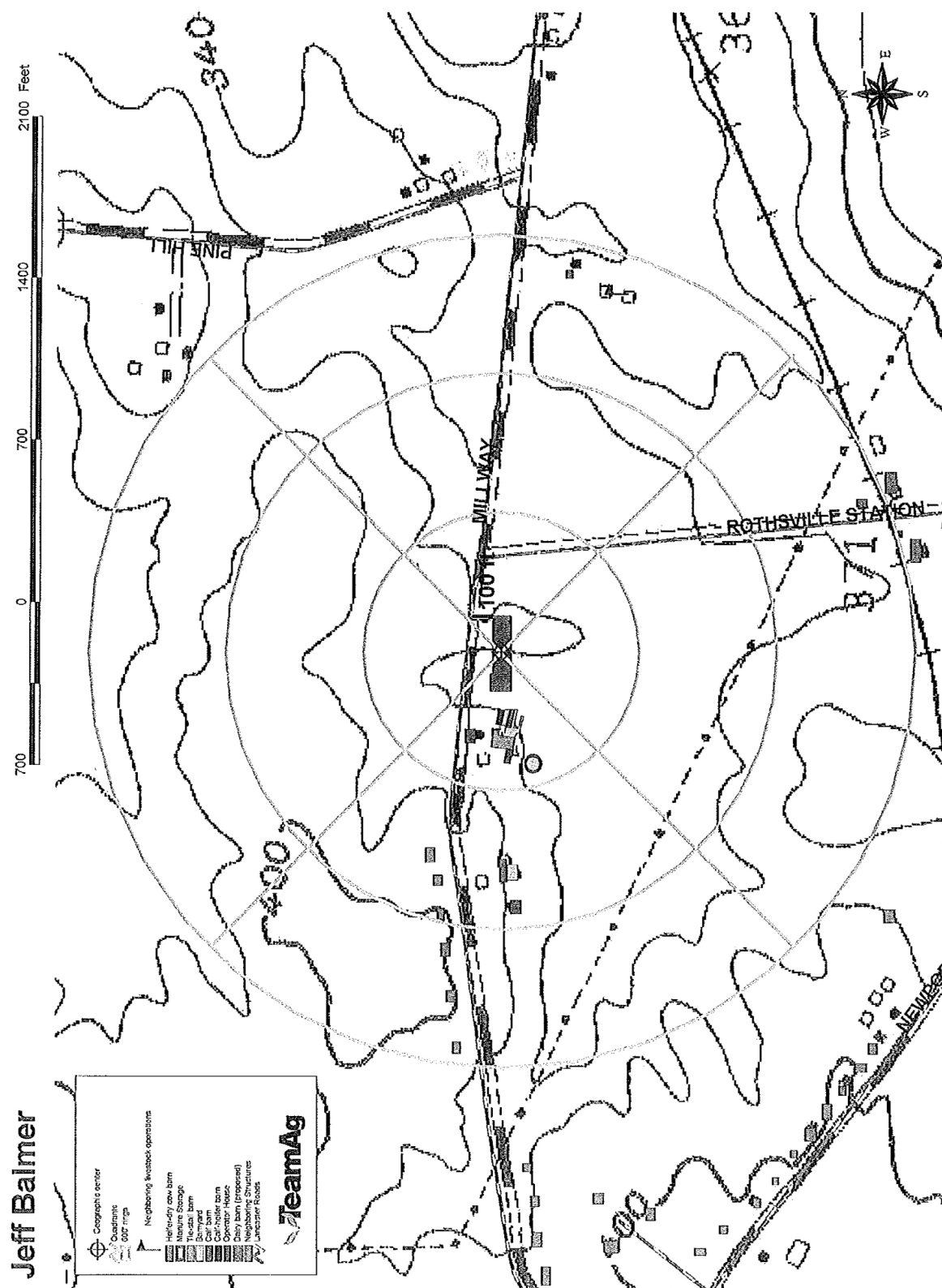
page 10

May 7, 2010

OMP Version 1.3

Other Unique Components...continued

Odor Management Plan



Other Unique Components...*continued*

Odor Management Plan

SCC Odor Management Program Technical Manual / December 3, 2008 Act 38 of 2005, Odor Management Plan

Appendix 3: Plan Evaluation – OSI

Other Unique Components...continued

Odor Management Plan

SCC OSI V.1

Operator Name: Planner Name: Type of Operation: Number of AEUs Proposed: Evaluation Distance:		Jeffrey Balmer Devon Gerlach Dairy 107 1800				OSI Score
Part A: Odor Source Factors Facility Size (AEUs) covered by OMP Site Livestock History (AEUs) Species/Type Manure Storage Type		<200 = 2 points Zero = 12 points Swine, Ducks = 15 points In or under building = 2 points	200-499 = 4 points 1-49 = 9 points Layers, Veal, Pullets, Cattle = 12 points Outdoor covered wet or dry = 3 points	500-749 = 6 points 50-199 = 6 points Broilers, Turkeys, Horses = 10 points Outdoor uncovered wet (crust expected) or uncovered dry = 5 points	750-999 = 8 points 200-499 = 3 points Other = Call SCC Outdoor uncovered wet (no crust expected) or feedlot = 10 points	1000+ = 10 points 500+ = 0 points 12 10
				TOTAL PART A		
Part B: Site Land Use Factors Ag Security Area Ag Zoning Preserved Farm		Yes = (-) 5 points; No = 0 points Yes = (-) 10 points; No = 0 points Yes = (-) 20 points; No = 0 points		YES YES YES		5 10 20
Part C: Surrounding Land Use Factors Other livestock >8AEUs within evaluation distance Distance to nearest property line If nearest property <300', is it preserved farmland? Neighboring Homes Public Use Facilities		Zero = 5 points <150' = 10 points Yes = (-) 5 points No = 0 points Total from Appendix A Total from Appendix B		5 or more = (-5) points >300' = 0 points 5 17.5 10 TOTAL PART C		10 10 5 17.5 10 10.5
				FINAL ODOR INDEX SCORE		10.5

Other Unique Components...continued

Odor Management Plan

Appendix A: Neighboring Home Multiplication Factors

	A ¹	B ²	C ³	T ⁴	A	B	C	T	A	B	C	T	A	B	C	T	A	B	C	T
					600-1200'				1200-1800'				1800-2400'				2400-3000'			
East	Number (<1800')	0	15	1	0	0	7	1	0	1	3	1	3							
	1-5 homes (>1800')													6		0	3		0	
	6-20 homes (>1800')													14		0	7		0	
	>20 homes (>1800')													40		0	20		0	
South	Number (<1800')	0	10	1	0	0	5	1	0	2	2	1	4							
	1-5 homes (>1800')													3		0	0.6		0	
	6-20 homes (>1800')													2.3		0	1.4		0	
	>20 homes (>1800')													10		0	4		0	
North	Number (<1800')	0	6	1	0	0	2	1	0	0	0.5	1	0							
	1-5 homes (>1800')													0.8		0	0.3		0	
	6-20 homes (>1800')													1.8		0	0.7		0	
	>20 homes (>1800')													5		0	2		0	
West	Number (<1800')	0	6	1	0	3	3	1	9	3	0.5	1	1.5							
	1-5 homes (>1800')													0.8		0	0.3		0	
	6-20 homes (>1800')													1.8		0	0.7		0	
	>20 homes (>1800')													5		0	2		0	
TOTAL (GT)																				

Appendix C: Intervening Topography and Vegetation Factors for Homes and Public Use Facilities

	<600'	600-1200'	1200-1800'	1800-2400'	2400-3000'
All Shielded	0.5	.4	.25	.25	.25
Some Shielded	0.75	.6	.5	.5	.5
None Shielded	1	1	1	1	1

Footnotes

¹ Number of homes, etc, in the distance/direction section.

² Point value assigned to each home, etc, in the distance/direction section.

³ Factor from Appendix C to adjust for intervening topography and / or vegetation

⁴ Total score for the distance/direction section.

