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Summary of Key Points in Report:

The report provides information on the members of the task force and identifies the four goals they were charged to examine:

- **Determine where our impact on the karst aquifer begins,**
- **Evaluate the best methods to reduce the impact of agriculture on groundwater quality,**
- **Prioritize the implementation of available technologies to prevent future problems,**
- **Determine where gaps are in our knowledge base.**

The background section concludes with five guiding assumptions which can be paraphrased as:

- 1. Prevention of all surface contamination of groundwater is a physical impossibility, however there are actions that landowners can take to reduce potential contaminations from livestock manure, human waste and other contaminants,**
- 2. There is a serious need for better mapping of Karst features,**
- 3. The recommendations are based on scientific knowledge and professional judgment,**
- 4. The recommendations are focused primarily on agricultural issues (in fact, almost entirely on manure). While the other issues (septage, industrial waste, on-site sewage treatment, etc.) could be a significant part of the contamination problem, they are beyond the scope of this task force.**
- 5. A uniform approach that provides a stable framework for environmental protection is needed.**

We can debate whether or not the Task Force accomplished their four goals and the merits of the five guiding assumptions, but that is not a productive use of our time or efforts. We commend you and your organization for their positive response and your commitment to work to reduce the number of “brown water” incidences in Northeastern Wisconsin. The staff of the UW – Discovery Farms Program is eager to work with you and the agriculture industry on the development of a strategy that is necessary, reasonable and implementable on Wisconsin farms with Karst features.

UW – Discovery Farms Response and Recommendations:

- It is perhaps not a good assumption for the authors of this report to propose that their recommendations apply only to a 3 or 4 county area in the northeastern part of the state. Carbonate bedrock with associated sinkholes and fractured rock overlain by shallow soils occurs in many areas of Wisconsin. Some areas are already looking to the Karst report for ideas and directions as they deal with the carbonate bedrock issue. We recommend that additional financial resources be allocated for on-farm research in three portions of the state (Northeast, Southwest and West Central) to identify acceptable application rates, methods and timing for manure, septage and other sources of nutrients.
- To expand on recommendations made by the Karst Task Force, we suggest that a mapping program that identifies the thicknesses and distribution of soils and unlithified materials at scales appropriate for agricultural producers be developed. We recommend a pilot project be conducted in Calumet County to determine the time and cost of such a mapping program. We have identified staff at the Wisconsin Geological and Natural History Survey who are capable and willing to assist with this pilot project. The goal of this project would be to develop high quality soil thickness maps, to identify the sources and amounts of manure, septage and industrial wastes applied on a county/township basis and to develop a series of recommendations of when, where and how nutrients should be applied in Calumet County in order to reduce the risk of contamination of surface and groundwater. In order for this pilot project to begin we would need to have some commitment of financial resources to cover the cost of mapping and hiring someone to inventory the amounts, sources and applications of all organic nutrients applied in Calumet County.
- This leads to a discussion of what is perhaps the most significant series of recommendations contained within the report. These recommendations are based largely on a table reprinted below.

When the carbonate bedrock is near the surface (< 5 feet), the ability of the soil to adequately treat either livestock or human waste decreases dramatically as the soil layer gets thinner (Level 1). Where there is 5 to 15 feet of soil and unlithified material overlying carbonate rock there is still a potential for movement of contaminants through fractures, particularly in the unlithified materials. It is our opinion that the Karst report overstates the risk on medium and fine textured materials that are between 15 to 50 feet thick (Level 3). Research currently underway suggests initially that movement of water through these materials is extremely limited. Therefore, the potential for water movement through medium and fine textured materials greater than 50 feet thick (Level 4) is probably non-existent.

Level of Protection required	Landscape Criteria	Relative vulnerability to contamination
1	Less than 5 feet (60 inches to carbonate bedrock, and/or closed depressions or any drainage areas that contribute water to sinkholes/bedrock openings)	Extreme
2	5-15 feet to carbonate bedrock	High
3	>15-50 feet to carbonate bedrock	Significant
4	Greater than 50 feet to carbonate bedrock	Moderate

- Particularly complex issue that arises as a result of many of the recommendations contained in the report is the question of liability. It is going to be difficult to define and/or assign liability if a spill or runoff event occurs resulting in groundwater contamination or other environmental problems. We recommend that a committee composed of attorneys (both private and state agency) be put together to review the issues of liability and to develop a strategy that limits this liability for producers, consultants and manure applicators who have implemented acceptable strategies that should reduce losses to ground or surface waters.
- The Task Force report also makes a series of recommendations regarding well construction, maintenance, and testing. These are sound ideas that basically involve educating homeowners about their wells. Extension in the state of Pennsylvania has developed a new program called The Master Well Owners Program based on the highly successful Master Gardeners Program. We suggest that a similar program be established in Wisconsin. UW – Extension could house this program either under the Community, Natural Resources and Economic Development (CNRED) program area or the Basin Educator Program. Extension needs to work with the WGNHS and its staff of hydrogeologists to deliver the education and training portions of this program. Many of the recommendations of the Task Force could be effectively implemented through a program patterned after the highly successful Pennsylvania program.
- The Task Force report makes a series of recommendations regarding the uniformity of codes covering the land application of numerous waste materials. Different agencies may control the application of different waste materials to the same parcel of land. As complicated as it may be, these differences should be ironed out so that landowners hear a uniform message regardless of the type of waste.

While the report contains some valuable recommendations, its assessment of the vulnerability of the unlithified materials in the area appears overstated. It does seem that once a better understanding of the distribution and thickness of those unlithified materials is developed and maps are produced at appropriate scales, wastes can be applied to those landscapes with little or no impact on the fragile groundwater system in the carbonate bedrock aquifer.