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FINAL
RELATED ACTIONS ENVIRONMENTAL IMPACT STATEMENT

CONFINED SWINE FACILITIES

November, 1979

PREPARED BY

Minnesota Pollution Control Agency

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STATE OF MINNESOTA

FINAL
RELATED ACTIONS ENVIRONMENTAL IMPACT STATEMENT

PENZ FARMS COMPANY
DARWIN SCHROEDER
HILLTOP PORK PRODUCERS
CONFINED SWINE FACILITIES

November, 1979

PREPARED BY

Minnesota Pollution Control Agency

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SUMMARY

Introduction

A public meeting was held in June to solicit public comments on the draft environmental impact statement (DEIS). Extensive information was provided by the public in the areas of potential odor, ground water and surface water contamination, social impacts, and need for good management practices.

The final EIS is an addendum to the DEIS, consisting of the public meeting transcript, State agency comments, public comments, and Minnesota Pollution Control Agency responses to those comments.

Proposed Action

The proposed action involves construction and operation of three large confined swine facilities. The Penz Farms Company and Darwin Schroeder confinement buildings and manure storage facilities would be located in Haverhill and Farmington Townships, respectively, in Olmsted County. The Hilltop Pork Producers facilities would be located in Wanamingo Township, Goodhue County. The three proposed projects would have a combined capacity of 12,645 swine and would produce approximately 25,300 market hogs per year. Manure generated during operation would be stored in plastic lined earthen basins (Penz Farms Company and Darwin Schroeder) or above-ground tanks (Hilltop Pork Producers) and would be applied to cropland by injection or spray irrigation.

Construction of the proposed facilities would begin in May 1980 and proceed for approximately five months. The economic life of the proposed operations has been identified by the applicants to be between 15 and 25 years.

Environmental Impacts

Public concern over the proposed action has focused on the following issues: odors, ground water and surface water contamination, public health, local socioeconomic conditions and worst case impacts. Anaerobic storage of swine manure releases odorants to the atmosphere and may, depending on waste management, meteorological and geographic variables, constitute a public or private nuisance. The potential for water contamination associated with manure storage and application is an important local concern. Large areas of southeastern Minnesota are

susceptible to ground water contamination because of the presence of "karstified" carbonate bedrock. Public health issues are related to the potential for disease transmission from high intensity swine confinement, manure storage, and land application of swine manure. Finally, concern has been expressed over the potential economic effects of the proposed large scale operations on local family farms and adjacent property values.

Management

Management has been identified as a significant component in reducing impacts in all technical areas described in the EIS. As with all potentially polluting operations, available technology for operation of the facilities will have little effect unless there is a commitment to operate and maintain these facilities as proposed in the EIS (i.e., implementing good management procedures).

Odor

The effects of normal operations of the proposed facilities on any federal or state ambient air quality standard would be negligible. Therefore, the principal air quality related issue is the potential for the facility to generate community odor levels that may constitute a public or private nuisance. Community odor levels induced by the proposed facilities were quantified, based on predicted emissions and concentrations of a single representative odorant: hydrogen sulfide. Assuming that most of the odorants would be released during the "warm season" (mid-April through mid-October), or approximately the period between the biannual land applications, community odor predictions were made for "worst case" and "typical case" meteorological conditions (under routine operating conditions).

The results indicate that swine odors would be perceptible at residences within approximately 1.5 miles of the Penz Farms Company and Darwin Schroeder facilities for about 2% to 3% of the time during the warm season, with about 40 residences in the vicinity of each of these facilities affected. Residents within 0.75 miles may be subject to "worst case" odors several times the threshold level. In the Hilltop Pork Producers study region, chronic swine odors could affect residences within a mile or so of the proposed facilities (about 13 houses). There was public comment on the validity of the model. Information submitted during the public meeting indicated that most odor complaints from other areas did fall into the 1/2 mile radius predicted by the model as having the potential for chronic noxious odors in uncontrolled situations. The distances predicted by the model as being the threshold of odor may be less reliable. Testimony was presented from one individual who indicated that odors from a confinement facility five miles

from his house were a problem. It should be noted that all these predictions are for routine facility operations, and the potential exists for more severe community odor impacts during manure withdrawal for land application, although such impacts would be of shorter duration. The severity of potential odor impacts is documented in the transcript by citizen testimony.

It is possible to implement mitigation measures that would substantially reduce community odor impacts during routine and nonroutine operations. Measures that appear to offer the most promise include mechanical aeration of storage basins and the use of masking agents or deodorants during settling basin or storage basin agitation associated with manure withdrawal for fertilization.

Water Quality

The proposed manure storage systems are designed to minimize seepage; however, rupture of the basin liners (Penz Farms Company and Darwin Schroeder) could release potential contaminants to ground water. Construction of concrete pumping bays in each earthen storage basin would minimize the potential for rupture of the liners.

Release of stored manure in the event of sinkhole development could result in adverse effects on water quality. The possibility of release of manure to the environment from the Hilltop facility is considered remote because of the structural integrity of the proposed manure storage facilities and the improbability of a catastrophic sinkhole developing at the site which would consume the entire structure. Because of the benefits of above ground storage, this alternative is discussed as a mitigative measure to protect ground water at the Penz and Schroeder sites.

Normal operation of the proposed facilities may not result in ground water pollution but there is a risk that it would. Minor beneficial impacts may be realized by improving soil properties that limit direct runoff and by routing runoff from an existing feedlot to a proposed manure storage basin if good management practices are followed. Poor management may result in contamination of the surface and/or ground water.

Public Health

Numerous pathogens and toxins are capable of causing disease in both swine and humans. If diseases of swine pose any threat to humans, it is most likely to be to their handlers

and caretakers. Because these people are generally in good health, the zoonotic disease transmission potential from swine to humans is probably low.

Pathogen survival in wastes applied to the soil is short and rarely constitutes a health hazard if proper mangement practices are used.

For pathogens or toxins from the swine to cause human disease in the community surrounding the proposed farms, there would need to be unusual circumstances, poor sanitary practices, or some highly improbable mechanical or biological vector.

The greatest impact resulting from the use of antibacterials in animal feeds is the formation of multiple drug resistant organisms. Drug resistant pathogens may cause problems in both humans and animals since the use of some antibacterials will not be effective against these organisms.

Socioeconomics

The proposed operations would be among the largest in the project region, and because of economies of scale would have lower hog production costs than the majority of local hog producers. However, it is not likely that the proposed action would have a major economic impact on the hog market in the area. While these operations would increase regional total hog production and decrease available hog slaughtering capacity, other factors that affect pricing and marketing, such as national long-term economic trends, seasonal variations, and product quality, would not be influenced. The proposed action may have a long-term impact by setting a precedent for accelerated development of similar large scale swine facilities. However, this factor would be only one of many influences on the future of livestock operations in the area.

Although these three facilities in themselves which the DEIS addressed are not expected to have significant social or economic impacts in the region, there is the potential for future cumulative impacts if this trend is followed by others in the region.

Any changes in the value of property surrounding the proposed facilities sites would be caused by the effect of odor produced during operation. Since the proposed operations would not interfere with any of the factors, such as soil fertility, topography, water retention and others, that contribute to the value of adjacent agricultural land, it is highly unlikely that these values would be affected. However, it is possible that the value of the farm residences adjacent to or near the facilities sites would decline.

The three operations would employ 13 workers, with a combined annual payroll of approximately $149,000. Additionally, the proposed operations would increase the market value of the three facilities sites and thus would increase the gross property tax received by Olmsted and Goodhue Counties.

Geology and Hydrology

All three proposed facilities sites are underlain at various depths by dolomite and limestone (carbonate) rocks. Depending upon the thickness and type of overlying geologic materials, carbonate formations in southeastern Minnesota may contain solution enlarged fractures or caverns, and the surface topography may contain karst features such as sinkholes or disappearing streams. Because of the lack of filtering capacity normally associated with ground water flow, "karstified" carbonate rocks are highly susceptible to ground water contamination. The sinkhole potential and the susceptibility to ground water contamination associated with each proposed facilities site are related to the thickness and type of geologic materials overlying these carbonate formations. Deeper soil borings at the Penz and Schroeder sites would be useful in further evaluating the sinkhole potential at these sites. Soil borings have not been conducted at the proposed Hilltop Pork Producers facilities site, and such investigations would be necessary to begin to evaluate sinkhole potential. However, the probability of karst related land subsidence of sufficient magnitude to threaten the structural integrity of the proposed storage tanks is considered low. Vibration from construction activities have been known to precipitate sinkhole development in certain areas.

The proposed use of manure as fertilizer is not projected to have adverse effects on soil properties and may improve soil fertility and enhance soil structure. All application sites are currently fertilized by manure or chemical fertilizers.

Land Use

No significant transportation impacts are expected during construction or operation. The concern about township road maintenance raised by several residents is a local issue and must be resolved within that context. Additionally, land use impacts related to cultural resources or visual aesthetic character are not anticipated.

Ecology

Impacts to terrestrial and aquatic ecology associated with construction and operation of the proposed facilities are expected to be insignificant. Construction and normal operation of the proposed facilities would not significantly affect wildlife habitat or populations. All proposed activities will occur on land currently in cultivation. No clearing of natural vegetation will be done. Accidental release of stored manure could adversely affect aquatic environments; however, the probability of such an occurrence is considered low. Detailed data regarding the role of wildlife as a potential disease transmission vector associated with swine facilities and land application of manure are unavailable; however, this potential is estimated to be low, provided that good management practices are observed.

Noise

Predicted noise levels during the construction and operation phases of the proposed action would not exceed MPCA daytime noise standards. The projects are considered to produce some minor degree of noise impact for brief periods of time during construction and possibly during hot weather nights.

Alternatives

The no action alternative involves continuation of the current use of the project sites. The proposed facilities sites would continue to be devoted to crop production, and the proposed manure application parcels would receive chemical fertilizers and minor amounts of livestock manure.

This alternative would eliminate all adverse and beneficial effects associated with construction and operation of the proposed confined swine facilities. Environmental impacts of the proposed action are summarized in Section 1.3 of the draft environmental impact statement.

Reduced Operation

The reduced operation alternative consists of two 150 sow farrow-to-finish confined swine facilities and one 510 sow confined feeder pig operation. The primary differences between this alternative and the proposed action are related to the number of swine kept and produced, and the total quantity of

swine manure generated. The confinement and waste mangement facilities would essentially be located, designed, and operated as described for the proposed action but would have reduced swine population and manure storage capacities.

Because of the attendant reduction in swine capacity and manure quantities, the reduced operation alternative would result in decreased transportation requirements and noise effects; a decrease in the total acreage required for manure application; and, most importantly, a decrease in total area (and total number of residences) subject to odor effects. The range of odor perception for both the worst case and threshold distance would be reduced by approximately 50% at each of the three proposed sites if good management practices are followed.

The possibility of accidental release of manure to the environment and the remote potential for disease transmission associated with the proposed action would not be significantly reduced by this alternative.

Worst Case Impacts

Several citizens were concerned over environmental impacts resulting from worst case conditions. Specific categories of impacts are mentioned above. Under worst case conditions, it would be possible to have poor management practices, severe odor impacts occurring at higher frequencies and intensities, on-site sinkhole development, surface water contamination, ground water contamination, transmission of diseases to other animal herds, and spread of infectious diseases to the community. It is most important to fully evaluate the potential for each of these. Proper management could significantly reduce the potential for most of these impacts.

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Testimony On Hog Feedlots

You,(P.C.A.) claim that these three operations are just the normal size operation----or the E. I. S. seemed to keep stating they are. This is completely wrong. I"m a stickler for the family farm , and as it"s been identified, as when the labor, land, and the facilities are used within a family unit with seasonal hired help. This does not state acreage at all. Some can be very large as the family grows, marries, and stays.-- ---But when you (PCA) allow agriculture to be used by people with such huge incomes to invest in any one thing at the risk of other people than PCA is not accepting their responsibility, and allowing large tax write offs for the person with the second income, which is infringing on the person trying to make a decent first income.

WATER

Water is one of the most feared risks that are involved for not only the immediate neighbors, but people several hundred miles from the proposed sites should an aquafier be contaminated by the waste. In the area of Wanamingo Twnsp. where the Hilltop Pork Prodecers site is located the permeable soil layer is very thin, therefore the risk of polluting the underground water supply, possibly is very high.

We live within three miles, as the crow flys, from the Hilltop Pork Producers site, and the land in this area is different. We"ve many springs and sink holes in our entire township. There are several homes that rely only on the springs for their water supply.

Not only are we thinking of how much permeable soil cover we have, because most all the surrounding farms are tiled out now allowing the waste to reach the streams faster.

The long range risk is far greater than the immediate due to the

fact of the waste run off settling in the low aresa going through to our aquafiers. We should want to preserve the water for our children, and grandchildren.

MONITOR

Who will monitor these operations has been a large question. They say the operator himself, but from seeing some management, we"re terrified at this suggestion.