Other Unique Components...continued

Odor Management Plan

Appendix B: Public Use Facility Multiplication Factors

Number of:	<600'				600-1200'				1200-1800'				1800-2400'				2400-3000'			
	A ¹	B ²	C ³	T ⁴	A	B	C	T	A	B	C	T	A	B	C	T	A	B	C	T
East Public Use Facilities	0	40	1	0	0	20	1	0	0	10	1	0	5	0	0	0	3	0	0	0
South Public Use Facilities	0	30	1	0	0	15	1	0	0	7	1	0	4	0	0	0	2	0	0	0
North Public Use Facilities	0	25	1	0	0	13	1	0	0	6	1	0	3	0	0	0	1	0	0	0
West Public Use Facilities	0	25	1	0	0	13	1	0	0	6	1	0	3	0	0	0	1	0	0	0
TOTAL (GT)																				

Footnotes

- ¹ Number of public use facilities in the distance/direction section.
- ² Point value assigned to each Public Use Facility in the distance/direction section.
- ³ Factor from Appendix C to adjust for intervening topography and / or vegetation
- ⁴ Total score for the distance/direction section.

Public use facility definition - Public schools, hospitals, public nursing homes/elder care facilities and apartment buildings with greater than four dwelling units.

Appendix C: Intervening Topography and Vegetation Factors for Homes and Public Use Facilities

	<600'	600-1200'	1200-1800'	1800-2400'	2400-3000'
All Shielded	1	.4	.25	.25	.25
Some Shielded	0.75	.6	.5	.5	.5
None Shielded	1	1	1	1	1

Succession Plan

Situation Overview:

As told by Jeff Balmer

A. *Why did the farm need a succession plan?* We had the first right of refusal to purchase the family farm, from my mother, signed in 2004. The Transformation Team helped us understand and work through the details of exercising our option to purchase.

B. *What resource people did the team use to build the plan?* Team members Dennis Hall, Dr. Charlie Gardner and bank representatives helped build the plan. When it was time to approve the transfer, lawyers helped complete the details of the purchase.

Challenges and Opportunities:

C. *What challenges, if any, developed during the succession plan process?* I have five Balmer siblings. The challenge was to gain agreement to the purchase by all my siblings.

D. *How did the team overcome those challenges?* The challenge was one that we needed to work out with the siblings, rather than the team. It did add an extra level of stress to the program.

Actions

E. *What are the key components to the final plan?* The key components included farm transfer, purchase and expanding the dairy herd.

F. *Approximately how much did the succession plan cost?* It's difficult to determine exact cost because fees intertwined with other Transformation Team project costs.

G. *Approximately how long did it take to develop the plan?* The plan was first developed in 2004, so the time frame was not applicable to the Transformation Team.

Succession Plan...continued

Results

H. *What benefits, if any, has the farm operation derived from engaging in a succession planning process?* Thanks to succession planning, our farm remains a family operation and family farm. I am the third generation on a farm that's been in the family since 1930. Our 6th and 4th graders are thrilled with the changes and the possibility of another generation on the farm.

I. *Was there anything uncovered during the succession planning process that helped family members to better understand other members of the family?* Communication is important.

J. *Is there anything you would have done differently with your succession plan?* Team member Dennis Hall offered to send out a questionnaire to my siblings when the project began in July 2010. It would help begin the conversation with the siblings and summarize any issues. At that time, we opted not to initiate the questionnaire because we thought all the issues had been worked through in 2004, when purchase option was signed. In addition, there was no resistance from any of the siblings.

In December 2010, when we were ready to move forward with the purchase, sibling issues popped up. While Dennis Hall's resources might not have changed the situation, everyone would have been engaged six months before we were prepared to purchase the farm.



Risk Management

Situation Overview:

A. *Before applying for this grant, this farm used the following traditional risk management tools:*

- Crop insurance – field crops

B. *What new risk management tools did the farm pursue during, and after, the project? Please describe.*

During the project, the farm chose to pursue Livestock Gross Margin (LGM) Dairy Insurance and had coverage under this policy through January 2012. Contracting of feed also has been discussed for the future. We have used forward contracting with the cooperative to either place a floor on our price, or a purchase a Max/Min contract.

C. *Does the farm have a marketing plan? Please describe.* All milk produced at Stoney Path Farm is marketed to Mount Joy Farmer's Cooperative. We have been shipping milk to Mount Joy for many years, and we are pleased with this business relationship.

Challenges and Opportunities:

D. *If the farm incorporated new risk management plans into your business model, did you overcome any challenges to implementation? Please describe.* One of the LGM policies that we thought would have provided a payment covering cost and indemnity, actually resulted in us owing money to cover purchase costs at the end of the policy. We now have a better understanding of the basis for grain prices in this area compared to the "market" prices used in calculations.

Actions:

E. *What communication was necessary with the farm's ag lender and what were their requirements for additional ag protection through risk management to move the project forward? Please describe.* Dale Hershey, our ag lender, attended the Center for Dairy Excellence risk management session with us. He strongly recommended utilizing LGM insurance and realized the benefits of pursuing risk management options for the farm. No additional requirements from the lender were needed for this project.

Risk Management...continued


Results:

F. *Can the farm quantify the change in business profitability attributed to implementation of new risk management tools? Please describe.* All contracts and policies, so far, have provided the assurance of protection in the event of significant changes (negative) in the market. It is still a challenge for us to pay the premium and pay for the protection and not have a financial return on that investment. We know that we are protected, if and when the markets change.



Resources and Contact Information

Blueprint



CERTIFICATE FOR REVIEW BY THE TOWNSHIP ENGINEER
Reviewed by the Warwick Township Engineer this _____ day of _____, 20____.

CERTIFICATE FOR APPROVAL BY THE SUPERVISORS
Approved by the Warwick Township Board of Supervisors this _____ day of _____, 20____.

CERTIFICATE FOR REVIEW BY THE PLANNING COMMISSION
Reviewed by the Warwick Township Planning Commission this _____ day of _____, 20____.

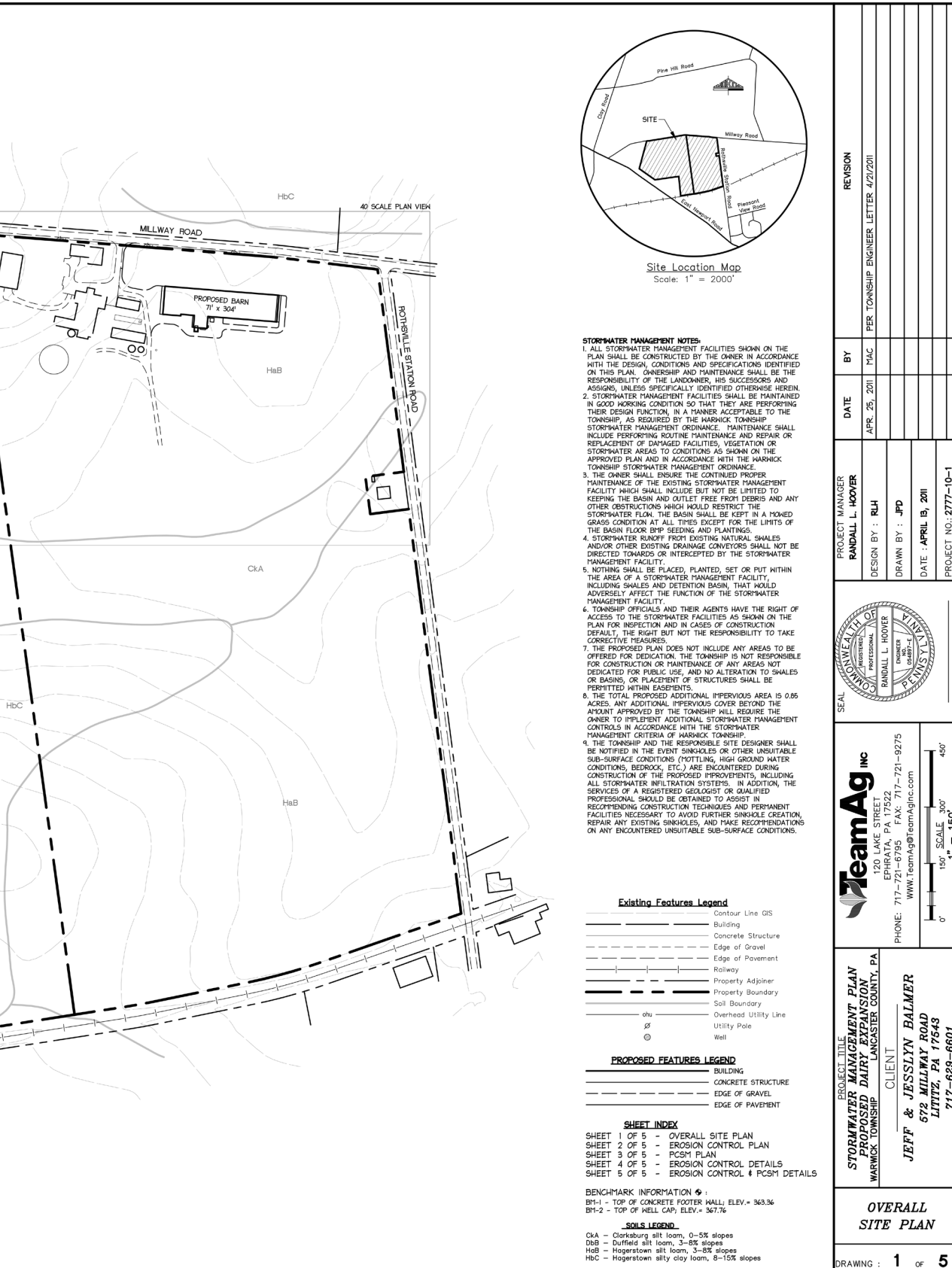
STORMWATER MANAGEMENT PLAN CERTIFICATION
I hereby certify that, to the best of my knowledge, the stormwater management facilities shown and described herein are designed in conformance with Chapter 270, Stormwater Management, of the Code of the Township of Warwick.

