Section 1
Nutrient Management Planning

1. What is a nutrient management plan?
A plan to achieve maximum yields on a farm with minimal effects on the environment.

2. Name three common on-farm nutrient sources.
Manure, alfalfa, soybeans, and green manure crops.

3. This part of a nutrient management plan contains information about field slopes, tillage and crop rotation in order to reduce soil loss.
Conservation plan.

4. List three prohibited areas where manure should never be applied.
When manure is running off of the field, frozen ground of greater than 9% slope or 12% if on the contour, near streams, rivers, ponds, or lakes in winter, within 50 ft of a well, don’t over apply.

Planning For Manure Application

1. What are best management practices of manure application?
Develop a plan to determine the application rate for the crop.
Follow environmental guidelines.

2. What are two items that should be identified in a plan on maps that are necessary for a nutrient management plan?
Field characteristics such as distance to streams of lakes, distance to wells, and slopes.

3. What are manure application restrictions meant to protect?
Groundwater or surface water.

4. Why does liquid manure need to be tested?
Variability of the amount of water added to the manure storage structure.

5. What are the benefits of an application map?
Highlight restrictions, identify where manure should be applied, provide the manure application rate, and serve a record of applications.
Section 2 Nutrient Management Regulations

1. What agency oversees the 590 nutrient management standard? 
   USDA-NRCS

2. In most cases, how many animal units will a farm have to enter CAFO status? 
   1000 Animal Units

3. Which agency oversees CAFOs? 
   Wisconsin Department of Natural Resources

4. Give an example of a local manure management ordinance. 
   County or township level, typically tied to manure storage. 
   Nutrient Management often tied in. 
   Cost sharing might be used to encourage a practice. 
   Ordinances can affect timing of application. 
   Type of application may be regulated too by local ordinances.

Section 3 Impact of Nutrients on Ground and Surface Water

1. What causes fish kills in streams and rivers? 
   Run off

2. What water source is nitrate a major threat to? 
   Ground water

3. How far should applications stay away from wells? 
   Minimum of 50 feet, or 200 feet if not incorporated within 72 hours.

4. What is another risk to wells in addition to nitrates? 
   Bacteria.

5. When is nitrate leaching at greatest risk to move? 
   In shallow soils. If there are cracks or sink holes in the bedrock. When excessive rates are applied. On sandy soil.

Section 4 Manure Storage, Agitation, and Handling

1. List two types of manure storage structures. 
   Liquid manure pits/lagoons lined with synthetic liners, concrete, or clay (in-ground). 
   Slurry upright systems (above ground).

2. What are some safety features that can be built into manure storage structures? 
   Concrete/adequate ramp so equipment doesn’t slide into the pit. 
   Safety fence around the structure. 
   Ventilation. Maintain the condition of valves.
3. How many inches of freeboard space are needed to prevent overtopping?  
1 foot to eighteen inches.

4. Why agitate manure in storage structures?  
To have a better, more even mixture of nutrients being applied to the field.

**Section 5 Manure Gases and Confined Spaces**

1. List the four gases which can cause health risks when working around manure storage structures.  
Ammonia, Methane, Hydrogen Sulfide, and Carbon Dioxide

2. This gas is lighter than air and irritates the eye and lungs.  
Ammonia

3. This gas is explosive if in high enough concentrations.  
Methane

4. Levels of this gas can increase dramatically during agitation.  
Hydrogen Sulfide

5. This gas is the most critically dangerous of the manure gases.  
Hydrogen Sulfide

6. This heavy gas can cause rapid breathing, dizziness, and fatigue.  
Carbon Dioxide.

7. What is the best way to determine if manure gases are present?  
Use a 4 gas monitor

8. Using ventilation, how many air exchanges should take place before someone enters a confined space?  
7

9. What should be used to enter a confined space if a gas monitor and ventilation is not available?  
Use a SCBA, Self Contained Breathing Apparatus.  
Make sure people have been properly trained and screened.  
Have life line harness.  
An attended must be present.

**Section 6**

**Surface Manure Application**

1. What should be tested before applying manure to cropland?  
Soil and the manure

2. What is the challenge with applying manure to moist soil?
The soil pore space may fill with water which will prevent the manure from running into the soil. It is more susceptible to run-off then.

3. Which nutrient has an Index to assess run-off risk?
   Phosphorus Index

4. What are some management steps that can be done to reduce manure run-off risk?
   Leave buffer strips in place.
   Roughen soil with tillage if liquid manure is sitting on the surface.
   Try to avoid creating wheel tracks.
   Use tillage on headlands.
   Pay attention to drainage, it can help reduce surface run-off but also can move manure underground.
   Apply to drier soil rather than wet soil.

**Methods of Liquid Application**
1. What are the two primary systems for applying liquid manure?
   Tanker system with tractor or truck mounting.
   Drag line / hose.

2. What is the problem with gravity fed tanks?
   Application rate can decrease as the tank empties and pressure diminishes.

**Using GPS for Liquid Application**
1. What are some benefits of GPS application?
   Track the application providing better record for the farmer.
   Convenient maps for the agronomist.
   Reduces the math for the operator.
   Sampling locations identified.
   Autosteer now available so there is less driver fatigue.
   Less overlap.
   Consume less fuel.
   Better computer equipment and flow meters.

**Nitrogen Stabilizers**
1. What is the new nitrogen stabilizing ingredient for manure called?
   Instinct

2. How does the nitrogen stabilizer work?
   It inhibits the bacteria that converts nitrogen to nitrate. This diminishes denitification.

3. Why do custom applicators of this product need a commercial license?
   It is a pesticide and the applicator is applying the product for hire on other farms.
Section 7 Manure Spreader Calibration
1. List the two main steps to manure spreader calibration.
   1. Weigh the spreader empty and full to get the manure weight.
   2. Get the rate by measuring an area which the manure has been applied with a known number of loads.

Section 8 Responding to Manure Spills
1. What should be included in a spill response plan?
   - Who to call / phone numbers
   - Steps to take
   - Supplies for cleanup
   - Maps of sensitive areas such as culverts, streams, concentrated flow channels, and tile inlets and outfalls.

2. What are the steps to manure spill response?
   - Control the spill: Stop the flow.
   - Contain the spill: Work the ground around the spill site, protect sensitive areas first.
   - Call the Spill Hotline: Report to the DNR
   - Clean up the spill
   - Document the spill cleanup action

Section 9 Public Relations and Manure Application
1. Who are stakeholders?
   - Neighbors, local elected officials, and even people driving by such as tourists.

2. Name as many steps possible to keep good relationships with stakeholders.
   - Build a trust relationship, tell your story, tell them the truth, begin planning early yet be flexible, develop a good image by keeping equipment clean, call it fertilizer, have a sweeper / scraper available to clean the road, try to reduce the odor, inject manure to reduce odor, avoid surface applications by sensitive areas such as home or parks, avoid spreading around holidays and graduations or parties, communicate with neighbors, watch the weather such as rainfall events.