

South Dakota DENR's Regulations for Concentrated Animal Feeding Operations

Yankton County Planning and Zoning Meeting

July 24, 2017

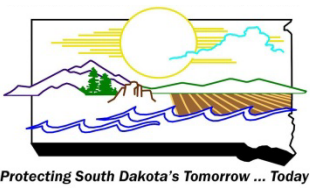
7:00 PM

Yankton Government Center



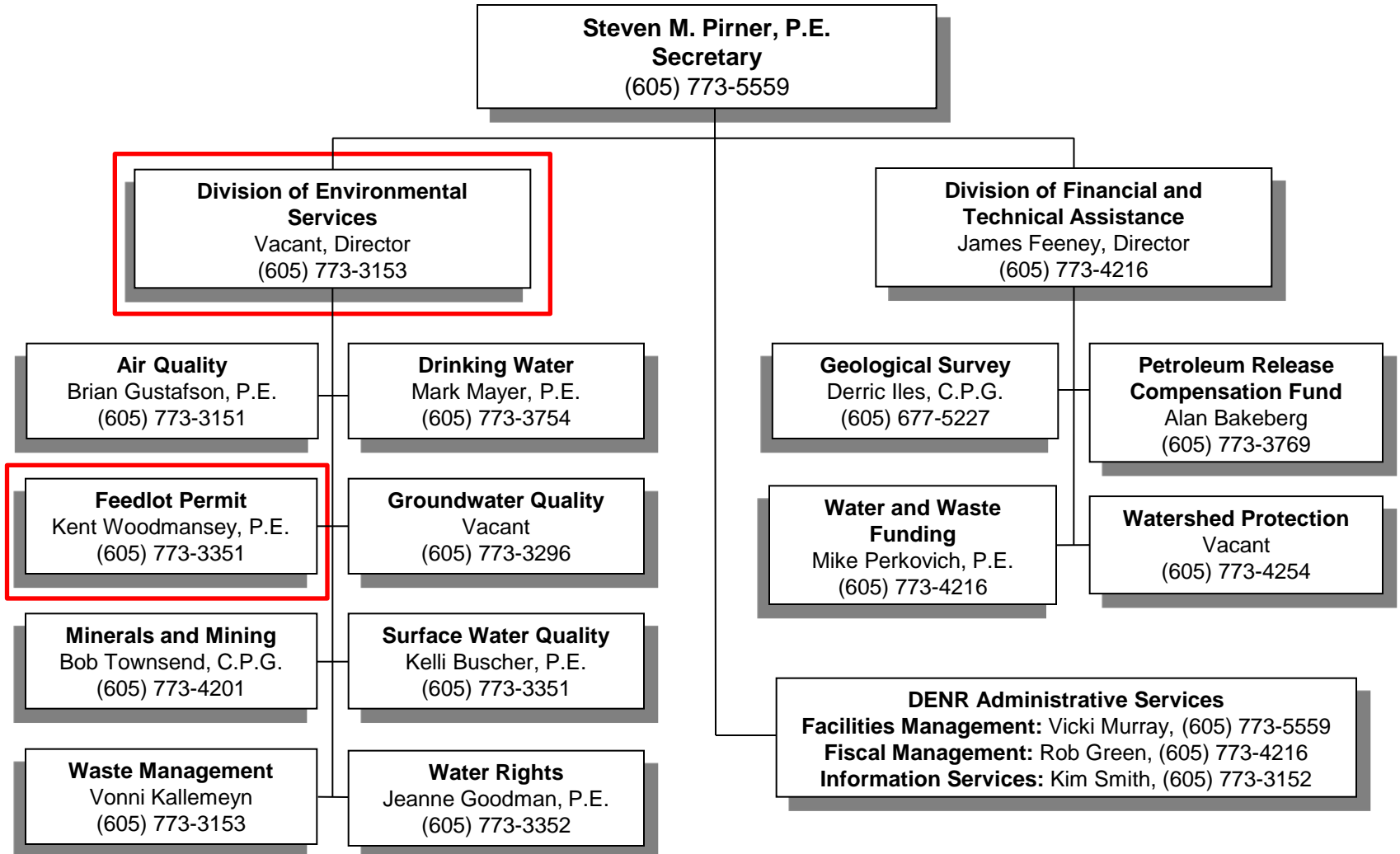
County Zoning and DENR's Permit

- ❑ Legislature has given local government the authority to regulate land use planning (setbacks to homes, churches, etc; roads; odors; etc.).
- ❑ DENR's has authority to control water pollution
- ❑ Generally new operations go through the county zoning process before they go through DENR's process.
- ❑ Unless the zoning ordinance requires zoning be done first, there is nothing stopping a producer from going through DENRs process first or doing them at the same time.



Department of Environment and Natural Resources

“The mission of DENR is to protect public health and the environment by providing environmental monitoring and natural resource assessment, technical and financial assistance for environmental projects, and environmental regulatory services; all done with reduced red tape, expanded e-government functions, and exceptional customer service to promote a prosperous economy while protecting South Dakota's environment and natural resources for today and tomorrow.”





Topics

- ❑ What is a general permit?
- ❑ History of general permits for concentrated animal feeding operations (CAFOs)
- ❑ The 2017 General Water Pollution Control Permit for CAFOs and the Permitting Process
- ❑ The general permit's shallow aquifer protection requirements
- ❑ Inspections/enforcement
- ❑ Producer Training



What is a general permit?