_____, 20____.

I, Randall L. Hoover, certify that the proposed STORMWATER MANAGEMENT BASIN is / is not underlain by carbonate geology.

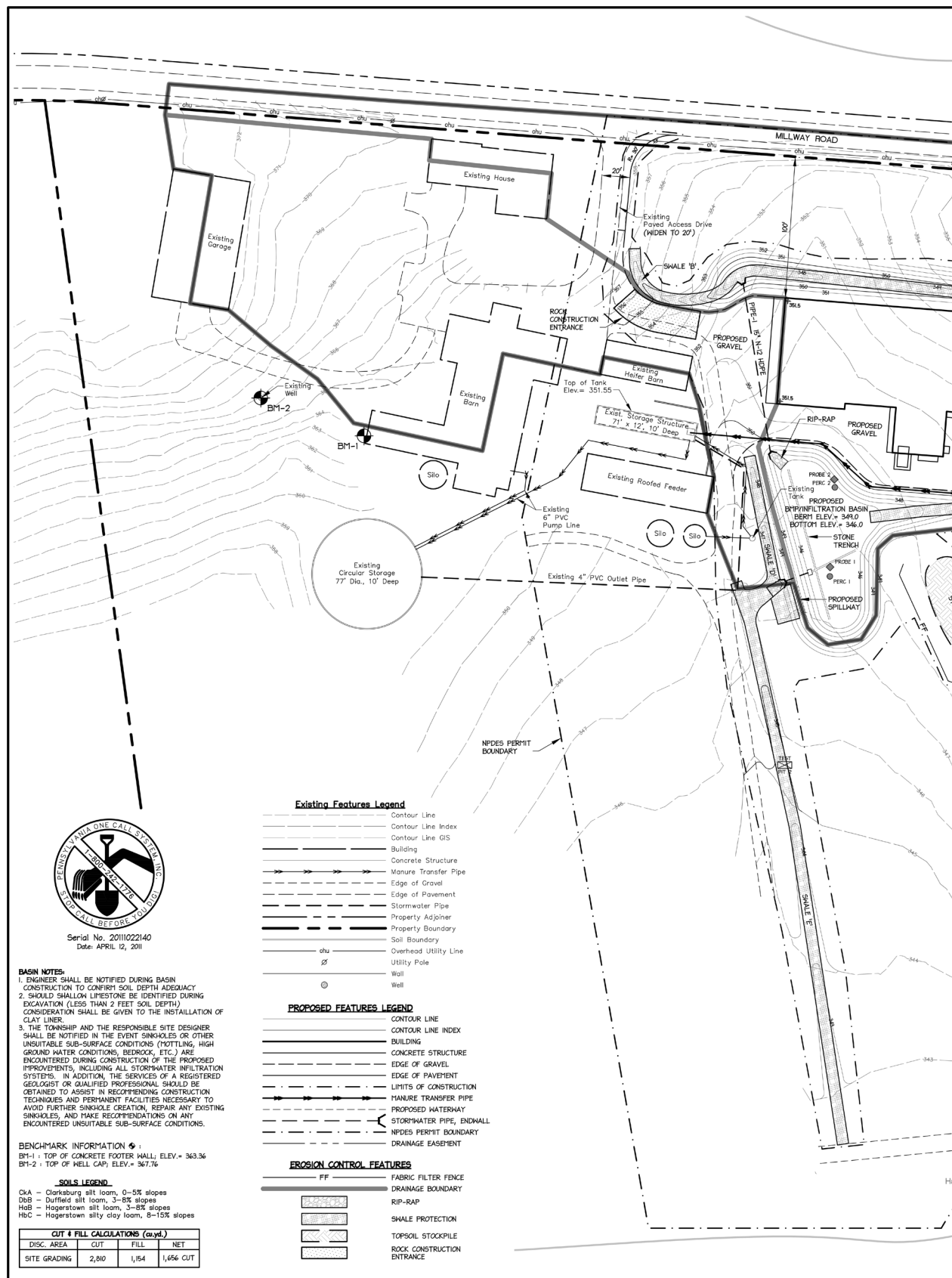
_____, 20____.