People say it could possibly be state inspected, and the poor normal average farmer doesn"t need any more state inspectors running about they"re farms, so ----Whats the answer. Very simple---- illiminate this size operations and the normal farmer needs worry no more. This size operations are what are bringing "state inspectors", which we don"t want or need, and I think PCA quite understands.

Maybe it would be possible to have a specific unit number of hogs that would no longer be considered as a average normal farm operation. I know ---we"ll hear this is discrimmination, but when operations of this size appear then I"m being discrimminated when asked to live amoungest them.

Another alternative would be to do as England does. Under the "Control of Pollution Act 1974" they state that the normal farming practise, may sometimes result in water pollution, and therefore farmers are afforded some protection by the Act, so long as they pursue, and practise good agriculture. However, there is provision for a new procedure whereby this protection may be withdrawn if the water authority is convinced that there is pollution. In this case a notice is served

on the farmer, and the "good agricultural practise" protection is removed and the farmer will be open to prosecution in the same way as anyone else if he continues the practise which causes pollution.

In short what is being said is that the normal farmer practising good agriculture is not the cause of the major pollution problem, but those with more intensive systems of livestock, because of the natural fertilizers being disposed of on land , and this causes pollution due to surface runoff.

WASTES

The Hilltop Pork Producers have by no means enough waste storage for the Minnesota climate. Mr. Kunde proposed a six month storage. With a late spring and early fall-------there is no way he could possibly dispose of all the waste needed, so that he may continue for another six months of operation. We propose there be a minimun of storage for one complete year.

It"s been testified that there is no gas that could be used as the "model", so to speak for the gas from hog manure. How then can the board feel whats stated in the EIS is correct? It"s been said that this gas is not a gas as we know, but a fatty ascid that clings to everything. If this is true then all the surrounding dairy farmers would not only be risking their water, but also their livelyhood----due to the spread of disease, and the foul flavor of their milk.

When speaking of disease don"t take it so lightly, because when

discussing the recycling of the waste and refeeding, a PCA member stated that this was in experimental stages, but would be highly unlikly due to disease. So----if they would"nt refeed because of disease then why is it so safe to spread on our fields and what if we should have a heavy rain following application? Our water certainly would carry disease from the hog to humon then. The storage for the waste we feel is probably the second highest risk following the water. So we hope this will not be just slid across.

MANAGEMENT---STRUCTURAL DESIGN----SITE

These are the three most important factors involved in these operations, and they are equally important.

Like the Nuclear Plants it appears as though the proposers would like to construct the most inexpensive building they could that would take care of each demands without much inspection for safety factors. If these are to be built lets get them built with maximum safety.

The sites should be checked and tested by a qualified Geoligist, and Chemist. Should permits be granted , the qualified Geoligist, and Chemist should be on the sites during construction. There should be specific type borings done at the minimum of not only fifty feet, but one hundred feet. After listening to the testimonys a the hearings we feel this is a small item to ask for.

Management.---At the hearings we were informed this was discussed during the permitting--but we disagree as it certainly is very important

due to the handling of waste storage and removal, dead hogs, water, and just simply how the fellow neighbor willbe treated. Will they be notified of waste removal in advance, so they can plan on no company, doing the wash earlier, plus numerous other things. One other thing to remember would be in case of new ownership at least he would know what was expected of him before he started.

MAXIMUM AND MINIMUM RISKS

At the EIS hearing in Rochester it appeared as though the board felt that the minimum risk was all that was necessary. When testifying on maximum risk or accidents that could quite possibly happen, we were left with the feeling that there were no risks involved. We"re not suggesting that there willbe a failure at any one thing, but implying that there is that possibility, and because of the possibility we"d like to see a deeper investigation done on these operations to make them better and safer.

FACTS

How can facts be found when ther have"nt been any such operations in Minnesota for a long enough period in which to recieve data. This is reality, and we suggest you go to the people already living near such operations. They"ll tell you what the real problems are.

PRICES

The proposers state how the price of pork will go down for the consumer, but what they neglected to tell was how this would reduce the quality. Another item they failed to inform the public is that after they've driven the normal hog farmer out of business, "as was the poltury", how they will regulate their own prices. Don"t forget this is supply and demand. Who knows what a ham may cost in years to come should we allow these type operations in. It may be compared to our gas situation I"m affraid.

LIVESTOCK

Years back there was the same or more livestock, but less pollution. Why? Simple--when spread out over large area of land the pollution was little or non, but with intensified systems of livestock the amount of waste in one area is too much.

TOWNSHIP ROAD

There was"nt much mention at the hearings about the Twnsp. road in Wanamingo Twnsp. for the Hilltop Pork Producers, but why should the tax payers of our twnsp. have to pay for the upkeep of a road that will benefit only one person or non farm investors, (which a whole new thing) We would like to require that Mr. Kunde pay the upkeep of the Twnsp. road which he enters on to county road # 1. This may be approximately one half mile.

METHANE DIGESTORS

According to a PCA members this is one of the best methods to help with the waste problems as of now. We"d like to see these operations install the methane digestor with a slurry, and a generator to put the methand gas right back into use, as its very hard to store, and we don"t need this floating about our atmosphere. We"ve also stated that a small sewage disposal should be installed. That would take care of all. Really it is sewage!

COMMENTS

The more we learn the more concerned we become, and feel things of this naturewill not improve our way of life, but do the exact opposite.

Minnesota certainly does"ht have the climate for these due to the disposal of the waste.

How do you clean up an aquifier once its contaminated?

Wanamingo Township is by far to populated to have operations this size.

Water is H2O plus minerals, not hog waste,

The not building of these sites will not cause economic disaster to the proposer, the community, or country, but the building, and failure of these operations will cause an economic impact on the entire country.

Land is a very special kind of property. Ownership of land does not give an absolute right to use or abuse, nor is it devoid of social responsibilities. It is in fact a stewardship.

We"ve enclosed some literiture which constantly uses the word "family," and it is always linked with "farm." This tells us something!

Mr. & Mrs. Leo Leuling

Over

Rt. 3
Kenyon, Minn. 5594

1. Mr. & Mrs. Len Feuling raised the issue that the three facilities are not "family farms." They defined a family farm as "when labor, land and facilities are used within a family unit with seasonal hired help," and that the draft characterizes the facilities as "normal size operation."

AGENCY RESPONSE: The facilities do meet the definition of family farms under Minnesota law. The Penz proposal and Schroeder proposal meet the qualifications for incorporation as a domestic family farm. The Kunde proposal is not currently incorporated; however, if he were to incorporate, he would do so as a domestic family farm (DEIS 5-39). Concerning the size of the proposed actions, the draft EIS stated that: "There is no doubt that the proposed swine operations are larger than most others in the area." (DEIS 5-39)

2. The Feulings raised an issue that the MPCA was not acting responsibly by not using economic status of the proposers as a basis for issuing permits.

AGENCY RESPONSE: The MPCA is required to consider economic and environmental factors. The MPCA is committed to dealing with all parties in a fair and consistent manner, no matter what their economic status may be.

3. The Feulings raised the issue of ground water contamination from the Hilltop Pork Producers (Donald Kunde facility) and that the risk is "...possibly very high" in areas of thin soil cover.

AGENCY RESPONSE: There may be a high possibility of risk in areas of thin soil cover if storage facilities are not properly designed and managed. There are no soil borings at the Hilltop site so the soil depth is unknown.

4. The Feulings raised the issue of the impact tiled fields would have on the potential for surface water contamination.

AGENCY RESPONSE: See Attachment 6, Page 194.

5. The Feulings raised the issue of runoff causing pollution of surface and ground water and long-term ground water contamination.

AGENCY RESPONSE: The Schroeder and Hilltop Farms proposals include injection as a method of manure application which will place manure approximately 12-14 inches below the soil surface

thus reducing the potential for runoff. The Penz Farms proposal would apply the solids portion of the manure by injection and the liquids by spray irrigation (DEIS 3-41). Spray irrigation would have a greater potential for surface runoff if applied prior to rainfall. Application procedures will determine potential for surface water runoff (DEIS 5-19). If surface runoff is not controlled, temporary degradation of surface water could result and accumulation could occur in low lying areas.

6. The Feulings raised the issue of the MPCA limiting the size of operations which it will permit.

AGENCY RESPONSE: The MPCA has no authority to deny permits based soley on size of operations.

7. The Feulings indicated a procedure followed in England which removes some types of legal protection afforded by the law if a farmer pollutes the area by not using "good agricultural practices" (sic).

AGENCY RESPONSE: The MPCA notes this information. The current Minnesota law governing these facilities is dissimilar in this respect from indicated procedures in England.

8. The Feulings indicated that the Hilltop Pork Producers (Donald Kunde) proposal has only six months storage and is not adequate considering the possibility of an early winter and late spring.

AGENCY RESPONSE: The design storage capacity of the Hilltop Pork Producers is 330 days or approximately 11 months (DEIS 3-24).

9. The Feulings questioned the use of the air dispersion model in the DEIS.

AGENCY RESPONSE: The MPCA determined that the best way to estimate odor impacts was to use air dispersion modeling. The DEIS documents the assumptions and limitations of the model (DEIS 5-5, 5-15). In addition, Agency staff have testified that the modelling represents an estimation (TR 135-137) of impacts. Letters and testimony have been provided by citizens who report odor impacts as far as five and eight miles from a hog facility. Others living 300 feet (TR 114), 500 feet, 1/3 mile (TR 211), a little over 1/2 mile (TR 194, TR 228) reported severe odor impacts from confinement facilities. It must be noted that these facilities may differ markedly from the proposals considered in the DEIS; however, these reports tend to confirm the odor model which predicted that within approximately 1/2 mile of the Penz and

Schroeder site and 1/3 mile from the Hilltop site, residences would be subject to "particularly offensive odors" if facilities do not mitigate odor potential (DEIS 5-14). Due to the limitations and assumptions of the odor model, odor impacts may actually occur at distances greater than those indicated in the draft EIS.

NAME	DISTANCE	REPORTS ODOR	CITATION
Hauen Baur residence	1/4 mile		Letter
Lauritz Romo residence	1/4 mile		Letter
Carol Mested residence	500 ft/1/3 mi.		TR 211
John Regehr residence	1/2+ mile		TR 194
* Sharalla Regehr residence	1/2 mile		TR 228
* Verna Henry residence	300 ft.		TR 111
* Marvelle Reckard residence	1/2 mile		TR 116
* Earl Reckard residence	1/2 mile		TR 120
* Jean Siebert residence	1/4 mile		TR 124
**Mr. & Mrs. Jacobs residence	1/2 mile	at 8 mi.	TR 133
**City Council of Bigelow		at 5 mi.	TR 133
**Unidentified dairy farmer in Wisc. residence		at 5 mi.	TR 133

* Testified at Public Meeting

**Cited in Dr. Cucchiara's testimony

10. The Feulings raised the issue of land spreading manure and its potential for spreading disease.

AGENCY RESPONSE: The likelihood of pathogenic organisms surviving manure storage is low (DEIS 4-28, 5-15 through 17, 5-26, 5-35). Most manure application will be by injection (DEIS 3-41) which will reduce the potential for runoff after rain. There will be some spray irrigation (DEIS 3-41). This method may have higher potential for surface water contamination if not disced in immediately following irrigation. Application procedures have a great effect on reducing potential for runoff after rainfall (DEIS 5-19). For nitrate movement in soil, see page 194.

Dr. Loehr, representing the MPCA on livestock management,

indicated that, based on his experience, health hazards from land application would be minimal (TR 43-44). Dr. Bane, a veterinarian from the University of Minnesota, representing the MPCA on animal disease, testified that the potential for aerosol transmission of disease due to spray irrigation would be minimal (TR 45-46).

11. The Feulings made several recommendations for permit conditions and construction inspection.

AGENCY RESPONSE: Recommendations are noted and will be available to the Division of Water Quality for consideration during the permitting process.

12. The Feulings raised the issue of the importance of proper management of these facilities in mitigating impacts on the environment and neighbors.

AGENCY RESPONSE: The MPCA agrees that good management plays an important and integral role in the protection of the environment and the reduction of impacts on the neighbors (DEIS 5-19, 6-5, 6-8, 6-9, 6-12 and others). Additionally, Dr. Loehr, an expert on livestock management representing the MPCA, testified that proper management is an important factor in reducing impacts (TR 43).

13. The Feulings commented that risks of these types of facilities should be more deeply investigated to make them safer and better.

AGENCY RESPONSE: The mitigative measures (DEIS 6-1 through 23) and alternatives (DEIS 10-1 through 20) are discussed in terms of improving the proposals environmentally. No alternatives were considered which were less environmentally sound than the original proposal.

14. The Feulings suggested talking to people near hog farms to get their view of the problems.

AGENCY RESPONSE: The Agency has received comments from people living near various types of hog operations, both in letters and in oral testimony, indicating impacts which result from those operations. This information is contained in the final EIS.

15. The Feulings indicated that they felt the MPCA didn't consider risks involved in the construction of these facilities.