- ❑ Used by DENR to permit similar activities
- ❑ Contains standard conditions required by state and federal law
- ❑ Provides DENR a mechanism to efficiently permit a large number of operations



CAFO General Permit History

- In 1993 when South Dakota was delegated the National Pollutant Discharge Elimination System (NPDES) Program by the EPA there were no NPDES permits for CAFOs in place
- In 1996 the South Dakota Pork Producers approached the department about working together to put in place a permit because of expected growth in the swine industry. A general permit was issued in 1997.



General Permit History (continued)

- In 1997 the South Dakota Department of Agriculture asked the department to put together a permit for all other animal types. That general permit was issued in 1998.
- In 2003 a general permit for all concentrated animal feeding operations was issued.

General Permit History (continued)

- 2007 South Dakota legislative session – SB 9 (34A-2-36.2) was passed requiring concentrated animal feeding operations to operate under a general or individual water pollution control permit
- Without a permit concerns were:
 - No road map for environmental compliance
 - local hearings for conditional use permits would be more controversial



General Permit History (continued)

- October 2008 – General permit expired
- DENR administratively extended permit anticipating new federal rules addressing court case
- November 2008 – Federal regulations were published in Federal Register. Regulations were immediately litigated by both producer and environmental groups.



General Permit History (continued)

- Proposed permit and December 16, 2015, contested case hearing public noticed in 10 newspapers and mailed to 931 interested parties by October 8, 2015.
- 27 parties submitted comments and 11 petitions were received to participate in the contested case hearing.
- On December 8, 2015, a request to delay the hearing was received.



General Permit History (continued)

- Hearing rescheduled for September 27-29, 2016 with August 2, 2016, newspaper notice and notice on DENR's one-stop public notice website.
- 2-1/2 day contested case hearing attended by 80 people. Secretary adopted the permit with changes at the end of the hearing.

General Permit History (continued)

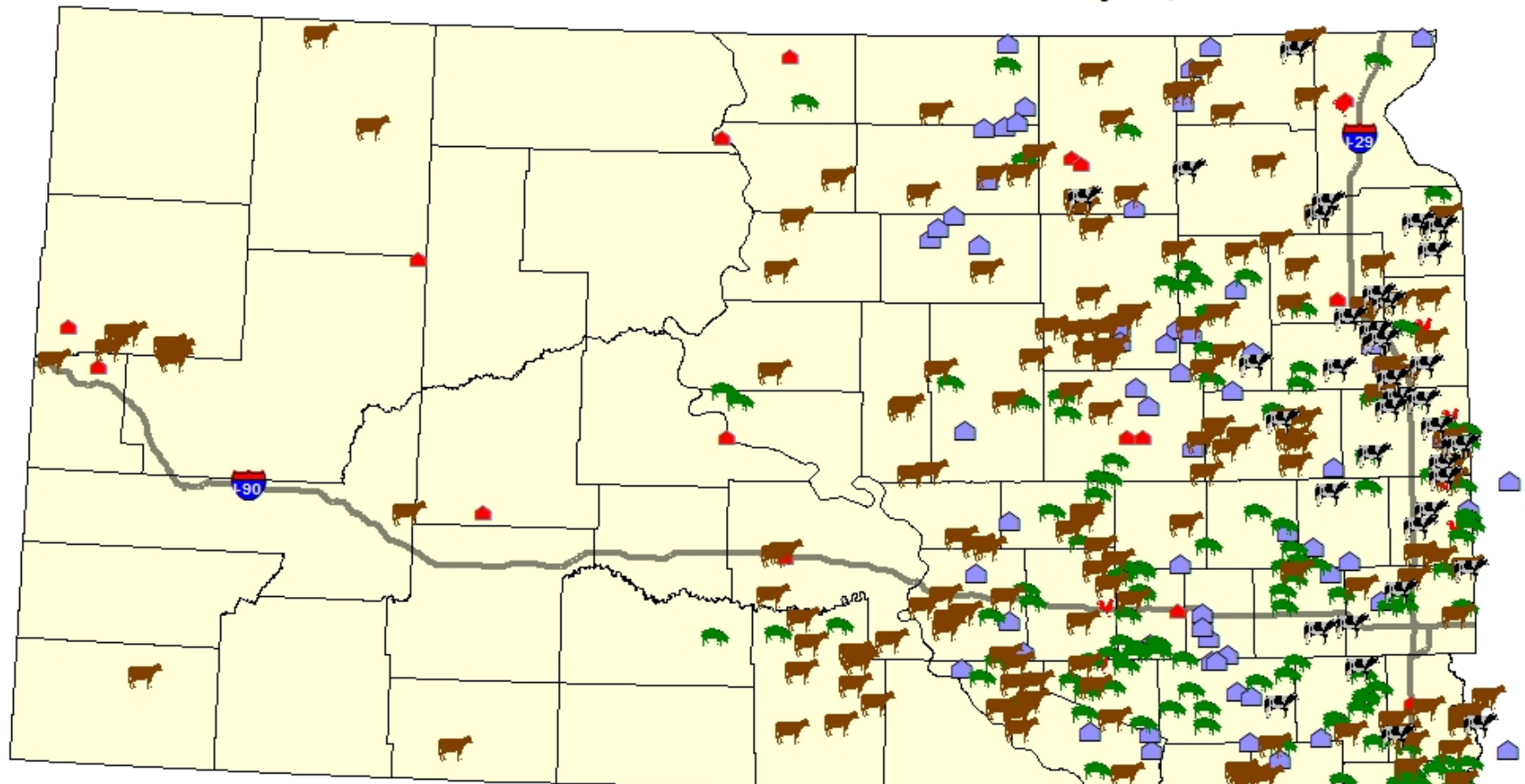
- Secretary adopted Findings of Fact and Conclusions of Law on March 10, 2017.
- Reissued Permit was effective April 15, 2017.
A copy can be found at <http://denr.sd.gov/des/fp/2017permit.aspx>.
- Existing permitted operations continue coverage under the 2003 general permit and have 1- 4 years to get coverage under the 2017 general permit, unless required sooner.