Resources and Contact Information...continued

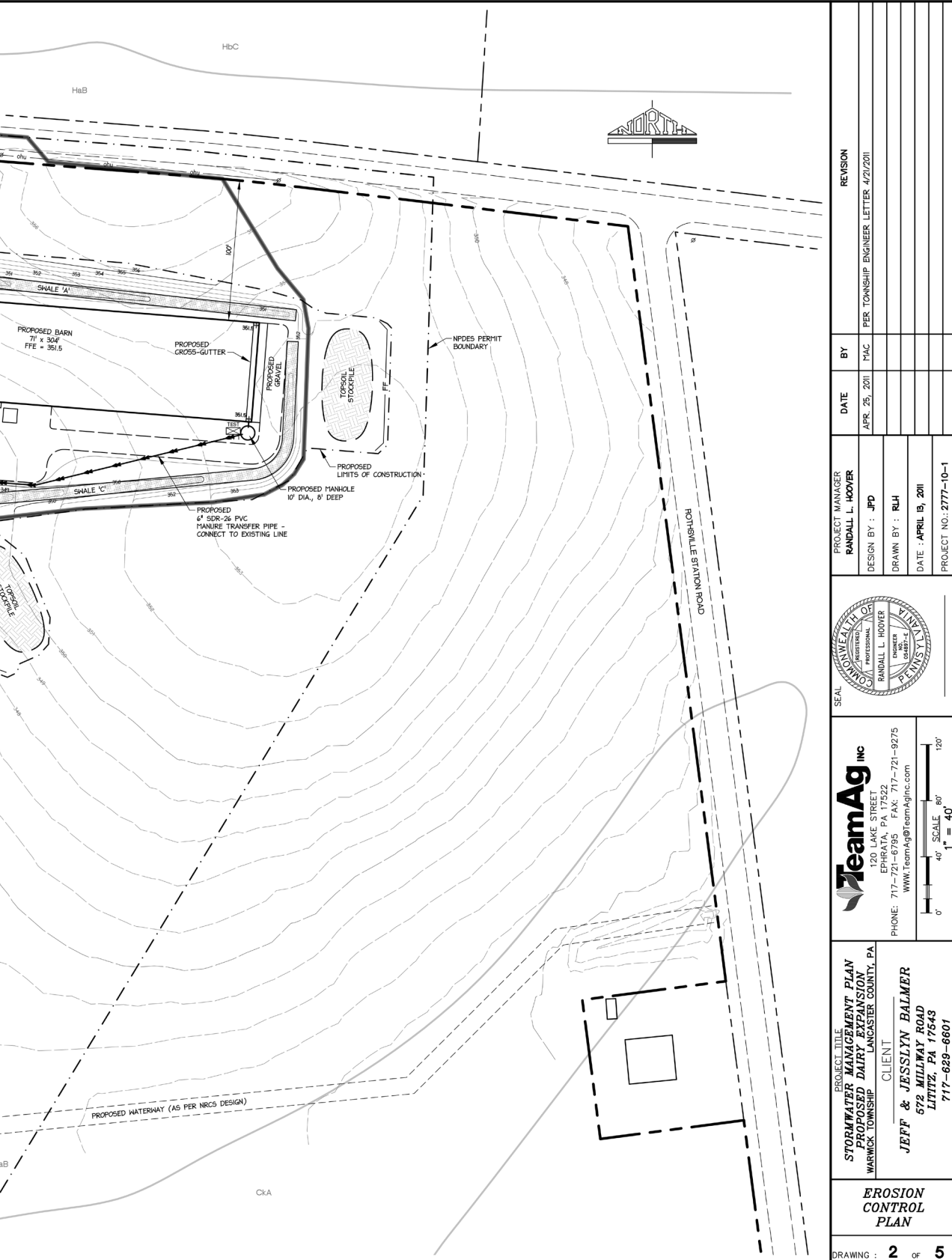


Resources and Contact Information...continued

Blueprint

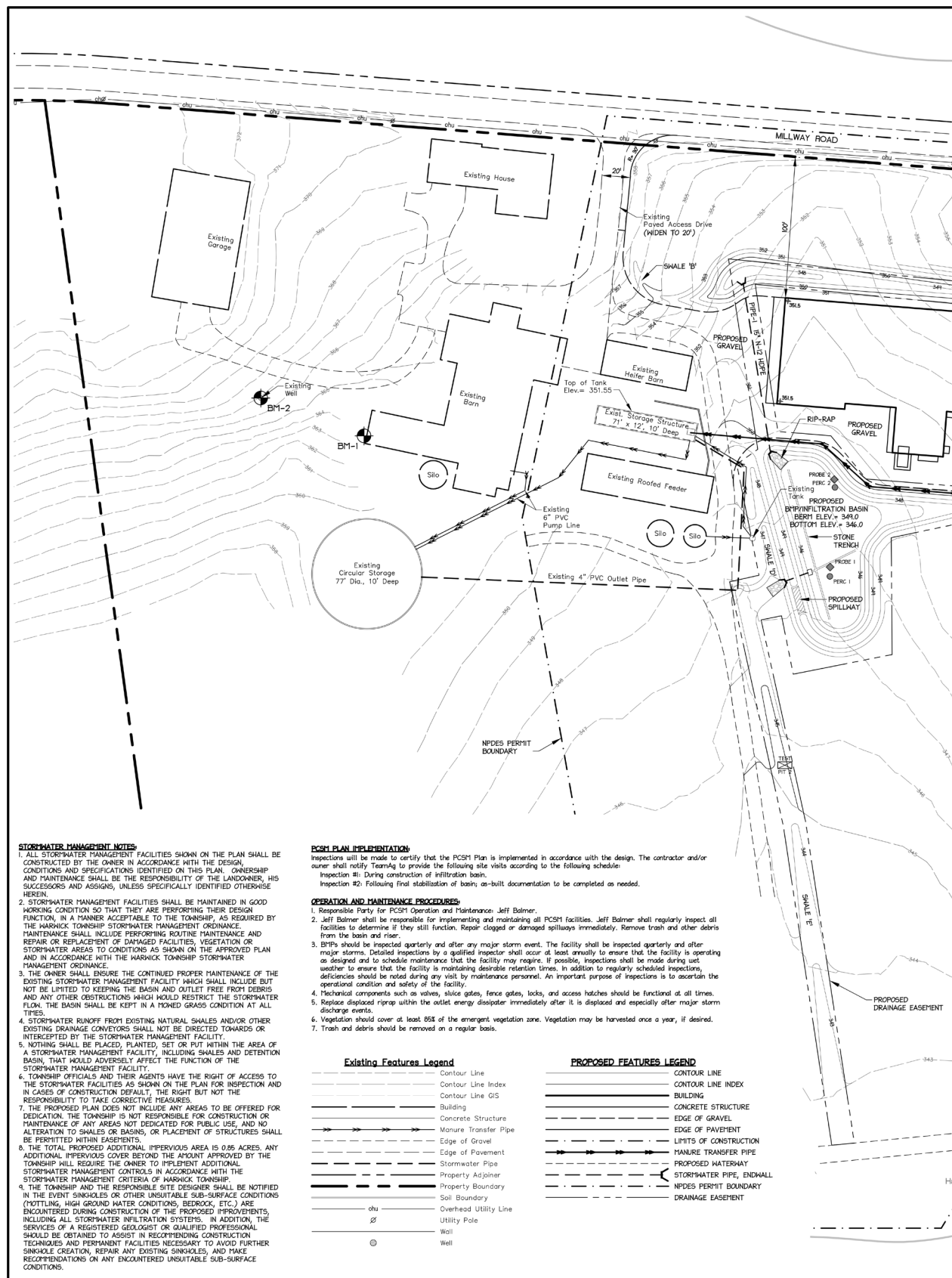


Resources and Contact Information...continued

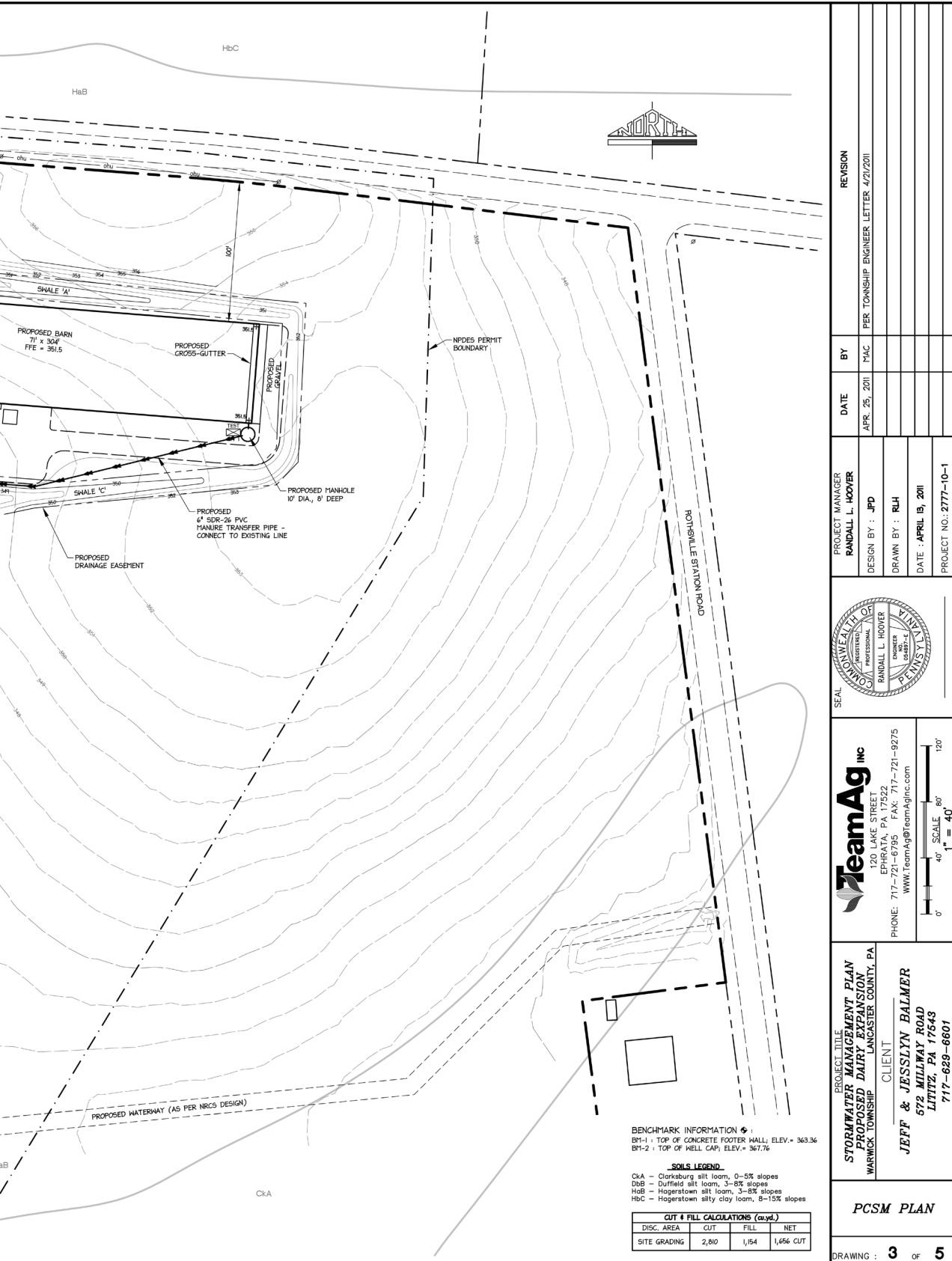


Resources and Contact Information...continued

Blueprint



Resources and Contact Information...continued



	PROJECT MANAGER	RANDALL L. HOOVER	DATE	APR. 25, 2011	BY	MAC	REVISION	PER TOWNSHIP ENGINEER LETTER 4/21/2011
	DESIGN BY :	JPD						
	DRAWN BY :	RLH						
	DATE :	APRIL 13, 2011						
	PROJECT NO.:	2777-10-1						
TeamAg inc 120 LAKE STREET EPHRATA, PA 17522 PHONE: 717-721-6795 FAX: 717-721-9275 WWW.TeamAg@TeamAgInc.com								
PROJECT TITLE STORMWATER MANAGEMENT PLAN PROPOSED DAIRY EXPANSION WARWICK TOWNSHIP LANCASTER COUNTY, PA								
CLIENT JEFF & JESSLYN BALMER 572 MILLWAY ROAD LITITZ, PA 17543 717-629-6801								

Resources and Contact Information...continued

Blueprint

GENERAL EROSION CONTROL NOTES:

1. Erosion and sediment control measures must be in compliance with the "Erosion and Sediment Control Program Manual." The developer or its authorized representative will be responsible for the proper construction, stabilization, and maintenance of all erosion and sedimentation controls and related items included with the Erosion and Sedimentation Control Plan. The Contractor is advised to become thoroughly familiar with the provisions of 25 PA Code Chapter 102 "Erosion and Sediment Control".
2. A copy of the approved Erosion and Sediment Control Plan must be posted at the construction site in accordance with state law.
3. Before grading or construction begins, the developer or its authorized representative is to construct and complete sediment control measures and devices as shown on the Erosion and Sediment Control Plans.
4. Should additional erosion or sedimentation occur during construction or should questions regarding the maintenance of control practices arise, contact the Lancaster County Conservation District (717) 299-5361 or appropriate agency immediately for technical support.
5. Should any measures contained within this plan prove incapable of adequately removing sediment from on-site flows prior to discharge or of stabilizing the surfaces involved, additional measures must be immediately implemented by the developer or its authorized representative to eliminate all such problems. The Conservation District must be notified of any additional measures taken to abate the pollution of waters of the Commonwealth not shown on the plans. Stockpiles of wood chips, hay bales, crushed stone, and other mulches shall be held in readiness to deal immediately with emergency problems with erosion.
6. The developer or its authorized representative must develop and have approved by the Conservation District, a separate Erosion and Sedimentation Control Plan for each spoil, borrow or other work area not detailed in the approved plan whether within or outside of the construction limits.
7. The developer or its authorized representative shall be responsible for supervising debris disposal from other trades during all phases of construction. Debris shall not be disposed in sediment traps or basins. The developer or the authorized representative shall bear the expense of any clean-up operations initiated by the Engineer or Owner.
8. Driveways are to be gravelled immediately after grading is completed and utilities are installed.
9. The developer or its authorized representative is responsible for the continued inspection, maintenance or repair of all erosion and sediment problems that might occur due to the development of this project, until the site is completely stabilized.
10. The developer or its authorized representative shall install silt fence or temporary diversion berms upslope of all watercourses as required to prevent sediment from entering the watercourses during construction.
11. Any disturbed area on which activity has ceased must be seeded and mulched immediately. During non-germinating periods, mulch must be applied at the recommended rates. Disturbed areas which are not at finished grade and which will be disturbed within one (1) year may be seeded and mulched with a quick growing temporary seeding mixture and mulched. Disturbed areas which are either finished grade or will not be disturbed within one year must be seeded and mulched with a permanent seed mixture and mulched.
12. Straw or hay mulch must be applied at rates of at least 3.0 tons per acre.
13. Lime shall be applied at rates recommended by a soil test.
14. Winter grading shall be avoided. Under no circumstances shall grading be done when the ground is frozen.
15. Silt fencing shall be used around material stockpiles, construction/earth disturbance areas.
16. All disturbed areas will be stabilized (covered) with stone or vegetation as soon as possible following grading or backfilling. Specifications for seeding are listed in the drawings.
17. During excavation, if sediment-laden water is encountered, a sediment filter bag ("dirt bag") shall be used.
18. Until the site is stabilized, all erosion and sedimentation controls must be maintained properly. "Maintenance" must include inspections of all erosion and sedimentation controls after each storm event and on a weekly basis. All preventative and remedial maintenance work, including clean out, repair, replacement, regrading, reseeding, re mulching and renetting must be performed immediately. An extra supply of stone, seed, mulch and silt fence shall be kept on site for emergency purposes.
19. Stockpile heights must not exceed 35'. Stockpile slopes must be 2:1 or flatter.