AGENCY RESPONSE: The environmental impact statement process is designed to assess impacts of major actions which have the potential for significant environmental effects. The draft EIS has considered worst case situations. For example, worst case health impacts resulting ground and surface water contamination were considered (DEIS 5-30). It is important to note that some mitigative measures designed to reduce risk of potential environmental impacts were included in the description of the proposed projects and especially the section on alternatives. (See DEIS 6-1 through 6-23 and 10-1 through 10-20.) Additional information concerning worst case impacts was provided by Dr. Calvin Alexander and others during the public meeting. (See attached transcript)

16. The Feulings indicated that there was less pollution in the past because animals were spread out.

AGENCY RESPONSE: Animal wastes contribute to total pollution regardless of whether they are spread out or in smaller feedlots. The potential may increase as facilities become larger; however, more controls are required for larger operations, thus tending to reduce actual pollution. Large and small facilities have a different potential for problems. For example, more careful controls are needed to protect animals in larger facilities, due to the increased potential for disease. In both cases, management plays an important part, but with large facilities, a higher degree of engineering to avoid environmental effects is required.

17. The Feulings indicated that Hilltop Pork Producers should provide upkeep of a township road which leads to this proposed facility.

AGENCY RESPONSE: That decision rests with the township.

18. The Feulings raised the issue of the use of methane digesters at the facilities.

AGENCY RESPONSE: The MPCA evaluated methane digesters, however did not consider the use of methane as a reasonable alternative because this equipment requires skills beyond the capability of the available staff of the facility (DEIS 10-14, TR 73). It is interesting to note that the type of microbiological actions which occur during methane digestion also occurs in the pits and tanks proposed in these actions. A close approximation to the stabilization achieved in a closed anaerobic digester can be met by the proposed storage facilities. (TR 73-74)

19. The Feulings indicated that a sewage disposal plant should be a part of the facility.

AGENCY RESPONSE: This option is not a feasible and prudent alternative, due to the specialized nature of the operation of a sewage disposal facility. Operation was considered beyond the technical capabilities of the average worker who would be maintaining these facilities. Also, manure should be considered a nutrient resource. It reduces the need for chemical fertilizer which is made by highly energy consumptive and air polluting processes. Organic fertilizer also acts as a soil conditioner, improving the tilth of the soil, increasing water holding capacity, lessening wind and water erosion, improving aeration and promoting growth (DEIS 5-19).

20. The Feulings indicated a concern for the operation of these facilities, especially manure application due to the climate.

AGENCY RESPONSE: The facilities have substantially longer storage capacity than required to store over the longest winter. (Hilltop 330 days, DEIS 3-24; Penz 305 days, Schroeder 295 days DEIS 3-23)

21. The Feulings raised the issue on how an aquifer, once contaminated, could be cleaned.

AGENCY RESPONSE: For all practical purposes, contamination of an aquifer is an irreversible impact.

22. The Feulings indicated they felt Wanamingo Township was too populated for facilities of this size.

AGENCY RESPONSE: MPCA feedlot rules require 1,000 feet from a residence. This issue appears to be largely a local issue which should be addressed by the township or county.

23. The Feulings raised the issue of economic impacts.

AGENCY RESPONSE: Economic impacts are addressed in the draft EIS (DEIS 4-37, 5-36, 4-46, 5-12). Additionally, the impacts from possible trends toward changes in hog operation structure are identified in the report "Technology Assessment of the Hog-Pork Industry" portions of which are found in Appendix III. The entire report is available for review at MPCA offices in Rochester and Roseville.

24. The Feulings commented on responsibility of land ownership.

AGENCY RESPONSE: The MPCA recognizes the concern and responsibility that land owners must assume to protect the land.

25. The Feulings referred to literature which they enclosed with their comments.

AGENCY RESPONSE: The information has been referenced in Appendix I.

26. Mr. Len Feuling indicated that the proposers "prove" they will not pollute (TR 199)

AGENCY RESPONSE: In order for the MPCA Board to issue a permit, the proposers must show that they will meet the requirements of swine confinement facilities regulations of the State of Minnesota.

27. Mr. Feuling indicated that the draft EIS did not emphasize the worst case sufficiently (TR 199).

AGENCY RESPONSE: See Page 13, Response 15.

28. Mr. Feuling asked how the facilities would be monitored (TR 200).

AGENCY RESPONSE: The permit may include a monitoring plan; however, it is anticipated that monitoring of the facilities on a day-to-day basis will be the responsibility of the individual farmer.

29. Mr. Feuling asked if soil borings were taken on all swine confinement facilities (TR 201).

AGENCY RESPONSE: MPCA rule SW 5346 requires an applicant to provide "A description of geological conditions, soil types and ground water elevations, including high water table to a depth of 10 feet below the lowest elevation of the site." Soil borings would be required to provide this information.

30. Mr. Feuling raised the issue of quality of meat produced by confinement facilities.

AGENCY RESPONSE: Generally, hogs from confinement facilities gain weight faster and can be slaughtered at a younger age than hogs from other types of operations. They also do not have an opportunity to exercise as much as hogs in open feedlots. Both of these factors tend to produce a more tender meat product from confinement facilities than from other types of facilities.

MaryEllen Kersch
June 25, 1979

I am MaryEllen Kersch, Chairman of "Save the American Family Farm", a coalition of individuals and groups who are concerned about the potentials for environmental and socio-economic hazards of large swine confinement facilities in Minnesota and Wisconsin.

This is our first experience with an EIS and we feel about it somewhat like most parents feel about their first child: We're very happy to have it, but some aspects of it make us very nervous. Fortunately, tonight we have an opportunity to deal with our concerns, in hopes of sending out into the world a more perfect version.

We disagree with those who have interpreted the DEIS as endorsing the three proposals. We think many legitimate concerns, which we have spoken out on for over 2 years, are also expressed in the draft. But, while the draft is an important beginning, it is only a beginning. Especially when the issue deals with such unmapped territory as tonight's subject, input from the real world is at least equal in importance to the projections and extrapolations from the paper world of a literature search, to which the draft was limited.

Perhaps it is because the draft was confined to a literature search that it is deficient. Tonight we will build on the draft and present testimony and documents to illustrate the reality of the problems presented by these facilities. The draft EIS spells out, very clearly, how things can be if everything goes well. We think the final EIS should include, just as clearly, what can happen if they don't. There are five categories under which I would like to present our concerns: Odor; Health; Management; Socio-Economics and Design.

I will begin with odor, not because it is our most pressing concern, but because it is the problem which is probably most difficult to deal with--and the most readily detected. Unfortunately, for many who will testify tonight, it is absolutely impossible to ignore.

For a long time, PCA did not acknowledge any jurisdiction over odors caused by these facilities. Finally, about a year ago, the Attorney Generals Office handed down an opinion that odors caused by storage of animal waste which result in a public nuisance come under MPCA's jurisdiction. That ruling was a result of the agony experienced by some people in Lewisville--and their concerted effort to put a stop to the putrid smells which drastically altered their quality of life. They are here tonight.

The draft says that " the proposed action would result in adverse odor effects in the communities surrounding each facility site" (DEIS, 7.1). However, it is deficient in its calculations of odors, - and for a very good reason: It took one odorant of the 15 that are known to be associated with swine manure and decided that that one, hydrogen sulphide, would be called "representative". From that weak premise, it went on to make a mathematical model to postulate the impact of odor from swine manure. Well, we don't buy the premise and we don't buy the whole bit. Several people will give testimony regarding the extent and effects of those odors. What they know--from their own experience, is that mathematical models don't always reflect the real world.

This is the first attempt to model swine odors--it's easy to understand that a model which was dependent upon a literature search is not accurate. That model cannot represent the "worst-case" odors accurately. Only the people living with them can do that. They are here tonight.

Dr. Roy Cucchiara, an anesthesiologist at St. Mary's Hospital, has some important information and questions regarding the odor-modeling. I would anticipate that MPCA would include those in the final EIS. Additionally, I would also like to ask a few questions:

1) Has MPCA checked with their Regional Director for serious odors from other large swine operations in this area? Were any of them owned by any of the proposers?

2) Wouldn't the existence of serious odors from these facilities represent "impairment or destruction of the air---within the state" ? (State ENvironmental Policy; 116B.02)

3) With regard to the mitigative measures proposed by the draft EIS relating to odors (DEIS 6.1), what has been the verified-real-world effectiveness in this

region of the country for each measure described? (3)

4) The draft EIS states that management is a primary mitigating measure for odor impact. Based on MPCA's experience with past violations on one of the proposers at least, would PCA anticipate that such management practices would be followed?

5) The draft states that the proposers will employ hired help to run these facilities. What has been the management track record of hired help with regard to odors at other such facilities? What has beer the track record of hired help at other facilities owned by any of the proposers--have there been any MPCA violations?

6) The draft speculates on odor impact if good management is implemented. Will MPCA, in the final EIS, please assess odor impact in the absence of good management?

7) Would MPCA follow the recommendations of the township and county officials in this matter?

These are issues which the final EIS should address with regard to odor pollution.

- - -

In past public hearing on feedlot proposals, the issue of health hazards of confinement feedlots has been clouded by an insistance to compare confinement facilities with open-range production, use of annhydrous ammonia, --and, even the geese at Silver Lake. The use of those examples is a circumvention of the EIS process --and they are not proper considerations in tonight's hearing. The subject of this hearing is the draft EIS on the three proposed facilities with the alternative considered by Mr. Kunde--and the potential hazards of those proposals.

I would like to ask MPCA if they will, in the final EIS, consider any arguments or discussions not relating directly to the subject of this draft EIS?

The health hazards from these operations are, according to the draft, "not projected to occur"--but, it goes on to warn, "some increased potential for their occurance is unavoidable--the actual effects of each operation will depend on each operator's management practices". (DEIS 7.1) Now, that makes us awfully uncomfortable!

The draft (4.24) states that the incentive for good management will be a desire to protect the herd. That herd however, is confined--the public is not! While dead and/or diseased hogs will be removed from the facility to protect the herd, there is no incentive to dispose of them properly to protect the health and herds of surrounding neighbors

Why, theoretically, a person could just pile them in a heap someplace untill they got around to disposing of them. Has PCA ever had any complaints about that? What are the health hazards for that practice?

Or, what if the operator sold an infected herd off quickly--before they died-- what would be the real-world health hazards of such an action? Wouldn't a requirement that infected herds be quaranteened be a reasonable protective measure?

The draft also indicates handlers will have to shower before entering and after leaving the facility. What if poor management resulted in the omission of the final shower?

The draft)5.16) states that there are no difinitive studies on existing or hypothetical swine facilities and community microbio-aerosol concentrations--or from landspraying operations that use swine manure as a fertilizer. There are, however, numerous studies on municipal wastes. The final EIS sould consider if there cannot be scientific comparisons between the two and evaluate the impact on that basis. (referance: "Process Design Manuel for Land Treatment of Municipal Wastewater", Appendix D, Pathogens, study by Katzenelson, et.al., page D 24)

What about the health hazards to neighboring herds and humans as a result of spray irrigation--for instance, if poor management resulted in the spraying of slurry into the Silver Creek, or spewing aerosol borne pathogens (such as PVR) onto beef cattle in a near-by pasture--Is the threat of disease-spread increased with spray irrigation over injectionof the manure? In the instance of a poor management record, wouldn't it be prudent to require injection of manure?

There are people in the health community who understand very clearly what can happen as a result of these potentials. You'll hear from them tonight. I ask MPCA in its final EIS to address these questions and that testimony.

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Throughout the draft EIS, the phrases "good management" and "proper maintenance" precede any section describing means for avoiding a variety of problems. The draft states that these operations are "larger than most in the area". (5-39) What is the past

experience with these types of technology on the part of the proposers? Will their neighbors be impacted by their inexperience? Or, if there is a background of experience, what does the real world record show?

I ask MPCA to check with its Regional Director to see if any of the proposers have ever been reported for such poor management practices as:

1) Constructing or altering a facility without a permit? How many times? What was the penalty?
2) Using concrete blocks--known to leak--in the construction of a manure pit built into bedrock? What was PCA's penalty?
3) Dumping whey into a running stream? Penalty?
4) Allowing dead cattle to decompose in a stream used by cattle for drinking and children for play? Penalty?
5) Allowing swine manure slurry to run into the Zumbro River in violation of an NPDES permit? Penalty?

Under these circumstances, would PCA consider that the individuals involved had established themselves to be the type managers the DEIS indicates are necessary to avoid the pollution which could result from poor management?

The draft says good management will avoid many problems. Would PCA please postulate what would result from poor management?

Additionally, because management is obviously not of the most conscientious nature in this case, and because PCA has not seemed to have had any great success in correction with past action, Would the requirement of a bond or specific penalties written into the permit not be a better incentive for good management, in this case?

Management is often a function of economics. Would it not be an incentive to issue the permit in the name of the proposer and all owners, and require all owners to share equally in all liabilites resulting from poor management?

Bill Walker, former Agricultural Commissioner of our state, has spent most of his life promoting good farm management, the concept of the stewardship of the land, and the preservation of the family farm. Because of a state statute prohibitting a former state employee from testifying before a commission on which he served for one year after leaving that position, he cannot testify. But farmers who share his affinity for

the land are here. I hope PCA will respond to their statements and questions regarding the incentives necessary to protect the environment from destruction--and the forces, many of them fostered by government, which threaten destruction of the farmers themselves.