General Permit History (continued)

- New and Expanding CAFOs need coverage under the 2017 general permit.

SD DENR Permitted CAFOs - January 9, 2017



-  41 Mature Dairy Cattle - 115,024 head
-  161 Beef and Other Cattle - 533,039 head
-  130 Swine - 648,670 head
-  7 Poultry - 4,263,060 head
-  62 Multi Animals - 3,466,388 head
-  18 Livestock Auctions
- 8 CAFOs Located in Another State with Land Application Areas in SD

427 Total Permits



DENR's General Permit

- Includes federal and state requirements ensuring manure management systems are properly designed, constructed, operated, and maintained so they protect the quality of South Dakota's surface waters;
- Includes state requirements protecting shallow aquifers;
- Ensures the nutrients generated are land applied following an approved nutrient management plan; and



DENR's General Permit (continued)

- Is understandable by producers, design engineers, and crop consultants so they provide a roadmap for environmental compliance.



Basic Elements of the General Permit



Basic Elements of the General Permit

- Definitions
- Who needs permit coverage?
- Permit application requirements
- Permit issuance processes
- Effluent Limits
- Design, Construction, Operation and Maintenance Requirements to protect surface and ground water
- Nutrient Management Planning Requirements
- Inspection, Recordkeeping and Reporting Requirements



Who Needs A Permit?

- Animal Feeding Operation:
 - Animals are stabled or confined for 45 days or more in any 12-month period, and
 - No vegetation present during the normal growing season.
 - Animal feeding operations under common ownership are a single animal feeding operation if they are within one mile of each other or use a common manure management system or nutrient management plan

Who Needs A Permit? (continued)

- An Animal Feeding Operation is a Concentrated Animal Feeding Operation if it is:
 - Large
 - Drainage running through confinement area
 - Man-made conveyance to surface water
 - Small (Designation based on inspection)
 - Same criteria as medium
 - Significant contributor of pollutants

Table 1. Number of Animals to Define Large, Medium, and Small Concentrated Animal Feeding Operations

Type of Animal	Concentrated Animal Feeding Operations		
Feeding Operation	<u>Large</u> Animal numbers equal to or more than:	<u>Medium</u> Animal numbers equal to:	<u>Small</u> Animal numbers less than:
Dairy cows (mature – milked or dry)	700	200 to 699	200
Veal Calves	1,000	300 to 999	300
Cattle other than mature dairy cows or veal calves ¹	1,000	300 to 999	300
Swine (weighing more than 55 pounds)	2,500	750 to 2,499	750
Swine (weighing less than 55 pounds)	10,000	3,000 to 9,999	3,000
Horses	500	150 to 499	150
Sheep or Lambs	10,000	3,000 to 9,999	3,000
Turkeys	55,000	16,500 to 54,999	16,500
Laying hens or broilers ²	30,000	9,000 to 29,999	9,000
Chickens, other than laying hens ³	125,000	37,500 to 124,999	37,500
Laying hens ³	82,000	25,000 to 81,999	25,000
Ducks ²	5,000	1,500 to 4,999	1,500
Ducks ³	30,000	10,000 to 29,999	10,000
Geese	30,000	10,000 to 29,999	10,000



Who Needs A Permit? (continued)

- CAFOs
- Operations below the large CAFO threshold required to get a permit by local government
- Operations can voluntarily get permit coverage

State vs NPDES Permit Option

State Permit

- Any discharge from an operation's manure management system is a permit violation. The Natural Resources Conservation Services' Soil Plant Air Water (SPA-W) model is used to verify the system is designed to not discharge

NPDES Permit

- The permit allows certain operations to have a discharge from their manure containment system in the event of a 25-year, 24-hour storm event if the manure management system is properly designed, constructed, operated, and maintained



State vs NPDES Permit Option (continued)

State Permit

- Applications for new operations or for those increasing their animal numbers are public noticed in the local paper and on DENR's One-Stop Public Notice website
- DENR will respond to any comments received in the 30 day comment period

NPDES Permit

- Applications for new operations and those making major modifications (see definitions) are reviewed and the Division's recommendation is public noticed in the local paper and DENR's One-Stop Public Notice website
- DENR will respond to any comments received in the 30 day comment period



State vs NPDES Permit Option (continued)