20. Mulch with control netting or erosion control blankets must be installed on all slopes greater than 3:1.
21. An area shall be considered to have achieved final stabilization when it has a minimum of 70% uniform perennial vegetative cover or other permanent non-vegetative cover with a density sufficient to resist accelerated surface erosion and subsurface characteristics sufficient to resist sliding or other movements.

FILL MATERIALS:

1. The General Contractor, or in the absence of a General Contractor, the Operator/Owner shall be responsible for performing Environmental Due Diligence to ensure that all fill material associated with the project qualifies as Clean Fill. All fill material must be used in accordance with the Department's policy "Management of Fill", document number 250-282-773.
2. Clean Fill is defined as: Uncontaminated, non-water soluble, non-decomposable, inert, solid material. The term includes soil, rock, stone, dredged material, used asphalt, and brick, block or concrete from construction and demolition activities that is separate from other waste and is recognizable as such. The term does not include materials placed in or on the waters of the Commonwealth unless otherwise authorized. (The term "used asphalt" does not include milled asphalt or asphalt that has been processed for reuse.)
3. Environmental due diligence is defined as: Investigative techniques, including, but not limited to, visual property inspections, electronic data base searches, review of property ownership, review of property use history, Sanborn maps, environmental questionnaires, transaction surveys, analytical testing, environmental assessments or audits. Analytical testing is not a required part of due diligence unless visual inspection and/or review of the past land use of the property indicates that the fill may have been subjected to a spill or release of regulated substance. If the fill may have been affected by a spill or release of a regulated substance, it must be tested to determine if it qualifies as clean fill. Testing shall be performed in accordance with Appendix A of the Department's policy "Management of Fill".

CONSTRUCTION SEQUENCE:

1. Notify Lancaster County Conservation District (717) 299-5361 seven (7) days prior to the start of construction. Also, at least 3 days before starting any earth disturbance activity, all contractors involved in those activities shall notify the Pennsylvania One Call System Inc. at 1-800-242-1776 for buried utilities location.
2. All earth disturbance activities shall proceed in accordance with the following sequence. Each stage shall be completed in compliance with Chapter 102 regulations before any following stage is initiated. Clearing and grubbing shall be limited only to those areas described in each stage.
3. The proposed basin area shall be protected at all times against construction equipment and stockpiling. The basin infiltration floor shall be chisel plowed at the end of construction.
4. Install rock construction entrance.
5. Install fabric fence as shown on the drawing.
6. Construct sediment trap and install temporary outlet structure.
7. Construct silt fences A, B, C, and D. Line silt fences with erosion control fabric. Install Pipe-1.
8. The above erosion and sediment controls must be constructed, stabilized and functional before general site disturbance occurs for the areas within the tributary areas of the controls.
9. Remove topsoil and rough grade the site of the proposed barn.
10. Begin construction of the barn. A crushed aggregate base course shall be applied to the driveway which is to serve the proposed building.
11. Fine grade the lawn areas and seed or sod immediately with a perennial grass cover. Lawns shall be maintained on a regular basis and repaired, reseeded and mulched until stabilization is achieved.
12. After final site stabilization (i.e. a minimum uniform 70% perennial vegetative cover, with a density capable of resisting accelerated erosion and sedimentation) has been achieved, the temporary erosion and sedimentation controls must be removed. Areas disturbed during the removal of the controls shall be restabilized.
13. The sediment trap should be converted to a permanent basin. The conversion is done in the following manner:
 - a. Remove remaining water from sediment trap.
 - b. Remove trash and other debris from the basin.
 - c. Remove sediment that has accumulated in the sediment trap.
 - d. Inspect and repair riser structure and spillway if necessary. Remove temporary outlet cover.
14. The basin may not receive run-off until the entire contributing drainage area to the basin has received final stabilization.
15. Prior to seeding, the infiltration basin floor shall be chisel plowed to a depth of 12-18 inches with suitable equipment.
16. After final grading, seeding will take place to establish a dense vegetative cover. Plant a seed mix containing "Virginia Wild rye" such as "Retention Basin Floor Seeding Mix ERNIX-126" from Ernst Conservation Seeds at 1/2 to 1 pound per 1,000 square feet.
17. Upon completion of an earth disturbance activity or any stage or phase of an activity, the site shall be immediately seeded, mulched or otherwise protected from accelerated erosion and sedimentation. Erosion and sediment control BMPs shall be implemented and maintained until the permanent stabilization is completed. For an earth disturbance activity or any stage or phase of an activity to be considered permanently stabilized, the disturbed areas shall be covered with one of the following:
 - (1) A minimum uniform 70% perennial vegetative cover, with a density capable of resisting accelerated erosion and sedimentation.
 - (2) An acceptable BMP which permanently minimizes accelerated erosion and sedimentation.