- - -

The socio-economic section of the draft EIS is inadequate. First, it states that the decrease in the average size farm and increase in number of farms indicate a strong familyfarm image for our area. Is it not possible that what those figures represent in the real world is merely an increase in "hobby" farms--people who derive their income from other sources but recognize the quality of life that comes from living in the country, raising animals and kids together, and working some land in their spare time?

Our area has been just as susceptible to the "gobble-up" philosophy of many big farmers as any other area in the country. "Real" farming, in this area as nationally, is becoming more concentrated in the hands of fewer individuals who farm larger parcels of land--and have hired hands working their hog operations.

The draft EIS states that there is a national trend to large-scale confinement facilities. It makes an unsubstantiated judgement that this trend is only "one" factor affecting the future of the family farm in this area. That's sort of like saying that the flood we had last July was of minor importance because it was just "one" kind of weather Rochester experienced in 1978.

The three proposed facilities represent, according to the draft, a hog production equal to 10% of hog production in the three county area (5-40). Technically, there are only 2 counties involved. But any traditional farmer in this room must know --from his own real world experience, especially if he used to raise broilers--that if these large facilities become prominent in this area, his hog operation is going to be in jeopardy. And certainly not because he's not as good a manager as any of the proposers, but he just can't get the same tax advantages that these large, multi-ownership factories can.

The draft (5-57) states "--it is increasing evident that a corporate structure has distinct legal, estate, and tax advantages for all types of farms". This is NOT correct.

Benefits from tax laws and accounting breaks accrue to the high income investors--most farmers do not fit into this category. Investment credit and accelerated depreciation benefit pruchasers of large amounts of expensive, large-scale , equipment not affordable by average farmers, and encourage non-farm investors looking for a good tax shelter. Favorable small business corporation tax rules, which also apply to limited partnerships, are not available to the average farmer. I object to the DEIS referring to him as "marginal".

Additionally, investment credit is not available to non-confinement structures, even if they are non-confinement barns used only for farrowing. They are available to confinement buildings, however!

The result of these inequities is that the rich get richer, especially those who promote and package confinement facilities and those who invest in them. Those investors are, increasingly, non-farmers who need a good tax-shelter. I will submit documents to substantiate these claims.

One very major flaw of the draft is that it assumes that these proposed factories are to be owned by family farm corporations, which are legal in this state. Actually, the family farm corporations would only be among the participating investors in the venture.

Until 1978, feedlots were not even included in the Minnesota Corporate Farm Act. Our group combined with others to get the state legislature to correct that ommission. However, the loophole is that limited partnerships engaged in farming are exempt. This is a situation which the Legislature must correct soon to avoid big operations and

non-farm investors getting around the intent of a law designed to protect family farming.

While a limited partnership incurs only slightly greater risks than a corporation, they still benefit from the same tax breaks, giving them quite an advantage over the unincorporated, or even an incorporated--family farm venture. A study on the trend of hog raising in Nebraska indicated that, unless something is done to stop this government subsidization of corporate feedlots, hogs, like poultry, will soon disappear from family farms.

We recognize that PCA, in its permit process cannot consider socio-economic concerns. Yet, that is a valid categoy of consideration in an EIS and we feel, especially because this EIS is a first, that it must treat this issue with some integrity. Therefore, we ask that the final EIS examine the material we are submitting and --objectively-- answer the following question: If the trend to large-scale confinement hog production continues in Minnesota as it has in Nebraska, what will be the impact on the family farmer in our state?

Bob Rumpza, of Minnesota Farmers Union, is also here tonight to present real-world information which PCA should consider in upgrading this section of the EIS to make it adequate.

- - -

The draft states that the above ground tank, proposed by Mr. Kunde, has distinct advantages over the lagoon proposed by Penz and Schroeder, (10-15, 10-16) stating that "this advantage may be particularly significant in karst regions." We heartily agree!

I would like to ask some questions in order to clarify this very important truth:

1) The draft does not indicate how manure from settling tanks associated with the lagoons would be disposed of during non-spread seasons. What is the plan for that? Would that be a necessary management consideration with an above ground tank?

2) Midwest Plan Service and Matt Walton, Minnesota Geological Survey, have both recommended that a minimum thickness of 20 feet of surficial materials exist BETWEEN a potentially contaminating land use--such as a feedlot--and underlying carbonate rock. Walton says 40 feet would be preferable, and says several borings, done under state inspection, would be necessary to properly assess site suitability, and an on-site inspection by a person qualified in the field of karst

topography should be a part of the prerequisite to a permit. The DEIS acknowledges the recommendations of both Walton and Midwest Plan Service. Wouldn't it then be appropriate to require borings to be at least 40 feet deep? And in the case of a 10 feet deep lagoon, wouldn't the thickness of impervious soils have to be at least 30 feet, or, following Walton's preferance, 50 feet?

3) A recent (Jan. 1979) Sigma Associates study of groundwater in this karst region, prepared for the Minnesota Department of Health, warns against increased potential for damage to groundwater in locations where great amounts of water are being drawn, such as these feedlots would do. In view of this warning and the recommendations by both Walton and MPS, would MPCA say that the existing borings are adequate to protect the groundwater from contamination from a leaky lagoon or sinkhole occurence?

4) If the lagoons were to leak, how would such a leak be detected? What steps would be required? How long would that take to verify? Who would do it?

5) There is a man-made ditch used for drainage on the Penz site, which empties into Silver Creek--a watering source for neighboring herds. What if poor management resulted in the lagoon over-flow reaching Silver Creek, would there be potential health hazards to those cattle?

6) The draft EIS and the groundwater study both state that sinkholes are very unpredictable. The groundwater study uses the lagoon failure at Altura, where prior construction on-site inspection was done, as an example of this. If the bottom fell out, figuratively and literally, and a sinkhole developed, what would be the impact to our area? How many wells could be contaminated, and at what cost, before discovery and correction?

7) How rapidly could contamination to groundwater occur?

8) How could the groundwater be decontaminated from a leak or sinkhole? At what cost? Who would bear it?

9) Given the hazards to groundwater presented by a lagoon in the karst region of this state, would it not be possible to diminish these threats by:

   A) Frequent, perhaps monthly inspections by County health officials and MPCA?
   B) Monthly ground-water monitoring at the sites?
   C) More extensive borings and site inspections as per Walton's recommendations?
   D) Requiring a bond be posted by the owners to cover damages in the event of lagoon-failure--thus avoiding bank-ruptcy or tax forfeiture, leaving us with the mess and the expense?

Now, with regard to a slurry:

1) Are they safer than a lagoon?

2) If there were a failure of the system which had a potential for pollution, would it be more readily observed than with a lagoon? Easier to correct? Would damage probably be less between the time of detection and correction than with a lagoon?

3) Would slurries be more appropriate in a situation with greater potential for pollution from karst formation, particularly when the depth to bedrock would automatically be greater because it sit's above ground, rather than in it?

4) Considering that the major manufacturer of slurries in Minnesota presently has orders for 93 such structures in this state, and that Mr. Kunde has proposed to use one, are they not a feasible and prudent alternative to the lagoons proposed by Penz and Schroeder? (Was economics a factor in determining that?)

5) The recent Health Department study of groundwater in this region states that our area is already impacted. Combine that with the structural integrity and easier detectability of a leak of the slurry, the greater dependency on good management - which is questionable in this case-required of a lagoon, and discount the difference of cost, which the State Environmental Act disallows as a consideration---
If there ANY reason to chose a lagoon over an above ground slurry in this instance?

6) The draft EIS (7-1) states that the proposed actions present increased risks of odor, health and water problems. If these operations are approved and similar ones subsequently follow, do the risks also increase?

7) PCA's 208 Planning Document, Feedlot package 1 states; " The Minnesota Geological Survey has found that "almost any surface activity..which produces effluent is likely to contaminate the underlying karst aquifer'. ..This means that all feedlots in the karst terrain of southeastern Minnesota must be considered as threats to water quality unless appropriate management practices have been installed or detailed investigation of the feedlot site shows that no (NO) hazard exists."
Would it not be wise, then, to look to the future growth of such facilities in this region and require that: a) Only well-documented, good managers build and operate them? -OR- b) Allow only those facilities whose design is such that the role of management plays a less hazardous part?

8) The draft states that the potential for nuisance odors to surrounding neighbors presents apotential for their homes to be devalued. (5-41, 6-18) Iowa recently instituted a feedlot odor nuisance act as a result of intense public furor--most of it from farmers--over the stench of many large confined feedlots. Lawsuits based on feedlot odor are now occuring in Minnesota. In our county, farming is of relatively high density. Again, with an eye to the future and seeking to diminish the dependence on management, would it not make sense to take all "feasible and prudent" (State EPA) measures to reduce the odor of these operations?

9) Unlike cattle manure, anaerobically stored swine manure does not crust, thus there is no natural seal at the top of the slurry. Dr Phillip Goodrich, U. of M. agricultural engineer and PCA Feedlot Advisory Committee member, has stated that there is only one known way that is economically competitive, to control swine odors. I would like to ask Mr. Landherrs, of MPCA, if he is aware of what that method is?

10) Setting aside economics, accepting Goodrich's expertise on this subject, and recognizing that we may be in the early stages of the wave of the future, would it not be "feasible and prudent" to require a digestor with a slurry?

The DEIS has told us that these operations can be of minimal ~~unisance~~ nuisance to our environment if everything goes well. We would like the final EIS to apply Murphy's law and tell us what to expect if everything goes wrong.

Over two years ago, a group of us met with the MPCA Director and some staff people in Roseville. They admitted to us that the regulations were formulated before the "factory farms" were a reality. It is time for PCA to come to terms with the state of the art in the areas of odor, design, health and management impacts of these factories. We will accept the fact that the state Legislature must assume responsibility for the socio-economic impacts, but we feel that that area must be covered more conscientiously in the final EIS to be considered adequate.

Basically, we feel that, for PCA to live up to its responsibility, it must require the following of these 3 proposals, in this karst region, and of these proposers:

1) Borings and site inspections as per Walton's recommendations.
2) If these sites prove adequate as per those specifications, above ground slurries with digestors to replace the lagoons.
3) Injection of the manure into the soil at proper rates.
4) Issuance of the permit in the names of the proposers and ALL investors.
5) Immediate quaranteen of the facilities in the event of infection or disease.
6) Prescribed and required clean-up procedures and a time frame for their completion to be written into the permit.
7) Specific penalties for failure to live up to the terms of the permit--written into the permit.
8) A bond to be posted in the amount equal to costs for worst-case correction.

We think these measures would go a long way in making these operations the kind of things that would <u>not</u> present unacceptable risks to our environment. Further, we feel they are "feasible and prudent" and totally within the terms of the State Environmental Policy Act.

Anything short of these measures would represent a failure of PCA to come to terms with its responsibility to the environment of the state--and would only increase the potential for more stringent state-wide actions, as has occured in Iowa.

Thank you.

July 5, 1979

Conclusions of Perry-Schroeder-Kunde EIS
Prepared by: Mary Ellen Kersch

I Health:

While there are potentials for health hazards to neighboring herds and humans as a result of the proposed actions, that potential is considered to be low. This potential, however, will increase with an increase of similar facilities to the area. Importantly, the potential is quite dependent upon each operator's management practices.

II Ground and Surface Water Contamination:

The facilities sites and areas designated for receiving manure present potential problems due to karst features. Only detailed borings and on-site evaluations, conducted by someone knowledgeable in karst, will be able to properly assess this potential. An increase in facilities similar to these proposed will increase the potentials for water contamination. While management can mitigate some of these risks, it cannot insure avoiding a potentially serious problem, especially if the borings and site inspections verify seriously karsted topography.

III Odor:

The odor model presented in the draft EIS is severely handicapped by lack of available laboratory information, numerous assumptions, and lack of verification — and cannot be considered to be an accurate representation of the potential for odor impacts of swine facilities such as the proposals. Far more serious and long-range odors have been reported. Swine manure odors are lingering and penetrating and are, therefore, a problem beyond the actual time when they are spread to an area. They drastically affect those who receive them; those effects range from physical irritations (burning sensations in eye, nose, throats; vomitting, headaches), to mental fatigue and emotional anxiety. Additionally, farmers affected by odors from existing operations report a devaluation of their homes and land, as a result of these odors.

IV Socio-Economics:

These facilities will be eligible for tax breaks, investment credits and accelerated depreciation which will allow them to sell at an actual loss — or a smaller margin — than farmers

who are unable to produce hogs through similar investment techniques. There is a potential that these operations may increase the number of hogs going to market, thus lowering the price. In Nebraska, where a strong trend for such facilities as these has occurred, hog production on the family farm is reported to be in jeopardy. Thus, there is a potential that family farms in Minnesota will experience adverse economic effects if hog production by large facilities, such as these, proliferate in this state.