State Permit

- No opportunity for contested case hearing

NPDES Permit

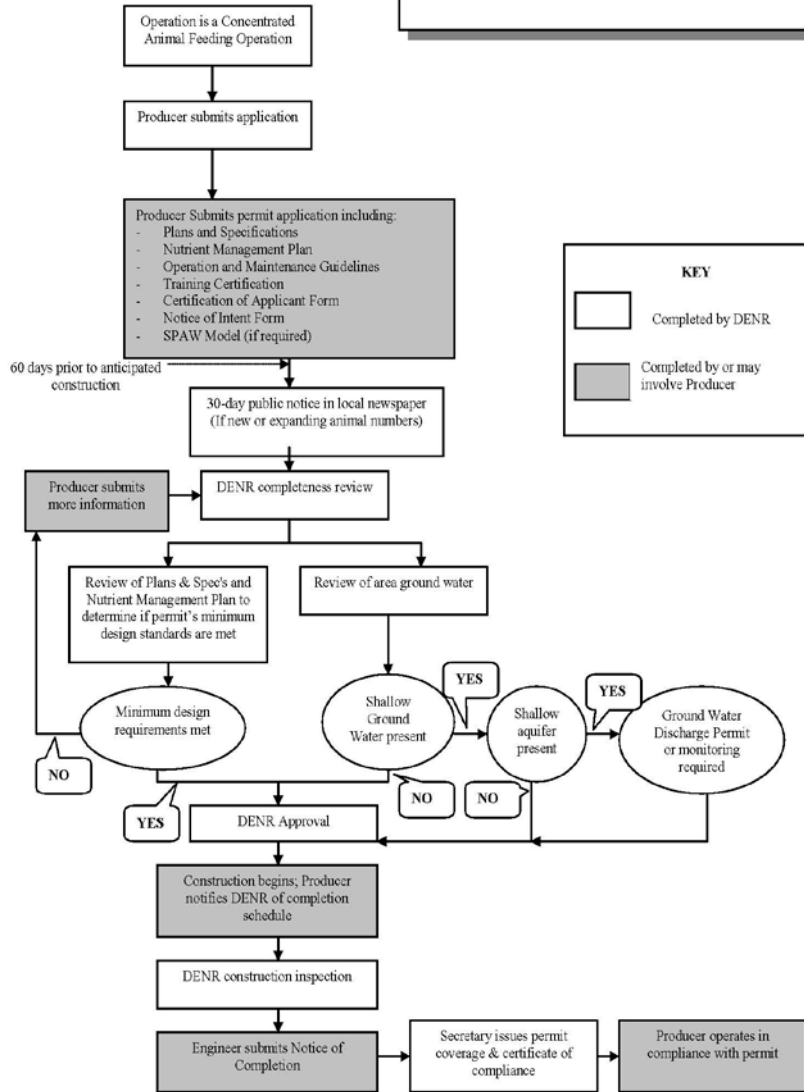
- Opportunity for contested case hearing



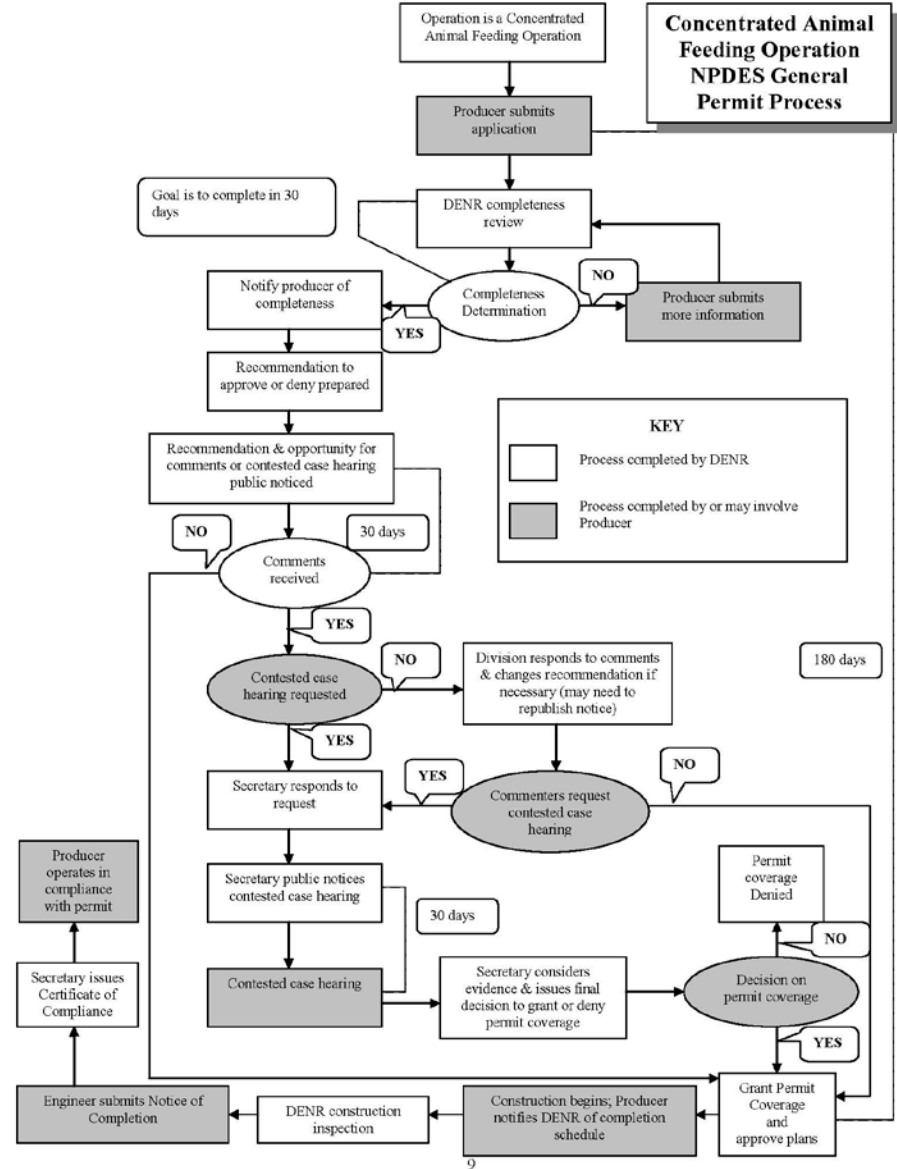
Permit Application Process

- Permit Application Process Checklist and Flowchart:
<http://denr.sd.gov/des/fp/documents/2017ApplicationChecklist.pdf>