MAINTENANCE OF EROSION CONTROL FACILITIES:

1. The General Contractor, or in the absence of a General Contractor, the Operator/Owner, shall be responsible for implementing and maintaining all Soil Erosion Controls. The Contractor shall, at the end of each work as well as with each rainfall, inspect all drainage and erosion control facilities to determine if they still function. Silt fence shall be cleared of silt when silt reaches halfway up fence. Additional stone ballast shall be placed, if necessary, to control the tracking of mud by construction vehicles onto the adjacent roads.
2. Check basin embankments, spillways, and outlets for erosion, piping and settlement. Make necessary repairs immediately. Replace displaced riprap within the outlet energy dissipator immediately after it is displaced and especially after major storm discharge events.
3. If additional silt fence or diversions are necessary, they shall be provided as required. The Lancaster County Conservation District must review all changes. Sediment deposited behind silt barriers shall be removed and incorporated into the final grading operations.
4. Until the site is stabilized, all erosion and sedimentation controls must be maintained properly. "Maintenance" must include inspections of all erosion and sedimentation controls after each storm event and on a weekly basis. All site inspections will be documented in an inspection log kept for this purpose. The compliance actions and the date, time and name of the person conducting the inspection. The inspection log will be kept on site at all times and made available to the district on request.
5. All preventative and remedial maintenance work, including clean out, repair, replacement, regrading, reseeding, re mulching and renetting must be performed immediately. If erosion and sedimentation BMPs fail to perform as expected, replace or modify installed BMPs. An extra supply of stone, seed, mulch and silt fence shall be kept on site for emergency purposes.
6. When the entire project has become stabilized (i.e. uniform vegetative cover), any temporary sediment and erosion controls shall be removed and the areas stabilized.
7. Sediment must be removed from traps when sediment has accumulated to the clean out elevation. Sediment traps must be protected from unauthorized access of third parties.

PROCEDURES FOR RECYCLING:

- The developer or its authorized representative shall to the greatest extent possible recycle and reuse construction materials when no longer needed on the site. Concrete forms will be reused in other construction projects. Excess materials will be used in other projects as much as is feasible, rather than disposal on the site.

NOTES FOR SEEDING

CONDITION	FORMULA AND SPECIES	SEED RATE # BY HEIGHT PLANTING PER SQ. YD.	SEEDING RATE SEED LBS. PER 1000 SQ. YD.
LAWN AREAS LESS THEN 3 TO 1	FORMULA B - Perennial ryegrass mixture (LOUIS PERENNIAL) a combination of improved certified varieties with no one variety exceeding 50% of the total.	20 # 40	0.15 4.0
	- Creeping Red Fescue or Chewings Fescue	30 # 60	0.15 6.0
	- Kentucky Bluegrass mixture (POA PRATENSIS) a combination of improved certified varieties with no one variety exceeding 50% of the total.	50 # 80	0.20 10.0
LAWN AREAS GREATER THEN 3 TO 1	FORMULA C - Grassmunch (CORONILLA VARIA)	45 # 90	0.10 4.0
	- Annual Ryegrass (LOUIS MULTIFLORUM)	55 # 60	0.15 5.0
PERMANENT SHALES	FORMULA D - Tall Fescue (FESTUCA ARUNDINACEA VAR. KENTUCKY 3)	70 # 60	0.15 15.0
	- Creeping Red Fescue or Chewings Fescue	30 # 60	0.15 6.0
TEMPORARY	FORMULA E - Annual Ryegrass (LOUIS MULTIFLORUM)	100 # 60	0.15 10.0

GENERAL NOTES:

1. Any disturbed area on which activity has ceased and which will remain exposed must be seeded and mulched immediately. During non-germinating periods, mulch must be applied at the recommended rates. Disturbed areas which are not at finished grade and which will be redisturbed within 1 year may be seeded and mulched with a quick growing temporary seeding mixture and mulch. Disturbed areas which are either at finished grade or will not be redisturbed within one year must be seeded and mulched with a permanent seed mixture and mulch.
2. Diversions, channels, sedimentation basins sediment traps and stockpiles must be seeded and mulched immediately.
3. Hay or straw mulch must be applied at rates of at least 3.0 tons per acre. Mulch shall be anchored immediately after application. Mulch shall be held down by synthetic binders or mechanical means.

PERMANENT SEEDING:

Preparation of seedings grade as necessary to bring the subgrade to a true, smooth slope parallel to and six (6) inches below finished grade. Place topsoil over specified areas to a depth sufficiently greater than six (6) inches so that after settlement and light rolling the complete work will conform to lines, grades, and elevations shown.

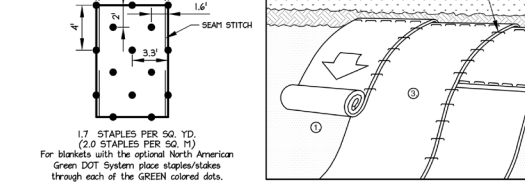
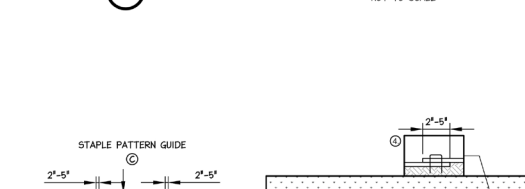
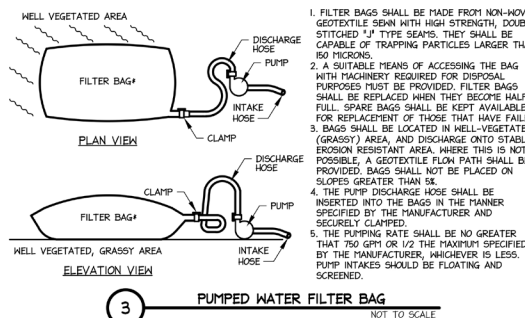
TEMPORARY SEEDING:

Apply 2700 lbs./acre agricultural grade limestone and 5-10-5 fertilizer at a rate of 240 lbs./acre.

Fertilizer and agricultural limestone shall be thoroughly incorporated into the soil by rototilling or other method to a minimum depth of four (4) inches. The entire surface shall be done in two (2) separate operations. The second seeding shall be done immediately after the first and at right angles to the first seeding and lightly raked into the soil. Mulch seeded areas immediately after seeding.

TEMPORARY SEEDING:

Site preparation: Apply 2700 lbs./acre agricultural grade limestone and 10-10-10 fertilizer at a rate of 180 lbs./acre and work in where possible. Secure a soil test before making a permanent seeding. After seeding, mulch with hay or straw at a rate of 3 tons per acre.



1. PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED. NO CELL-O-SEED DO NOT SEED PREPARED AREA. CELL-O-SEED MUST BE INSTALLED WITH PAPER SIDE DOWN.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE BLANKET IN A 6" (15cm) DEEP X 6" (15cm) WIDE TRENCH WITH APPROXIMATELY 12" (30cm) APART IN THE BOTTOM OF THE TRENCH. ANCHOR THE BLANKET WITH A ROLL OF STAPLES/STAKES.
3. ROLL THE BLANKET (A) DOWN OR (B) HORIZONTALLY ACROSS THE SLOPE. UNROLL WITH APPROPRIATE STAPLES/STAKES. COMPACTED SOIL AND FOLD REMAINING 12" (30cm) PORTION OF BLANKET BACK OVER SEED AND COMPACTED SOIL. SECURE BY COMPACTED SOIL WITH A ROLL OF STAPLES/STAKES SPACED APPROXIMATELY 12" (30cm) APART ACROSS THE WIDTH OF THE BLANKET.
4. THE EDGES OF PARALLEL BLANKETS MUST BE STAPLED WITH APPROXIMATELY 2'-5" (5m-12.5m) OVERLAP DEPENDING ON TO ENSURE PROPER SEAM ALIGNMENT. ANCHOR THE EDGE OF THE OVERLAPPING BLANKET (BLANKET BEING INSTALLED ON TOP) WITH STAPLES/STAKES.
5. CONSECUTIVE BLANKETS SPICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 2'-5" (5m-12.5m) OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" (30cm) APART ACROSS ENTIRE BLANKET WIDTH.

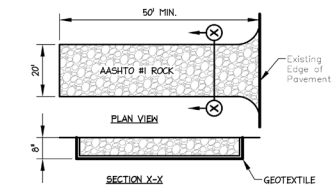
NOTE: IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" (15cm) MAY BE NECESSARY TO HOLD THE BLANKETS.

**NORTH AMERICAN GREEN
SLOPE INSTALLATION**

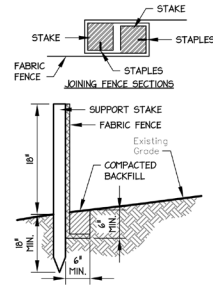
6

NOT TO SCALE

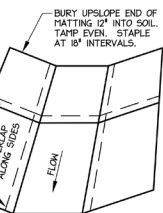
Resources and Contact Information...continued



1 ROCK CONSTRUCTION ENTRANCE
NOT TO SCALE

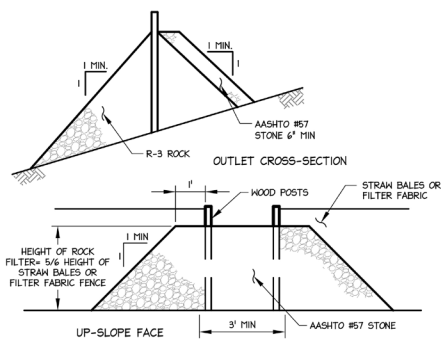


2 STANDARD FILTER FABRIC FENCE (18' HIGH)
NOT TO SCALE

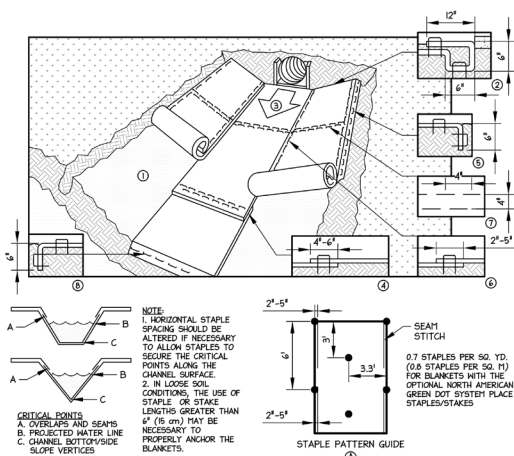
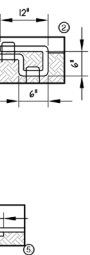


SHALE	CHANNEL SLOPE (FV/FH)	B (Ft)	D (Ft)	Z	LINING
A	0.010	3.0	1.4	3	NAG-S75
B	0.010	2.0	0.8	3	NAG-S75
C	0.017	3.0	1.2	3	NAG-S75
D	0.006	5.0	1.55	3	NAG-S75
E	0.025	3.0	1.2	3	NAG-S75

4 PUMPED WATER FILTER BAG
NOT TO SCALE



5 ROCK FILTER OUTLET
NOT TO SCALE



7 NORTH AMERICAN GREEN
NOT TO SCALE

PROJECT TITLE STORMWATER MANAGEMENT PLAN PROPOSED DAIRY EXPANSION WARWICK TOWNSHIP LANCASTER COUNTY, PA		PROJECT NO.: 2777-10-1	
PROJECT MANAGER RANDALL L. HOOVER	DESIGN BY : JPD	DATE APR. 25, 2011	REVISION
DRAWN BY : RLH	DATE : APRIL 13, 2011		
SEAL 			
TeamAg inc 120 LAKE STREET EPHRATA, PA 17522 PHONE: 717-721-6795 FAX: 717-721-9275 WWW.TeamAg.com		SCALE AS NOTED	
CLIENT JEFF & JESSLYN BALMER 572 MILLWAY ROAD LITITZ, PA 17543 717-629-6801			
EROSION CONTROL DETAILS			
DRAWING : 4 OF 5			

Resources and Contact Information...continued

Blueprint

POST CONSTRUCTION STORMWATER MANAGEMENT (PCSM) STANDARD NOTES

PCSM Requirements

A licensed professional or a designee shall be present onsite and be responsible during critical stages of implementation of the approved PCSM Plan. The critical stages may include the installation of underground treatment or storage BMPs, structurally engineered BMPs, or other BMPs as deemed appropriate by the Department or the conservation district. The PCSM Plan, inspection reports and monitoring records shall be available for review and inspection by the Department or the conservation district.

PCSM Long Term Operations and Maintenance Requirements

The permittee or co-permittee shall be responsible for long-term operation and maintenance of PCSM BMPs unless a different person is identified in the notice of termination and has agreed to long-term operation and maintenance of PCSM BMPs. A permittee or co-permittee that fails to transfer long-term operation and maintenance of the PCSM BMP or otherwise fails to comply with this requirement shall remain jointly and severally responsible with the landowner for long-term operation and maintenance of the PCSM BMPs located on the property.

Permit Termination

Upon permanent stabilization of the earth disturbance activity under §02.22(a)(2) (relating to permanent stabilization), and installation of BMPs in accordance with an approved plan prepared and implemented in accordance with §02.4 and §02.5 (relating to erosion and sediment control requirements), and PCSM requirements), the permittee or co-permittee shall submit a notice of termination to the Department or conservation district.

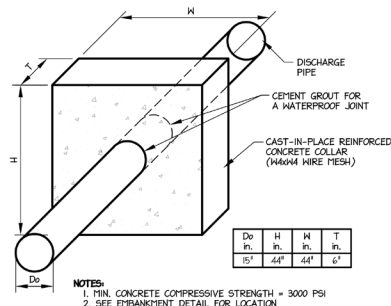
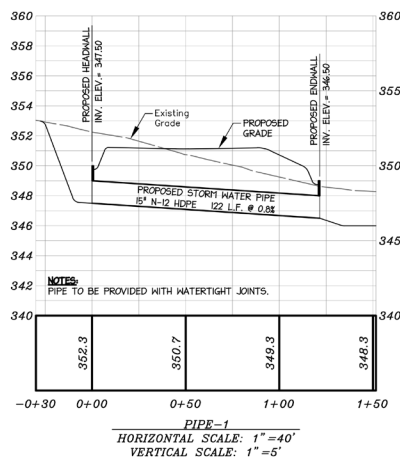
The notice of termination must include:

1. The facility name, address and location
2. The operator name and address
3. The NPDES permit number
4. The reason for permit termination
5. Identification of the persons who have agreed to and will be responsible for long-term operation and maintenance of the PCSM BMPs in accordance with §02.8(m) and proof of compliance with §02.8(n)(2)
6. Final certification: The permittee shall include with the notice of termination "Record Drawings" with a final certification statement from a licensed professional, which reads as follows:

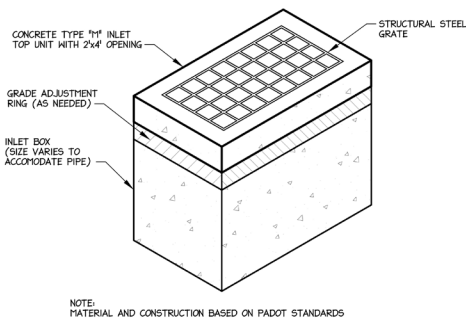
"I (name) do hereby certify pursuant to the penalties of 18 Pa C. S.A. §4904 to the best of my knowledge, information and belief, that the accompanying record drawings accurately reflect the as-built conditions, are true and correct, and are in conformance with Chapter 102 of the rules and regulations of the Department of Environmental Protection and that the project site was constructed in accordance with the approved PCSM Plan, all approved plan changes and accepted construction practices."