II Management:

While specific management practices were disallowed as a discussion topic in public testimony during the hearing, P.C.A. has had rather extensive dealings with Calvin Perry, at least, to be ~~under~~ aware that mitigation reliant upon management, in his case, must be discounted. Management practices of the other proposers should be reviewed prior to permit issuance. Because management was found by the EIS to be so important a mitigative measure, MPCA should make management a central part of permit procedure for future similar facilities.

VI Design:

The draft EIS states that above ground tanks may well be more suitable to this East region than the lagoons proposed by Berg and Schroeder testimony and submitted data affirm this preference. Because these facilities may precage a proliferation of similar facilities to this region, because the area is one of high-density farming, and because MPCA is experiencing increasing odor complaints across southern Minnesota, as a result of these manure storage facilities, odor control devices should be incorporated into the design. Because the facilities are of a high-volume, concentrated nature, this may require an expertise beyond the norm, but is appropriate because the nature of these operations is beyond the norm.

VII Risk vs Benefit:

While the benefits of these operations accrue dramatically to the proposers, the greater risks are to their neighbors. These risks include adverse odors, health, water and socio-economic impacts. It is, therefore "feasible and prudent" to require the proposers

to minimize those risks to the extent possible, utilizing currently available technology. It is also "feasible and prudent" for UPCA to mitigate these potentials through its permit process, requiring the following of the proposers in their permits.

A) Extensive evaluations of designated manure-receiving areas and site-boring prior to permit consideration (to ensure feasibility of those sites and areas)

B) Utilization of above ground tanks with methane digesters (to mitigate water and odor pollution)

C) Injection of manure into the soils (at appropriate rates and on appropriate parcels)

D) Immediate guarantees of facilities in the event of disease or infection.

E) Prescribed corrective procedures and a time-frame for their completion (in the event of potential pollution problems).

F) Performance bond equal to cost of worst-case clean-up (to avoid tax forfeiture or bankruptcy, leaving pollution problems unresolved).

G) Operators and owners to successfully complete thorough instruction program in proper management techniques (prior to issuance of permits)

H) Issuance of permits in the names of all owners (with all sharing in liabilities resulting from poor management practices)

2801 Osjor Circle
Rochester, Mn 55901
July 6, 1979

RECEIVED
JUL 10 1979
OFFICE OF HEARING
EXAMINERS

Re: testimony by Lenden Olson on Peny-Schroeder-Kunde
Draft EIS

1) "Permit process is appropriate for many concerns, including management". PCA record has been very poor in terms of background investigation of site, design and management -- and enforcement! Unfortunate, but a reality which we must face. Over two years ago, we tried to get PCA to consider management in the Peny permit and were told that consideration was appropriate to the EIS process.
2) "Many of these issues must be dealt with through re-permit process by P.C.A." If initial permitting is so sloppy, imagine the quality of re-permitting! Virtually a rubber-stamp process!
3) the study Mr Olson cited which he said indicates that odors were not a problem among most operations was a poll of managers and operators - not neighbors. The severity of the problem is exemplified by Iowa's new feedlot odor nuisance act and the increase of odor-nuisance lawsuits in Minnesota. Every time a newspaper article covers the

issues on our problem and mentions my name, I get another call for help. I assure you, I did not seek this position.

4) "ASCS designs holding ponds for purposes of protecting against water pollution - and their record has been good." ① These holding ponds are designed to protect against surface - not ground - water contamination ② their record is unknown. Dr. Alexander's testimony and submitted evidence on karst regions would seem to be pertinent.

5) "Methane digesters should not be discounted by the EIS simply because they require some management." Amen. An interesting point, the EIS says management is critical to mitigation, but most owners get into these things because they are perceived as a means of minimizing management demands.

6) "Socio-economics cannot be given more than a cursory review in the EIS because it cannot deal in detail with areas not considered legal by the state legislature." Not true - to assume that our state legislature is incapable of edification is to give up hope (although it often is difficult to sustain, at times). This EIS

is intended to compile data pertinent to the issue - the reaction to that data is not a concern, but the collection of it *is* appropriate. Because this is the first (and probably last) EIS on fireworks, it is imperative that all pertinent information be included.

Mary Ellen Kersch

1. Ms. Mary Ellen Kersch indicated that the EIS does not adequately address the worst case conditions.

AGENCY RESPONSE: See Page 13, Response 15.

2. Ms. Kersch commented on the use of modelling to predict odor impacts.

AGENCY RESPONSE: See Page 10, Response 9.

3. Ms. Kersch asked if there were complains for other large confinement facilities and were any owned by the proposers.

AGENCY RESPONSE: Complaints have been received by the MPCA for two facilities owned by two of the proposers, as well as other large facilities. Many complaints have also been received concerning small farm operations.

4. Ms. Kersch asked whether serious odor represents "impairment or destruction of air --- within the state" as defined by 116D.02.

AGENCY RESPONSE: This question was addressed in the draft EIS (DEIS 4-9, 4-12; letter to Myron Greenberg from Robert Moilanen 7/20/79).

5. Ms. Kersch asked about actual operation success of mitigating measures described in the draft EIS.

AGENCY RESPONSE: This was addressed during the public meeting. (TR 23-26)

6. Ms. Kersch questioned whether one of the proposers would follow good management practices.

AGENCY RESPONSE: The MPCA has no guarantee that any individual will follow correct procedures; however, it is to the economic benefit of the proposers to follow correct management procedures. Economic benefits from proper management do not preclude poor management practices.

7. Ms. Kersch raised the issue of hired help implementing measures to reduce odor impacts.

AGENCY RESPONSE: Testimony (TR 29) indicated that average hired help can implement the mitigative measures discussed in the draft EIS. The MPCA cannot know whether certain individuals hired to manage farms will implement the measures.

8. Ms. Kersch asked if MPCA would follow the recommendation of local officials regarding these facilities.

AGENCY RESPONSE: This was addressed during the public meeting. (TR 35, Mr. Anderson)

9 Ms. Kersch raised the issue of improper disposal of dead animals and health hazards which may result from that practice.

AGENCY RESPONSE: This was addressed during the public meeting. (TR 39-41, Dr. Bane; DEIS 5-26)

10. Ms. Kersch asked about selling of infected herds (pseudo-rabies) and quarantine of animals.

AGENCY RESPONSE: (TR 40, Dr. Bane) Additionally, the Livestock Sanitary Board has regulations governing quarantine and selling of infected herds. The Board has the authority to quarantine herds, supervise selling of infected herds, supervise destruction of animals, supervise transportation of animals, and order disposal. Regulations relating to swine are:

Minn. Reg. LSB 50-54	General Sanitation
Minn. Reg. LSB 57-59	Livestock Feeding Premises
Minn. Reg. LSB 60-	Condemnation, Slaughter & Indemnity
Minn. Reg. LSB 61	Isolation and Quarantine Because of Disease
Minn. Reg. LSB 10	Control of Anthrax
Minn. Reg. LSB 14	Control of Hog Cholora
Minn. Reg. LSB 17	Control of Rabies
Minn. Reg. LSB 21	Control and Eradication of Swine Buicellosis

11. Ms. Kersch asked what the result would be if the final shower before leaving the facility were omitted.

AGENCY RESPONSE: This was addressed during the public meeting. (TR 41, Dr. Bane)

12. Ms. Kersch raised the issue of comparing and spreading of human waste to manure application.

AGENCY RESPONSE: This was addressed during the public meeting. (TR 41-44; 167-169, Dr. Loehr)

13. Ms. Kersch raised the issue of potential health hazards of spray irrigation and the role good management plays in mitigating effects.

AGENCY RESPONSE: This was addressed during the public meeting. (TR 43-44, Dr. Loehr; 45-46, Dr. Bane)

14. Ms. Kersch discussed management and indicated that the final EIS address the effects of poor management.

AGENCY RESPONSE: Poor management may result in worst case conditions as discussed in the draft EIS. This might include swine odor impacts (DEIS 5-7 - 15) surface and ground water pollution (DEIS 5-22, 23, 24), possible spread of both human and swine disease (DEIS 5-26, 5-30) or any combination of those. The DEIS discusses alternatives which tend to minimize the effects of poor management by better design such as a concrete base at the pumping area in manure pits to avoid possible rupture of plastic liners, aerators to reduce odors, slurry tanks to reduce potential for ground water contamination or infections. (DEIS 6-1, 6-17, 6-19, 6-20; 10-1, 10-20) Although good design can reduce the effects of possible poor management, it cannot totally eliminate the effects. (DEIS 7-11) (TR 43-44)

15. Ms. Kersch indicated that all owners should be named in the permit required for swine facilities.

AGENCY RESPONSE: The proposed rules (6 MCAR 4.8051) which will govern facilities of this type will name all owners on the permit.

16. Ms. Kersch indicated that the decline in size of farms reported may result from an increase in hobby farms in the area.

AGENCY RESPONSE: Agency agrees. This was addressed during the public meeting. (TR 56)

17. Ms. Kersch indicated that the draft EIS was in error in considering the trend to swine confinement as only one factor affecting the future of the "family farm."

AGENCY RESPONSE: The future of farms owned and operated solely by a single family is affected by many factors in addition to the trend toward confinement of animals. Ms. Kersch mentioned in her comment No. 14 that the spread of hobby farms may be affecting size of farms in the area. The trend toward people moving to the country for the life style but not actively working the land tend to contribute to the consolidation of larger and larger parcels of land with fewer owners. Another contribution are factors affecting other types of animal raising operations (beef) and crop prices. These are unrelated to swine confinement but still would affect the economics of single family owned farms. Another contribution is the growth of residential developments near towns. The high price for land which can be gained by farmers who sell to developers or economic incentives for farmers themselves to develop their land for other than farm purposes will contribute to the future of traditional farming in southeastern Minnesota as well as state-wide. Additionally, strict environmental regulations and land use restrictions may affect family farms which do not have the capital to invest in pollution control technology. "Future modifications of existing regulations to include small producers is likely to be a significant factor in forcing small and particularly marginal producers out of the production segment of the industry. Waste treatment costs per pound of pork marketed decrease as the size of the production unit increases." ("Technology Assessment of the Hog-Pork Industry,"MRI report to National Science Foundation NSF-C-850, July 8, 1977)

18. Ms. Kersch raised the issue of the social impacts of confinement facilities of this type and the future of the family farm.

AGENCY RESPONSE: The MRI Report,"Technology Assessment of the Hog-Pork Industry,"July 8, 1977, contains an assessment of trends and impacts of various types of facilities. The introduction and table of contents is included in Appendix III.The full report is available at the MPCA for review.

19. Ms. Kersch raised the issue of how solids would be disposed of during "nonspread" seasons and whether above ground storage alleviates the problem of solids application.

AGENCY RESPONSE: The Schroeder proposal storage basin has 295 days of storage capacity (DEIS 3-23). This capacity of

approximately 10 months is sufficient to account for any delay due to inclement weather conditions for injecting. The Penz facility has 305 days of storage. Solids and liquids are not separated in above ground manure storage as proposed in the draft EIS for the Hilltop proposal. The two tanks proposed for the Hilltop facility have 330 days of storage capacity and would have the capability of storing over a long winter period as would large settling basins such as in the Schroeder and Penz proposals.

20. Ms. Kersch raised the issue of requiring the recommendations of Matt Walton be followed.

AGENCY RESPONSE: Deep soil borings at each site are identified as a measure which would add further information to help identify the potential for sinkhole development (DEIS 6-10). The extent of the requirements, including Dr. Walton's recommendations, needed to obtain a permit for these individual facilities will be determined as a part of the permitting process.

21. Ms. Kersch raised the issue of whether existing borings are adequate to determine potential for ground water protection.

AGENCY RESPONSE: No borings have been taken at the Hilltop site and would have to be completed to evaluate sinkhole potential. Additional soil borings driven to a minimum of 40 feet would be useful in further defining the sinkhole potential at the Penz and Schroeder site. (DEIS 1-7, 6-10)

22. Ms. Kersch raised the issue of monitoring leaks from storage basins.

AGENCY RESPONSE: The present proposals do not include ground water monitoring. The permitting process will determine the necessity for monitoring and a program which would be followed. (TR 58-59) Leaks from above-ground tanks could be identified much quicker and perhaps repaired more efficiently than with below-ground storage alternatives.

23. Ms. Kersch raised the issue of possible pollution of Silver Creek being a health hazard to cattle in the area.

AGENCY RESPONSE: Pathogens do not survive well in stored manure. Nitrates reaching the stream would depend on the severity of the spill, flow rate of the stream, volume of water, distance to cattle, and other factors.

24. Ms. Kersch raised the issue of the effects of catastrophic sinkhole development under the storage basins and referred to Altura.

AGENCY RESPONSE: If catastrophic sinkhole development occurred, ammonium and nitrates would be released to the local ground water. The number of wells which potentially could be contaminated is unknown as well as the extent of cost to replace wells which might be contaminated. The Altura waste treatment lagoon was designed to release not more than 400 gallons of liquids per acre per day but some liquid definitely seeped out of the stabilization pond which may have contributed to the collapse. The proposed storage facilities are designed to be leak proof.