Concentrated Animal Feeding Operation State General Permit Process



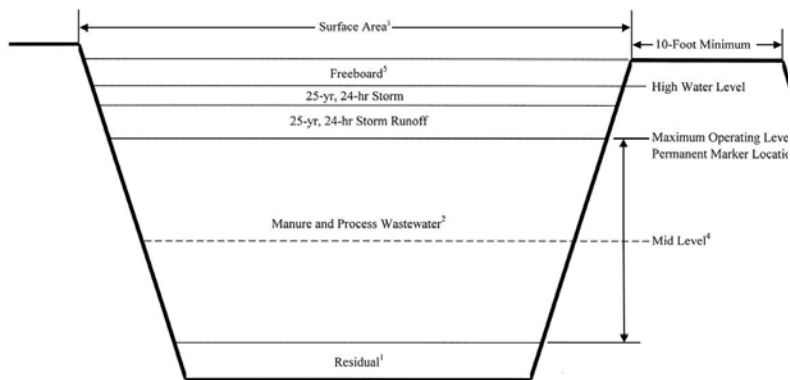
Concentrated Animal Feeding Operation NPDES General Permit Process



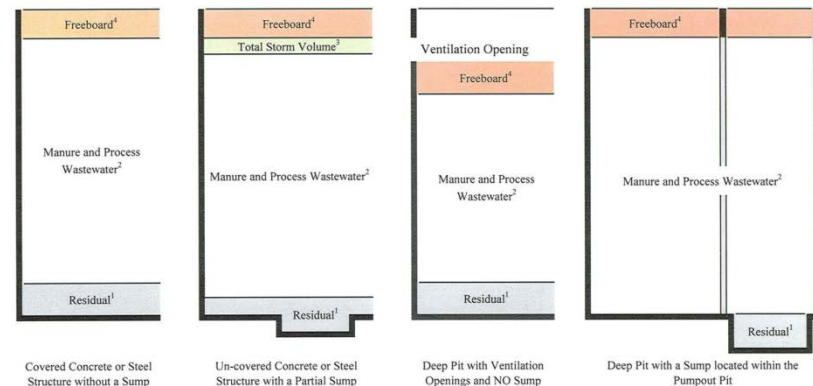
DENR Permit Application Review

- Is the operation a “bad actor”?
- Does the manure containment system meet the required capacity requirements (270 or 365 days) and other required storage volumes. See Appendix H of the permit (below) for cross section information

CROSS SECTION FOR AN EARTHEN MANURE CONTAINMENT STRUCTURE



CROSS SECTION FOR A CONCRETE OR STEEL MANURE CONTAINMENT STRUCTURE



¹ There must be a minimum of 1-foot available for residual solids accumulation in all earthen structures.

² Process wastewater is any process generated wastewater and any precipitation (rain or snow) that comes into contact with the animals, manure, litter, bedding, or other portions of the animal feeding operation, and includes any runoff from an open lot.

³ Annual precipitation and the storm precipitation for an un-covered structure is determined by using the surface area at the top of the structure.

⁴ Annual evaporation for an un-covered structure is determined by the surface area at the mid level of a structure which is midway between the maximum operating level and the top of the residual.

⁵ A minimum of 2-foot of freeboard and the top of the freeboard is established at the lowest berm elevation.

¹ A minimum of 1-foot is required for residual solids accumulation but a portion of or all of the residual depth may be accounted for in a sump. If a structure includes a sump, the O&M guideline must include the procedure for agitating the contents of the structure prior to or during manure and process wastewater removal.

² Process wastewater is any process generated wastewater and any precipitation (rain or snow) that comes into contact with the animals, manure, litter, bedding, feed, or other portions of the animal feeding operation, and includes any runoff from an open lot.

³ Volume required for the 25-year, 24-hour storm which includes the direct storm precipitation on an un-covered structure and the storm runoff from any drainage area that may be associated with the system.

⁴ A minimum of 1-foot of freeboard is required. The top of the freeboard begins at the lowest opening in a structure, if present, or the top of the structure.



DENR Review (continued)

- Does the application meet the required clay liner, concrete, and other design standards in the permit?
- Does the application meet the permit's initial nutrient management plan requirements?
- Has the producer attended the SDSU Producer Training class?
- Are the liquid manure containment system or land application fields located over a shallow aquifer?