1. The permittee shall retain a copy of the record drawings as a part of the approved PCSM Plan.
2. The permittee shall provide a copy of the record drawings as part of the approved PCSM Plan to the person identified in this section as being responsible for the long-term operation and maintenance of the PCSM BMPs.

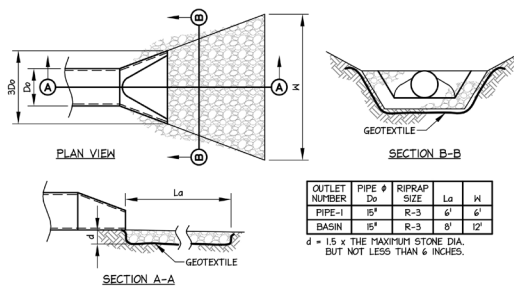
7. Copy of Legal Instrument: For any property containing a PCSM BMP, the permittee or co-permittee shall record an instrument with the recorder of deeds which will assure disclosure of the PCSM BMP and the related obligations in the ordinary course of a title search of the subject property. The recorded instrument must identify the PCSM BMP, provide for necessary access related to long-term operation and maintenance for the PCSM BMPs and provide notice that the responsibility for long-term operation and maintenance of the PCSM BMP is a covenant that runs with the land that is binding upon and enforceable by subsequent grantees, and provide proof of filing with the notice of termination.



1 REINFORCED CONCRETE ANTI-SEEP COLLAR NOT TO SCALE

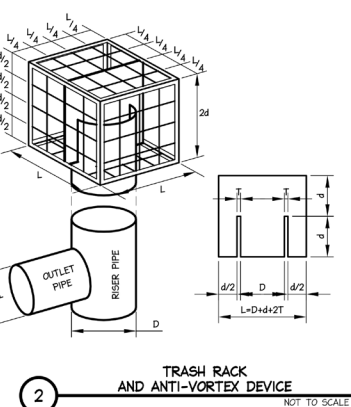


4 TYPE 1 INLET NOT TO SCALE

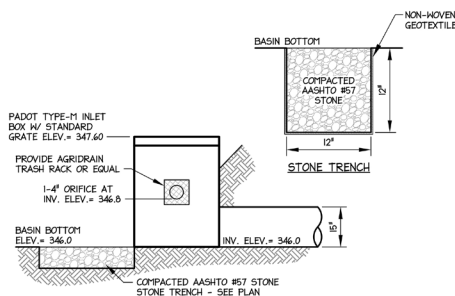


7 RIPRAP APRON OUTLET PROTECTION NOT TO SCALE

Resources and Contact Information...continued

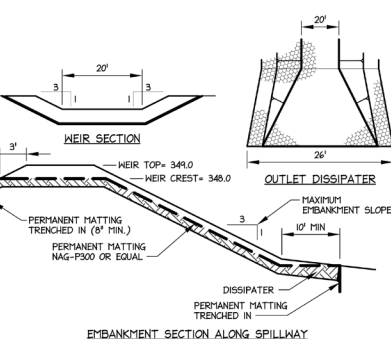


2 TRASH RACK
AND ANTI-VORTEX DEVICE



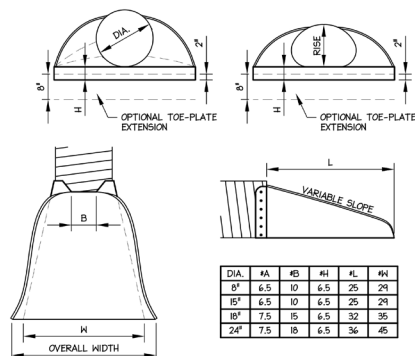
NOTES:
PROPOSED INFILTRATION AREAS MUST BE PROTECTED AT ALL
TIMES AGAINST CONSTRUCTION EQUIPMENT AND STOCKPILING.

3 PERMANENT OUTLET STRUCTURE NOT TO SCALE

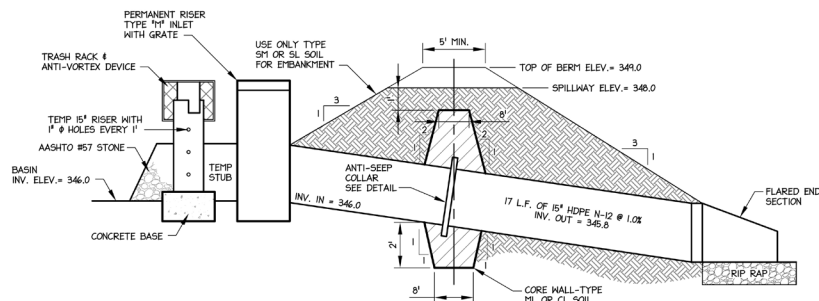


NOTE: EMBANKMENT SHALL BE COMPACTED TO 95% MODIFIED PROCTOR

5 SPILLWAY NOT TO SCALE



6 FLARED END SECTION





NOTES:

1. REMOVE ALL TOPSOIL OVER EMBANKMENT PRIOR TO PLACING FILL.
2. PLACE FILL IN 6" - 12" LIFTS, COMPACT TO 90% MAX. DRY DENSITY PER ASTM-D1557.
3. FURNISH AND PLACE 4" MIN. TOPSOIL, SOIL SUPPLEMENTS, FORMULA "B" SEED, MULCH, PER PADOT 408.
4. PROVIDE RETENTION BASIN FLOOR SEEDING MIX CONTAINING "VIRGINIA WHITE RTF" SUCH AS "HIX ERX-126" FROM ERKIN CONSERVATION SEEDS.
5. PROPOSE INFILTRATION AREAS MUST BE PROTECTED AT ALL TIMES AGAINST CONSTRUCTION EQUIPMENT AND STOCKPILING.

PERMANENT RISER				TEMPORARY RISER				BARREL				EMBANKMENT					
BASIN NO.	SIZE (N)	CREST ELEV (FT)	MATERIAL	ORIFICE	MAT'L	DIA (N)	CREST ELEV (FT)	MAT'L	DIA (N)	INLET ELEV (FT)	MAT'L	LENGTH (FT)	OUTLET ELEV (FT)	TOP ELEV (FT)	TOP WIDTH (FT)	CLEAN OUT ELEV (FT)	BOTTOM ELEV (FT)
1	TYPE M	347.4	CONCRETE	Ø 36 x 36	PVC	16	347.4	PVC	16	346.0	PVC	17	345.4	348.0	5	346.5	346.0

8 SEDIMENT TRAP/DETENTION BASIN

PROJECT TITLE STORMWATER MANAGEMENT PLAN PROPOSED DARTY EXPANSION, PA WARWICK TOWNSHIP	CLIENT JEFF & JESSYNN BALMER 572 MILLWAY ROAD LITITZ, PA 17543 717-629-6601	 TeamAg inc 120 LAKE STREET EPHRATA, PA 17322 PHONE: 717-721-6795 FAX: 717-721-9275 WWW.TeamAg@TeamAgInc.com		PROJECT MANAGER	DATE	BY	REVISION
				RANDALL L. HOOVER			
				DESIGN BY : JPD	APR. 25, 2011	HAC	PER TOWNSHIP ENGINEER LETTER 4/21/2011
				DRAWN BY : RJH			
				DATE : APRIL 13, 2011			
PROJECT NO: 2777-10-1							

Resources and Contact Information...*continued*

Contacts:

Please call the Center for Dairy Excellence to make contact with any of these individuals or organizations to learn more about their role in successfully completing this project.

Dr. Charles Gardner

Randy Hoover, Team Ag

Dale Hershey

Dennis Hall

Dr. Steve Foulke, Herd Veterinarian



CENTER FOR
DairyEXCELLENCE

To learn more, contact the Center for Dairy Excellence

2301 North Cameron St., Harrisburg, PA 17110

Phone: 717-346-0849 ♦ Fax: 717-705-2342

info@centerfordairyexcellence.org ♦ www.centerfordairyexcellence.org

Follow Us on [Facebook](#)