25. Ms. Kersch raised the issue of how fast ground water could become contaminated.

AGENCY RESPONSE: The time required for ground water contamination, should it occur, would depend on the soil thickness available for attenuation. (DEIS 5-23) If the manure reached the karstified bedrock pollution might move through the bedrock rapidly, depending on the character of the bedrock, ground water flow, rate of leakage and other factors (DEIS 5-22). The specific time is unknown.

26. Ms. Kersch asked how ground water could be decontaminated, at what cost and who would bear the cost.

AGENCY RESPONSE: For all practical purposes, aquifers cannot be cleaned except by eliminating the source of the pollution and waiting for natural processes to restore ground water to an acceptable quality. The costs of future potential ground water pollution would most likely be borne by those affected.

27. Ms. Kersch gave four suggestions which she felt might diminish the potential for ground water impacts.

AGENCY RESPONSE: These suggestions may reduce the potential for ground water impacts and will be referred to the Division of Water Quality for consideration during the permitting process.

28. Ms. Kersch asked whether above-ground tank storage (glass fused steel) is safer than pit storage.

AGENCY RESPONSE: Above-ground storage reduces the potential for ground water and surface water contamination which would result from the release of stored manure due to rupture.(DEIS 6-10, TR 63-64)

29. Ms. Kersch asked whether damage to above-ground storage tanks would be detected and remedied more easily than pit storage.

AGENCY RESPONSE: Since above-ground storage tanks would be visible, any failures would be more easily detected. The ease of repair of above-ground storage versus concrete storage facilities is unknown. Above-ground storage may require ordering new sections from an out-state company to replace defective sections, rather than being able to use local concrete suppliers.

30. Ms. Kersch asked if above-ground storage was a feasible and prudent alternative to pit storage.

AGENCY RESPONSE: Yes. Tank storage is discussed as an alternative to the storage basin in the Penz and Schroeder proposal and the draft EIS identifies tank storage as affording greater protection in karst areas. (DEIS 1-10, 10-15, 10-16; TR 64-65)

31. Ms. Kersch asked if, disallowing cost, there is any reason to select pit storage over above-ground storage.

AGENCY RESPONSE: Above-ground storage provides an added safety measure to protect against environmental impacts. (DEIS 1-10) Consequently, if cost to the farmer is not considered, then above-ground storage would be the environmentally safest choice.

32. Ms. Kersch asked if the environmental risks identified from the three proposals would increase if the number of swine confinement facilities increased.

AGENCY RESPONSE: Impacts on individuals may not increase with more facilities. Location of the facilities would have an effect on the impacts to individuals; however, increasing the number of facilities, assuming identical design, may expose a larger population to the same impacts. If facilities were located very close to the three proposals discussed in the draft EIS, then the impacts may increase for the local population or area. On a regional basis, the potential for impacts would increase.

35. Ms. Kersch suggested that only persons having documented good management be allowed to operate facilities or have only facilities permitted in which management would play a smaller role.

AGENCY RESPONSE: Management is a most important factor in determining the potential for environmental impacts from large swine confinement facilities. This is a factor which could be considered during the permitting process. In evaluating the prudence of alternatives, the MPCA considered whether existing management would be sufficient to ensure adequate performance.

36. Ms. Kersch asks whether it makes sense to take all "feasible and prudent" measures to reduce odor.

AGENCY RESPONSE: The MPCA works with livestock operators to develop methods to reduce odors. The authority the state has to control odor is discussed in the draft EIS (DEIS 4-9).

37. Ms. Kersch asked Mr. Larry Landherr if he was aware of Dr. Goodrich's suggested method of odor control for swine waste.

AGENCY RESPONSE: This was addressed during the public meeting. (TR 72, Mr. Landherr)

38. Ms. Kersch asked if methane digestors should be required as the most "feasible and prudent" alternative.

AGENCY RESPONSE: This was addressed during the public meeting. (TR 73-75, Dr. Loehr)

39. Ms. Kersch submitted suggestions for permit conditions.

AGENCY RESPONSE: All permit suggestions for permit conditions will be made available for consideration by the Division of Water Quality in its permitting process.

40. Ms. Kersch submitted a summary of her assessment of major issues relating to these facilities and suggestions for permits.

AGENCY RESPONSE: The MPCA appreciates Ms. Kersch's assessment.

41. Ms. Kersch submitted a response to another citizen's comments.

AGENCY RESPONSE: Comments noted

RECEIVED
JUL 25 1979
OFFICE OF HEARING EXAMINERS

Gary J. Esterby MG
Rt 1
Dennison, Minn. 55018
1-507-778-3343

July 24, 1979

Minnesota PCA,

To Whom it May Concern,

After attending the two Nights of a hearing in Rochester concerning the feedlot proposals by Deny Schroeder, & Kunde, I find it very disturbing to see that most of the work done so far had been from an office and books with only a mid-winter site inspection made. Site evaluations cannot accurately be made from a book. After hearing from Dr. Alexander, it appears portions of the material are untrue or presented from a "protectorate" standpoint in favor of the feedlots. I thought the policy of the MPCA was to protect people from possible polluters. No real effort was made to find information concerning the pertinent geology as pointed out by

Dr. Sloan. Something else rather disgusting was the amount paid for the draft study. If a small portion of that money had been spent on a site evaluation, the conclusion of that report would be as important as that resulting from all office hours!

So many of these types of operations are owned & financed by outside investors, & if it wasn't because of a tax advantage, why would they even get involved?

Kunde, in particular, has said his would be a family-farm-operation. Every indication at the township & county level has been that it would be a corporation of outside investors; however all the names of the investors are not on the application.

Because of the large investment involved, these pig-factories will go at or near capacity regardless of the price of market hogs. That will

leave the small operators to pick up responsibilities of the up's & downs involved with the supply & demand market. It takes only a small deviation in supply numbers to cause huge savings in the market place.

Because the management has so much to do with whether or not the business will be compatable with the people in the neighborhood, it should also be a part of the decision as whether or not to grant a permit.

I am a farmer who milks cows, raises a small number of pigs, chickens, & steers. Each of these animals & their manure has its own particular scent which can be offensive more so to one than to another. Problems with manure arise when it must be stored, spread late, & when there is a large amount to dispose. Even a poorly managed bird cage can create an offensive odor; however because of its size, it is not likely

to create a disturbance. Because these proposals handle large amounts of manure that must be stored & spread later, management plays a major role in whether or not problems will develop.

I have written this letter as a

1. concerned citizen
2. adjacent landowner to one of the proposers
3. member of the township zoning commission
4. township supervisor

Sincerely,

Darryl E. Eberly

RR1

Dennison, Minn

55018

1. Mr. Gary Esterby expressed disapproval with the EIS process in that it does not provide for gathering of original data, (i.e., geologic investigations) on-site inspection during the summer and cost.

AGENCY RESPONSE: It is the responsibility of the MPCA to bring together existing information into a document within 120 days after an EIS order is published in the EQB Monitor. The order was published on January 22, 1979, thus requiring that the draft be distributed in late May. The EIS process is not a research project but a collection of existing information which is usually reflected in published data and maps. The public review process allows for additional information to be considered such as the original mapping of potential sinkholes which was done by Dr. Calvin Alexander and Mr. Eric Mohring. The maps which Dr. Sloan referred to in his testimony were and are unpublished (TR 82) and were not made known or available to the MPCA or its consultant by the Minnesota Geological Survey during the time information was being compiled for the draft EIS. The MPCA appreciates receiving this information from Dr. Sloan through the public review process and will, in the future, specifically request this unpublished work for proposals in southeastern Minnesota.

2. Mr. Esterby raised a concern about investors and tax advantages which accrue to the owners, particularly Mr. Kunde's proposal.

AGENCY RESPONSE: The scope of the EIS is to examine environmental impacts of a proposal and does not purport to address the motivation of the proposers in selecting a type of operation. However, corporate farming has been identified as having distinct legal, estate and tax advantages for all types of farms (DEIS 5-37). Hilltop Pork Producers (Mr. Donald Kunde's proposal) is not presently incorporated but if it were, Mr. Kunde would probably attempt to do so as a domestic family farm in accordance with State law (DEIS 5-39).

3. Mr. Esterby raised the issue that these facilities will sell hogs regardless of how price will affect the market.

AGENCY RESPONSE: See Page 123.

4. Mr. Esterby raised the issue of the importance of management in providing for environmentally sound operations.

AGENCY RESPONSE: See Page 37, Response 14.

Janet Cain
Environmental Planning + Review unit

Who - Mr & Mrs Kermit Sweenson
What - Concerned about Hilltop Pork
producers facility site.

We live about 3 tenths of a mile east of the Proposed site + 2 tenths West of Kundes present Confinement + We also have have another Confinement about ½ mile Northwest of us. the odor is just terrible lot of the time. We cant hang out Clothes out + ~~Lot~~ of the time have closed doors + Windows. Can't enjoy the outdoors, like We did a few yrs ago. This farm has been in the family over 100 yrs + We feel we were here first and why should we have to put up with this big operation, with all the odor + pollution that goes with it. Donald Kunde present operation he hauls manure, whenever he feels like it, not twice a yr pg 3,18 as he stated.

The proposed site has had lots of liquid manure Put on it. The Proposed site was originally owned by the Swensons so we know its limestone rock there

and also know there's ~~also~~ Pathales too & also fissure in the rock. in the winter it steams out of that rock so this why we request insight testings and borings. if this site become a reality, we want to have it made safe & not Polutte our water supply, with the spreading of Manure and the run off it just might. our well is only 120ft deep & fed by groundwater Were almost sure.

We know it will devalutate our building site, who wants to buy a smelly home. Were also concerned about our township road not a county road as stated. which cant take it at all, with the big semi trucks & the hauling of the manure ect & why should us tax payers have to pay for the road that those big operators will be using. We have a bad approach so if we have all that traffic by here, someone will get killed & We feel it isn't fair to us.

thanks for your time
Kermit & Gladys Stevenson

RECEIVED
JUL 23 1979
OFFICE OF HEARING
EXAMINERS

Dear Mr Greenberg

Mr & Mrs Kermit Swenson
Kenyon, Minn 55946
Telephone 8-507-824-2317

My husband & I are very concerned about the Hilltop Pork Producers facilities site just 4 tenths of mile West of us. Kunde has a present confinement about 4 tenths of mile east of us, We also have another confinement about ½ mile north west of us. So when the wind is right we have plenty of odor, We can't enjoy the outdoors like we used too and lot of the time keep doors & windows closed. This farm has been in the family over 100 yrs, We've farmed it 35 yrs. My husband will be 65 yrs this aug., We would like to retire here for a while yet, but if we get another big confinement, We know the stench will be terrible & chase us out. We don't feel its fair to us. We ~~was~~ were here first. Kunde's present operation, he's hauling manure, not twice a yr but whenever

he feels like it, + thats every few wks
Hes hauled lots of liquid manure on
the Proposed site. The Proposed site was
orginally owned by the Sievensons, so we
know it is limestone rock there +
We know there there is Pot holes +
allso a fissure in the rock, in the
Winter it steams out of the rock. Just a little
way 70 rds from the Proposed site, we have
tile lines, here is a map of our farm
+ where the tile lines are, Not far from the site
so thats why
we request unsight testing + borings,
so if this proposed site becomes a
reality, make sure it is safe + will
not Polutte our water. our well is 120ft
deep fed by ground water, other neighbors
around here have shallow well + ground
fed. We know it will devaludate
our building site. who wants to buy
a smelly home. Were also concerned about
our township road, not a County road
as was stated in the E.I.S. Statement. We
know this road will not stand up, in the
spring or anytime with all the semi's
that will be using it. and why should
us tatpayers pay for a road that those
big operaters will be using steady.
all the get out of it is the odor + air

Pollution is possible in a few yrs
pollute our water too.
There is also a rock quarry about
70 rds from the Proposed site.