Shallow Aquifer Protection

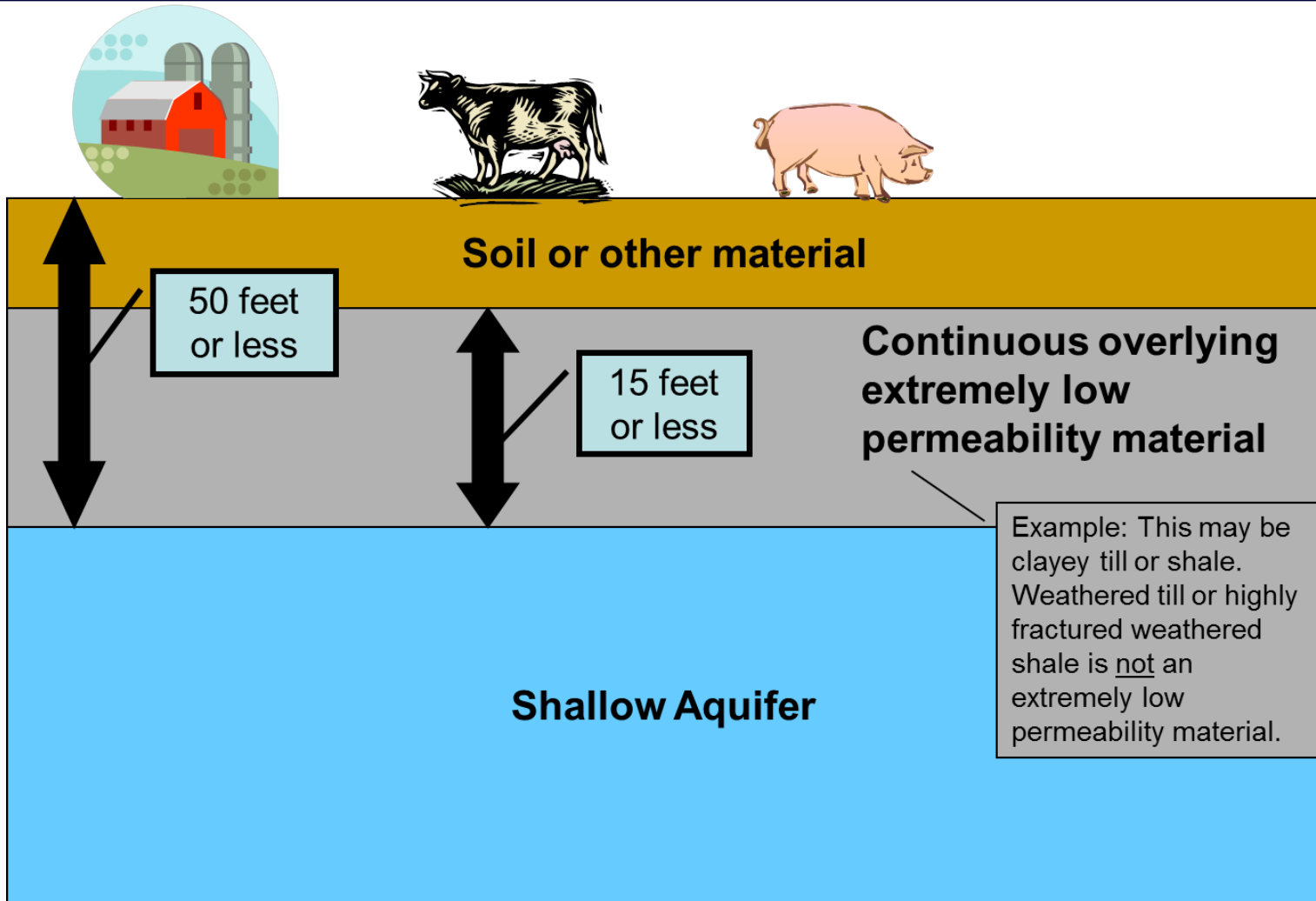


Shallow Aquifer as defined in SDCL 34A-3A-24

SDCL 34A-3A-24 defines a shallow aquifer as any aquifer having the following characteristics:

- The aquifer is within fifty feet or less below the land surface with fifteen feet or less of continuous, overlying, extremely low permeability geologic material, such as clayey till or shale. Weathered till or highly fractured weathered shale is not an extremely low permeability material for purposes of this section; or