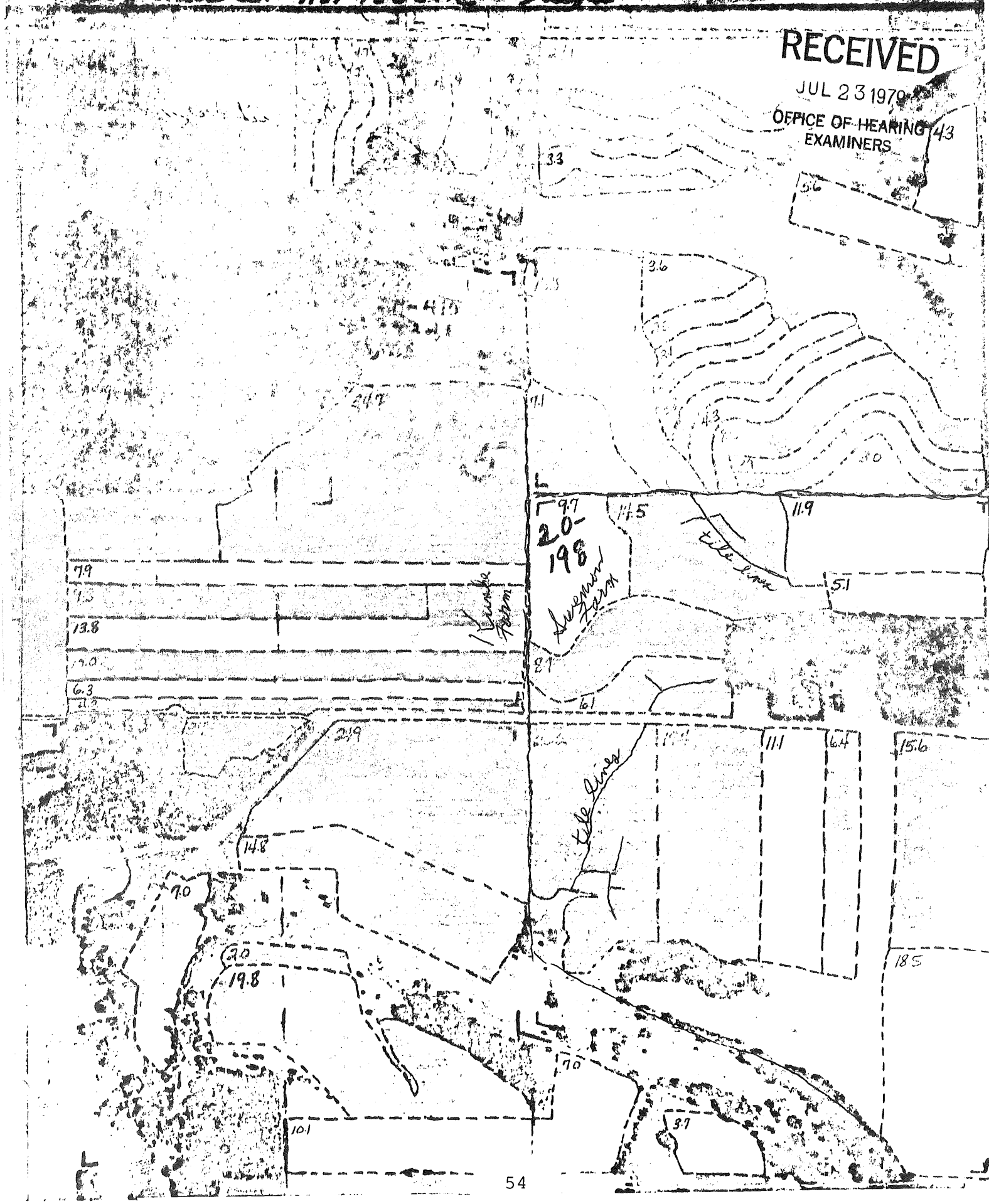
Thank you for your time

Kermit & Gladys Swenson
Kenyon, Minn.
R.R. 3 55946

Permit Revision

Boeing Co. Not To Scale 3 Lights # 16-2-93

RECEIVED
JUL 23 1979
OFFICE OF HEARING EXAMINERS



1. Mr. & Mrs. Kermit Swenson indicated that they experience severe odor impacts from existing facilities at their location which is 2/10 mile from one existing facility and 1/2 mile from another facility.

AGENCY RESPONSE: The odor model predicted that under worst case (i.e., unmitigated) conditions, particularly offensive odors might be experienced within .34 miles of the facility site (DEIS 5-11). The Swenson residence, according to the USGS map, appears to be a little more than 1/3 mile from the facility site and may experience severe odor impacts.

2. Mr. & Mrs. Swenson requested on-site borings at the Hilltop Pork Producers facility site.

AGENCY RESPONSE: On-site soil borings are suggested as one means of helping to identify potential geologic characteristics which may lead to potential pollution problems (DEIS 6-10, 6-19, 6-20).

3. Mr. & Mrs. Swenson indicated a concern for manure spreading on the facility site.

AGENCY RESPONSE: Manure is currently applied on this parcel at the rate of 11 tons/acre/year (DEIS 3-16). The proposal would inject manure which would reduce the potential for surface runoff (DEIS 3-16) and odor from spreading. Application of nutrients would be at agronomic rates (DEIS 5-44) and would not constitute an increase over existing conditions on this parcel. Periodic soil testing should determine the nutrient loading for each parcel (DEIS 5-44).

4. Mr. & Mrs. Swenson indicated a concern for devaluation of their residence.

AGENCY RESPONSE: There is a potential for devaluation of residences near facilities due to odor impacts (DEIS 5-41, 5-42).

5. Mr. & Mrs. Swenson were concerned about the roads being able to support the loads and additional traffic.

AGENCY RESPONSE: The State and county roads have load limits which must be complied with. These roads are reported to be used below traffic capacity (DEIS 4-78). Load restrictions, upkeep, and corrections for dangerous approaches for township roads as identified by Mr. & Mrs. Swenson are the primary responsibility of the Township Board.

6. Mr. & Mrs. Swenson submitted a second letter expressing essentially the same concerns as addressed above and submitted a map indicating field outlines and tile lines.

AGENCY RESPONSE: These issues have been addressed in the above responses.

RESOLUTION

The Board of Farmington Township recommends that the Minn. State P C A require the following regulations for concentrated livestock operations in order to help protect the public from possible water pollution and odor problems.

1. Require slurry store or similar container to hold the affluent.

2. Require the knifing into the soil of the affluent and the use of an enclosed tank for hauling of affluent.

3. Require standards of how much affluent may be applied per acre according to soil comformation.

4. Require a set amount of acres to handle the affluent safely and a guarantee of several years availability by lease or ownership by operator.

5. Require strict monitoring of these regulations and if violations occur penalities severe enough to induce confirmation.

L.H. Reiter, Supervisor

Hugh Liebenow, Supervisor

Lester Koenig, Supervisor

1. The Farmington Township Board submitted a resolution recommending new regulations for concentrated livestock operations.

AGENCY RESPONSE: New feedlot regulations are currently being promulgated (1979). State-wide hearings were held and new rules (6 MCAR 4.8051 and 4.8052) will most likely go into effect in the fall of 1979.

NC

RECEIVED
JUL 25 1979
OFFICE OF HEARING EXAMINERS

How Big is Big Enough?
does Don really need it?
He has enlarged both sites, on home place & at Moland. In fact the Moland site has too many hogs for the amount of manure. And still he wants more?

The neighbors at Moland have already signed a petition against him.

At the last meeting in Rochester, Don complained about his neighbors cows polluting the stream, these streams have been used by these farmers & their animals for the last 100 yrs or more. There also a big difference between 40 cows to 9,000 hogs. Its not just pollution of water, its pollution of air also.

I wonder how he feels towards his neighbors? Not much, when he spreads manure before graduation in front of his neighbors house.

I hope & pray that the PCA members will listen to Dr. Alexander, giving Don a permit would be an injustice to the community.

Don should remember the Golden Rule: do unto others, as you would have others do unto you.

Betty Henderson
Kenyon, Minn
55946

1. Betty Henderson submitted comments on Mr. Kunde's Moland site facility.

   AGENCY RESPONSE: The MPCA appreciates Ms. Henderson's comments.

Dr. Roy Cucchiara
Testimony June 25, 79

1. Can hydrogen sulfide be scientifically termed "representative" of swine manure odor?

p. 5-5,6 of the draft EIS list four major "problems connected with the use of H_2S as the 'most reasonable representative odorant'"

1- wide variability of range of threshold concentration
2- "annoyance" levels very difficult to quantify
3- wide variability in H_2S concentrations in swine buildings
4- H_2S depletion in swine operations virtually unknown

I have consulted a professional chemist who explained these further inadequacies with H_2S as a model.

1- H_2S is a light gas and tends to rise upward when released unlike some other odorants
2- the carbonyl group of chemicals from pig manure are heavier and stay closer to the ground so their odor carries farther. They are also more annoying.
3- A combination of H_2S and short chain fatty acids (carbonyl group table 5-1.1) a) could cause vastly more intense and annoying odors, b) residues of these combinations could be very difficult to remove from items of contact, c) could carry farther than one chemical alone.

EIS itself notes (p.5-3) that investigators have shown carbonyls are believed to contribute to perceived odor through an additive or synergistic effect, i.e. the resultant odor is stronger than the sum of the chemicals together.

Thus, the entire odor problem as addressed in the EIS is based on H_2S which the EIS recognizes as inadequate but does not emphasize as such.

It is an error to base decisions regarding odor effects on such inadequate and misleading information.

2. Is it possible that there is no "representative" odorant? Could the odorants of swine manure in combination produce a unique odor and that this odor is greater than the sum of the odorants?

This is alluded to and recognized in the EIS but ignored in search of a "model" of odor to measure (p. 5-3 p.5-5).

Swine manure odor is unique. The "representative" odor of H_2S does not have the same intense characteristics, chemical compounds, or molecular weight to base an entire equivalent odor model upon.

3. Was there any attempt to verify the odor model?

p. 5-7 of EIS
The methodology of determining quantity of of the emissions is based on four things.

1- "limited data" on concentration of H_2S inside swing facilities

p. 5-3 of EIS states, "Virtually no studies have been performed for an actual anaerobic settling basin or outdoor waste storages facility, the component of swine operations that generally constitutes the principal source of odor.

2- results of N_2 balance and NH_3 release. This work is valid but has absolutely no bearing the overall odorant production.

3- assumptions - re: emissions

4- assumptions - H_2S/NH_3 ratio

Thus the "quantity" of H_2S released is really a flat out guess.

How will this "quantity" of H_2S spread? Elaborate and honest calculations are performed in a mathematical model which is never tested in real life in the EIS.

4. If H_2S is the wrong thing to measure for swine manure odor and the calculated model was not tested in this EIS what can we use to intelligently get information about the spread of such odor?

Already in existance are the Wan Feeder Pig Co-Op, Mr. Penz's lagoon on the home farm (built without a MPCA permit two years ago), International Swine Facility near Stewartville, and others.

Doesn't it make good sense to study these real life situations? What do the people who live around these facilities say about odor and ground water contamination?

Letter to Mayo of Adrian from the City Council of Bigelow, Minnesota:
"odors we endure are comparable to having dead animals on your lawn", "...the odor radius is about 5 miles minimum regardless of wind velocity..."

Letter from Mr. and Mrs. Jacobs, Rushmore, Minnesota to people of Adrian.
"We live ½ mile south from ... hog confinement setup...odor is so severe that being outside one can hardly keep from vomiting." We are also 8 miles northwest of Naser hog confinement and when the wind is from that direction we can smell that too..."

Letter from a dairy farmer from Wisconsin who lives 3/4 mile from a 3,000 hog confinement setup and represents neighbors in a 5 mile radius.
"...we were informed it would deliver no odor...but hog odor fills the air.
Effects:
1. Household – cannot picnic in our yards, hang our wash, or even eat an apple from our trees because the odor is on the peeling. Eating and sleeping inside we are not free of the odor.
2. Our barn – smell can contaminate Grade A milk from 3/4 mile away.
3. Knifing machine is no solution because if soil conditions aren't just right, or it is raining, or they can't pull the machine they just pour the manure over the ground.

Minneapolis Tribune article January 28, 1979.
"Kansas City, Missouri – writes about odor problems with big hog operations and a farmer filing $175,000 suit against the hog operation.

These are drastically different odor problems than the situation predicted by the "model"in the draft EIS.

It seems more reasonable to believe the testimony of the people living near these facilities now rather than an unproved "model" of odor. These folks cannot express strongly enough the terrible inpact these odors have had on their quality of daily life and on their property values.

1. Dr. Roy Cucchiara questioned the validity of the odor model.

AGENCY RESPONSE: See Page 10, Response 9.

2. Dr. Cucchiara raised the issue of model verification.

AGENCY RESPONSE: The model has not been verified; however, most of the locations of individuals who testified at the public meeting about odor impacts at some existing facilities which, if considered unmitigated regarding odor, tended to fall within the 1/2 mile radius identified by the model for pit storage as having the potential for particularly offensive odors and chronic odor problems under worst case conditions (no odor mitigation, stable atmospheric conditions) (DEIS 5-14). The letters cited by Dr. Cucchiara include reports of odor up to 8 miles away, which is a far greater distance than that predicted by the model as being the distance for perception of odor. Odor impacts may, in fact, be felt at distances greater than the odor model predicted.

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EXAMINERS

July 17, 1979

TO: Mr. Myron Greenberg
Office of Hearing Examiners
Room 300
1745 University Avenue
St. Paul, Minnesota 55104

FROM: John H. Tinker, M.D.
R.R. #1, Box 107
Elgin, Minnesota 55932
(Viola Township)

RE: Draft Environmental Impact Statement
Regarding Proposed Hog Factories of:
Penz Farms Co.
Darwin Schroeder

Sir:

I reside on 40 acres, including a 300 tree apple orchard, very nearly midway between the two proposed hog factories listed above. Although I am an anesthesiologist, not a specialist in either public health or infectious disease, I can read the medical literature and I do have reason to do so.

The environmental impact statement in its final form must not perpetrate the multiple inaccuracies and misstatements found in the "draft" version.