Shallow Aquifer as defined in SDCL 34A-3A-24

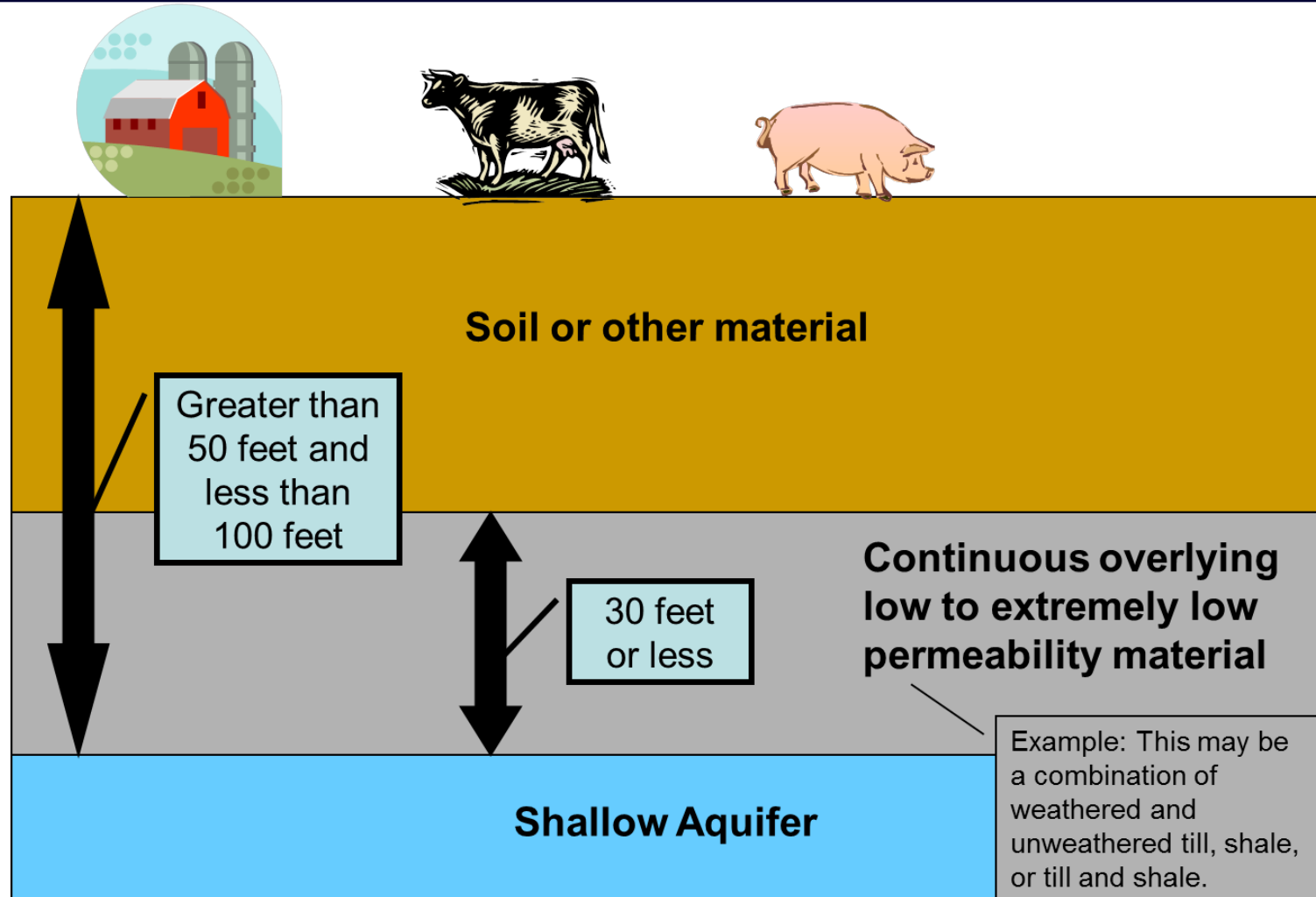


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- The aquifer is greater than fifty feet but less than one hundred feet below the land surface with thirty feet or less of continuous overlying low to extremely low permeability geologic material that may be a combination of weathered and unweathered till, shale, or till and shale.

Shallow Aquifer as defined in SDCL 34A-3A-24





Containment Structure Review Process

The process that the department uses to determine whether an operation is located over a shallow aquifer consists of reviewing the following information:

- ❑ On-site hydrogeologic information (on-site soil borings)
- ❑ The First Occurrence of Aquifer Materials Maps
- ❑ County Aquifer Studies
- ❑ Local well completion reports
- ❑ Information from the Department's Geological Survey Lithologic Logs Database



Soil Boring Requirements

The general permits contain soil boring requirements designed to provide information to help determine if the proposed process wastewater containment structure is located over a shallow aquifer. The requirements are:

- ❑ A minimum of two soil borings or at least one soil boring per acre of containment structure at the maximum operating level
- ❑ All soil borings must be located within 200 feet of the proposed process wastewater containment structure
- ❑ All soil borings must extend a minimum of six feet below the bottom of the containment structure
- ❑ At least one of the soil borings must be a deep subsurface boring characterizing the subsurface hydrogeology of the site.



Soil Boring Requirements (continued)

The deep subsurface soil boring must extend a minimum of 25 feet below the ground surface and must continue until one of the following criteria is met:

1. At least 15 continuous feet of extremely low permeability, geologic material (unweathered clayey till or shale) is encountered in the soil boring;
2. At least 30 continuous feet of low to extremely low permeability, geologic material (weathered or unweathered till or shale) is encountered, if the boring is greater than 50 feet in depth;
3. The boring reaches an aquifer or bedrock; or
4. A total depth of 100 feet.



Groundwater Monitoring

If the operation is found to be located over a shallow aquifer, the following table, which can also be found in Appendix G of the general permit, is used to determine if groundwater monitoring or a groundwater discharge permit is required.

DENR Criteria to Determine Ground Water Discharge and Monitoring Requirements for Concentrated Animal Feeding Operations

Located over a Shallow Aquifer*		Not Located over a Shallow Aquifer	
Counties without Zoning and Wellhead Protection Ordinances		Counties with Zoning and Wellhead Protection Ordinances	
Large CAFOs	Medium and Small CAFOs Units	Any Size Operation	Any Size Operation
<p>New Feeding Operation (After July 1, 1997):</p> <ul style="list-style-type: none"> • Ground Water Discharge Permit and ground water monitoring required. 	<p>Existing or Expanding Feeding Operation:</p> <ul style="list-style-type: none"> • Ground water monitoring required. 	<ul style="list-style-type: none"> • If the county requires state approval or a valid water pollution complaint is filed on the livestock feeding operation, or the producer requests coverage under a state general permit, DENR will use the criteria described in the general permit for concentrated animal feeding operations to determine if a ground water discharge permit and/or ground water monitoring is required. • If a producer is not required by either local or state law to obtain coverage under a state general permit, but requests plans and specifications approval, ground water monitoring will be required. • Producer has the option of applying for a ground water discharge permit. 	<ul style="list-style-type: none"> • Operation shall comply with local government ordinances. • If a valid water pollution complaint is filed, or if the producer requests coverage under a state general permit, ground water monitoring will be required. • If a producer is not required by local or state law to obtain coverage under a state general permit but requests plans and specifications approval, ground water monitoring will be required. • If the operation is outside a wellhead protection area, the producer has the option of applying for a ground water discharge permit.
<ul style="list-style-type: none"> • Ground Water Discharge Permit not required • Monitoring may be required if site-specific conditions warrant monitoring to protect localized, shallow ground water supplies. 			

All feeding operations shall be in compliance with South Dakota Ground Water Quality Standards. A Ground Water Discharge Permit allows the producer to have a limited zone where ground water may be impaired.

*Shallow aquifer is defined in SDCL 34A-3A-24 passed by the 1997 Legislature.



Groundwater Monitoring (continued)

If the Feedlot Permit Program's review indicates a groundwater discharge permit may be required, the Department's Groundwater Quality Program is consulted for additional review of the soil borings and other site specific information to make a final determination whether a groundwater discharge permit will be required.

If a groundwater discharge permit is deemed necessary, it is administered through the Department's Groundwater Quality Program.

Groundwater Monitoring (continued)

If the process wastewater containment structure is located over a shallow aquifer and the Feedlot Permit Program's review does not indicate a groundwater discharge permit is required, the operation is required to install monitoring wells and conduct groundwater monitoring.

- A minimum of three groundwater monitoring wells must be installed around the process wastewater containment structure and must be installed by a South Dakota licensed well driller.
- The monitoring wells must be sampled on a quarterly basis for the following parameters:
 - Total Dissolved Solids;
 - Sulfate, Dissolved;
 - Nitrate as Nitrogen;
 - Ammonia – Nitrogen, dissolved NH_4^+ - NH_3 as Nitrogen;
 - Chloride, Dissolved; and
 - Water Table Elevation.



Groundwater Monitoring (continued)

- ❑ At least one round of sampling is required prior to placing process wastewater in the containment structure.
- ❑ If groundwater does not appear to be impacted after one year of sampling, the producer may request to reduce the monitoring frequency.
- ❑ If the groundwater appears to be impacted, the department may require more frequent monitoring and reporting, groundwater remediation, additional sampling parameters, or a groundwater discharge permit.



Land Application Site Review

New and revised land application sites are also reviewed to determine if they are located over a shallow aquifer using the following materials:

- ❑ The First Occurrence of Aquifer Materials Maps
- ❑ County Aquifer Studies
- ❑ Local well completion reports
- ❑ Information from the Department's Geological Survey Lithologic Logs Database



Land Application Site Review (continued)

The soil sampling requirements included in the 2003 general permit and the 2017 general permit were developed in cooperation with South Dakota State University, the South Dakota Department of Agriculture, and the South Dakota Natural Resource Conservation Service.

- ❑ Annual soil samples from 0 to 2 feet are required on all manure land application fields prior to manure application.
- ❑ If a land application site is found to be located over a shallow aquifer additional soil sampling is required.
- ❑ The producer has the option to conduct two different types of additional soil sampling.



Additional Soil Sampling

The producer may elect to conduct additional deep soil sampling which consists of taking nitrate-nitrogen soil samples from 2 to 4 feet in addition to the standard nutrient management plan requirement of nitrate-nitrogen soil samples from 0 to 2 feet.

- If the 2 to 4 foot soil test results indicate that there is greater than 30 pounds of nitrogen, the nitrogen recommendation in the rate calculation must be reduced an additional four pounds of nitrogen for each five pound increment above 30 pounds.

Additional Soil Sampling (continued)

The producer may elect to take soil samples for nitrate-nitrogen from 0 to 2 feet both prior to manure application and within four weeks after harvesting the crop.

- If the residual nitrate-nitrogen in the post-harvest soil samples is above 100 pounds per acre, the field will not be available for land application until one full growing season has passed. If a soil sample is taken the following year and shows that the nitrate-nitrogen has dropped below 100 pounds per acre, manure application may resume.

DENR Inspections

□ Construction Inspections:

- At least one construction inspection (ARSD 74:57:01:03)

□ Compliance Inspections:

- U.S. EPA requires permitted CAFOs be inspected every 5 years.
- DENR inspects at least annually or once every three years (ARSD 74:57:01:04 and 74:57:01:05)
- Violations found during inspections are followed up by:
 - Warning letters,
 - Administrative enforcement actions, or
 - Referral to the Office of Attorney General for resolution.



DENR Inspections (continued)

- U.S. EPA staff have conducted joint or oversight inspections at permitted CAFOs and have given the Feedlot Permit program positive feedback.
- Penalties are calculated using a penalty policy that was part of the department's NPDES delegation package. Penalties are based on the magnitude of the violation or its effects, environmental damage, willfulness, violation history, cooperation, mitigating factors, and economic advantage for noncompliance.
- Penalty calculations are reviewed by the U.S. EPA every year.
- U.S. EPA do other reviews as part of our delegated NPDES program oversight.

DENR Inspections (continued)

□ Closure Inspections:

- Required before terminating permit coverage (ARSD 74:57:01:06)

□ Complaint Inspections:

- Requires a complaint form or complaint from government official acting in their official capacity

<http://denr.sd.gov/des/sw/eforms/E0424LDV1-ComplaintForm.pdf>



Producer Training

- The general permit requires the producer or their onsite representative to attend a DENR approved environmental training course on proper operation and maintenance of a manure management system and nutrient management planning
- SDSU manages the only approved training course which is offered between quarterly to semiannually
- Topics include water quality, livestock nutrition options for reducing nitrogen and phosphorous, DENR's permit program, land application of manure – nitrogen and phosphorous management, land application worksheets, soil erosion and infiltration, and air quality and odor.



Producer Training (continued)

- Recent training reached participants from livestock operations that represented approximately 22,500 animals in the beef industry, 4,000 dairy cows, 60,000 pigs, 5 million laying hens, and 3,000 sheep. Survey results showed a 21 to 32 percent increase in the overall understanding of the topics, and more than 63 percent of the participants said they plan to adopt certain practices they learned at the training sessions.

The End

For more information contact DENR's Feedlot Permit Program at (605) 773-3351 or visit our website at <http://denr.sd.gov/des/fp/cafo.aspx>