Although I have major objections to the odor model, I confined my testimony at the two hearings in Rochester to questions of public health and public safety. Below is a detailed recapitulation of that testimony. Regarding the "odor" model, it is ludicrous to base it upon hydrogen sulfide, since that compound is not what one smells when one comes near one of these hog factories! On page 4-25 the draft EIS notes "those zoonotic diseases of possible significance to the proposed action are discussed below." Only nine diseases are discussed. On page 4-26-27 only 20 infectious diseases are listed (bacterial, viral and parasitic). In addition, table 4.3-1 (page 4-27) lists 12 toxins or toxic chemicals. I have found 55 diseases, excluding possible toxins! The following is a list of them. All are to be found in Hubbert WT, McCulloch WF, Schnurrenberger PR: Diseases Transmitted from Animals to Man, 6th Ed., Charles C. Thomas, Springfield, Illinois, 1975.

Disease	Page # in Above Reference	Possibly Fatal or not?	Comments Common names, etc.
Actmomycosis	361	Yes	
Arizonabacter	90	?	Not just in Arizona
Ascariasis	584	Yes	
Balantidiasis	775	?	
Botulism	259	Yes	
Brucellosis	18	Yes	
Chlonorchiasis	661	Yes	
Coccidiodomycosis	517	Yes	
Corynebacterium	267	Yes	diphtheria!
Cryptococcosis	540	Yes	meningitis
Cysticercosis	679	Yes	
Dioctophyma	564	Yes	kidney worm
Diphyllobothriasis	727	?	
Escherichia coli	94	Yes	dysentery encephalitis
Echinostomiasis	649	Yes	
Epidemic typhus	385	Yes	"Q fever"
Erysipeloid	271	?	"mad itch"
Fascioliasis	652	Yes	
Filiariasis	574	Yes	
Foot and mouth disease	862	?	
Glanders	123	Yes	
Gnathostomiasis	596	Yes	
Histoplasmosis	502	Yes	
Hydatid disease	689	Yes	
Influenza	839	Yes	"swine flu"
Japanese encephalitis	942	Yes	insect borne
Leptospirosis	436	Yes	jaundice, meningitis
Listeriosis	286	Yes	meningitis
Melioidosis	113	Yes	
Metagoniosis	657	Yes	heart worm

Disease	Page # in Above Reference	Possibly Fatal or not?	Comments Common names, etc.
Murray valley encephalitis	946	Yes	mosquito borne
Mycosis, cutaneous	480	?	
Mycosis, deep	480	Yes	
Opistorchiasis	663	Yes	liver worm
Pasteurellosis	132	Yes	bubonic plague
Smallpox	831	Yes	
Pseudorabies	825	?	But fatal to cattle!
Reovirus	920	Yes	infant death
Rift valley fever	950	Yes	Africa only
Salmonellosis	33	Yes	typhoid fever
Sarcocystis	804	?	
Schistosomiasis	628	Yes	Not yet in USA
Parainfluenza	851	?	
Sparganosis	732	Yes	encephalitis
Staphylococcosis	290	Yes	
Streptococcosis	298	Yes	
Strongylordiasis	601	Yes	
Tetanus	251	Yes	
Toxoplasmosis	805	Yes	
Trichinosis	545	Yes	
Trichostrongyliasis	617	Yes	
Trypanosomiasis	745	Yes	
Tuberculosis	303	Yes	
Vesicular stomatitis	900	Yes	
Vibriosis	229	Yes	meningitis + other sx
Yersinia	175	Yes	like tuberculosis

I do not imply: a) that this list is complete or b) that all these diseases are present in the USA. But there are human cases of every one, transmitted from swine, directly or indirectly, by other animals, insects, water, aerosols, etc. The draft EIS makes no mention of most of them — because they are mostly not threats in the US today. Why are they not problems today? Because of our superb public health measures. If these hog factories are poorly managed, they could easily become disease factories, and all that separates their manure from my drinking water is one layer of very thin plastic!

Next, I wish to discuss the few diseases that the draft EIS chooses to mention, to bring out some additional points.

1. Brucellosis - page 4-25

Symptoms are vague and the disease can be very difficult to diagnose. Affected persons often merely see their performance gradually decrease, complain of being "run down" etc. Consequences can be severe, including permanent arthritis, even death. This disease is common, in this country, and, because it is so difficult to diagnose, is a threat. Should a leak develop in the "lagoon", it is impossible to say how widespread it could become. Brucellosis is a disease which greatly concerns all veterinarians, for they are subject to it. They understand it — do these investors have the right to subject me to it?

2. Colibacillosis

A fancy name, deliberately designed to "turn off" the lay person. Go to Mexico, drink the water, and spend the next week with diarrhea — this is "colibacillosis". Now you have an appreciation for public health in the USA. At West Plains, Missouri, the collapse of a sewage lagoon drained 50 million gallons of sewage and resulted in 750 cases of severe gastroenteritis in just two days!* E. coli organisms are most famous for the above, but they also develop resistance to antibiotic drugs placed in swine feed. These resistant organisms are "super germs" in the sense that they are much more resistant to medical therapy e.g. antibiotics, in man.

3. Salmonellosis p 4-28

The draft EIS admits that this could result in "debilitating septicemia". What they leave out is the COMMON NAME for this — TYPHOID FEVER. Are they deliberately trying to mislead us? Do they think the public shouldn't hear the dreaded words typhoid fever? One of the first concerns during a flood is this disease. What about the three inch rainfall just after Mr. Penz or Mr. Schroeder has spread thousands of gallons of hog manure on the fields?

* Source: "Problems relating to safe water supply in Southeastern Minnesota." Minnesota Health Department, January 1979, pp A-26

4. Leptospirosis 4-30

This bacteria, similar to that which causes syphilis, does not have to be ingested, merely swimming in a contaminated creek could give a child this dread disease. Once again, the draft EIS makes light of this illness, which can produce the symptoms of meningitis. This is a severe illness, and can be permanently disabling and fatal. Penicillin does not work well against it. It can be prevented in swine if they are vaccinated (but that's a management question — we're not allowed to address). We who live near these factories are dependent upon so many such management practices I wonder which one will break down first.

5. Ascariasis pg 4-31

Nowhere does the EIS draft mention that "ascarids" are WORMS. It is not fair to the non-medically trained public that this EIS continues to hide under a semantic blanket of words only physicians and the like have ever heard. Ascarids are long round red smooth worms which live in human and animal intestines and are very hard to diagnose. Again, vague symptoms are present, i.e. generally "run down". The EIS says "the eggs are very persistent in the environment." Truth to tell, they may remain viable for DECADES!

6. Swine flu (called "influenza" by the draft EIS pg 4-31)

Nowhere is it mentioned that swine flu was most likely responsible for the worldwide flu epidemic of 1918-19 which killed infants and elderly by the hundreds of thousands worldwide. Nor is it mentioned that this same disease resulted years later in the development of the dreaded PARKINSON'S DISEASE in many people who managed to survive the epidemic. Although the pro-hog-factory people who wrote the EIS apparently are not concerned about swine flu, the USPHS was, in 1976, sufficiently so to try to immunize everyone in the USA! Doesn't that effort (laughed at now by some) lend credence to the seriousness of this disease?

7. Methemoglobinemia pg 5-25

This disease is tucked away in a different part of the EIS, under geology! The description is misleading in the sense that adults can most certainly become ill — and just as quickly. Also not mentioned is the potential that infants, chronically deprived of oxygen by nitrite poisoned hemoglobin, might well be BRAIN DAMAGED. Had the pro-hog factory writers taken the time to look, they could have found a much better description of this deadly disease in any text of hematology, (e.g. Williams Text of Hematology, 1972, pp 409-411). Anyone wishing to read further about the effects of water containing nitrates on infants can find multiple papers — going all the way back to JAMA 129:112, 1945!

The argument that if the swine are sick, they will die and not transmit these diseases is just NOT TENABLE. Many of the above diseases, resistant E. coli for example, do NOT produce symptoms in the pigs, especially in a poorly managed facility where no one is watching things very carefully. Many of the above diseases CAN be transmitted even if the swine appear healthy.

Another point: RISK. How much is too much risk? What if one child contracts leptospirosis and dies? Does this group of unnamed investors, most

of whom are doing this for its TAX INCENTIVES, have the right to subject my children (3 girls, aged 7, 9, 10) to ANY of these risks? If the hog factory was essential to feed the country, then risks might be taken, but it is NOT. American family farmers have been doing a super job all these years, I say let them continue.

What do I do when my well becomes contaminated? How many years will it take to clean it up? Whom do I turn to for help if my wife becomes depressed because of constant stench? Sue Penz? Sue Schroeder? Appeal to the Supreme Court? Sure.

This draft EIS is a poorly disguised cover-up of prior approval on the part of Minnesota PCA staff. It is poorly written, with multiple errors, misleading statements, half truths, some of which are documented above. These projects are clearly opposed by virtually all who live anywhere nearby. Even if you believe the "odor model" contained in the EIS draft, Schroeder will pollute 37 residences and Penz will pollute 41. Even though our tax laws, with all their special-interest loopholes are ridiculous, were they really meant to allow unnamed investors to do that to me and my farmer neighbors?

I hereby declare that the statements, references, citations made herein are true to the best of my knowledge and abilities to discover.

John H. Tinker, M.D.
Associate Professor of Anesthesiology, Mayo Medical School
Consultant in Anesthesiology, Mayo Clinic, Rochester, Minnesota

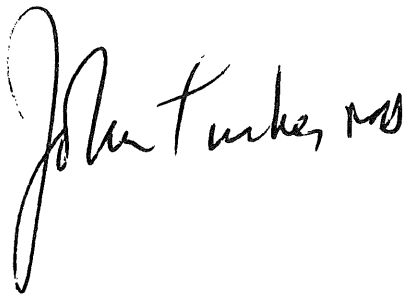
JHT:aet

Appendix

I hereby submit into the record a copy of the following reference:

Katzenelson E, Buium I, Shuval HI: Risk of communicable Disease Infection Associated with Wastewater Irrigation in Agricultural Settlements. Science 194:944-946, 1976

I submit this because it clearly documents the dangers of aerosols from wastewater spray irrigations. It is contained in one of our finest peer-reviewed journals. The testimony of the gentleman from Cornell not withstanding, this evidence exists, in print, for all to read — not just a privileged few who apparently are privy to additional (unpublished) information!



1. Dr. John Tinker questioned the validity of the odor model used to predict odor impacts.

AGENCY RESPONSE: See Page 10, Response 9.

2. Dr. Tinker questioned the draft EIS discussion of health effects related to the transfer of swine diseases to the community.

AGENCY RESPONSE: Dr. David Bane, Assistant Swine Health Specialist, has responded to Dr. Tinker's comments (letter follows).

3. Dr. Tinker asked what he should do if his well becomes comtaminated.

AGENCY RESPONSE: The only practical solution is to drill a new well into a deeper aquifer.

4. Dr. Tinker asked how many years it would take to clean up his well.

AGENCY RESPONSE: It would depend on the extent of the contamination, the nature of the aquifer, whether the pollutant source had been identified and corrected, and other factors. For all practical purposes, wells, once contaminated, must usually be abandoned and new wells drilled.

5. Dr. Tinker submitted a paper from *Science Magazine*.

AGENCY RESPONSE: Dr. Raymond Loehr responded to Dr. Tinker regarding this paper during the public meeting (TR 42-44, 167-169).

PCR-79-011

116

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UNIVERSITY OF MINNESOTA
TWIN CITIES

Department of Large Animal Clinical Sciences
College of Veterinary Medicine
385 Animal Science/Veterinary Medicine Building
1988 Fitch Avenue
St. Paul, Minnesota 55108
(612) 373-1877

August 31, 1979

Mr. Myron Greenberg
Office of Hearing Examiners
Room 300
1745 University Avenue
St. Paul, MN 55104

RE: Draft Environmental Impact Statement Regarding Proposed Swine Facilities of: Perz Farms Co., Darwin Schroeder

Dear Mr. Greenberg:

This letter is in response to comments submitted by Dr. John Tinker to the Office of Hearing Examiners dated July 17, 1979. Dr. Tinker expresses concern that the draft EIS incompletely discussed the zoonotic disease potential of the proposed swine facilities. In researching this section of the draft EIS, my colleagues and I consulted not only the text to which Dr. Tinker refers (Hubbert, McCullock, Schnurrenburger: Diseases Transmitted from Animals to Man, 6th Edition, Charles C. Thomas, Springfield, Illinois, 1975) but also more current and specific references including:

1. Cuber, Blacklaw, Copezza, Panjvari, Bednarek: Persistance of Antibodies to Rotavirus in Human Milk; Journal of Clinical Microbiology; Jan., 1979.

2. Diesch, Goodrich, Pomeroy, Will: Environmental Protection Technology Series--Survival of Pathogens in Animal Manure Disposal; June, 1975.

3. Donham, K.: Respiratory Hazards of Livestock Confinement Workers.

4. Hattwick, O'Brien, Hoke, Dandle: Pandemic Influenza--The Swine Influenza Virus and the National Influenza Immunization Program.

5. Knapp, L.W.: State of the Art Report on Occupational Safety and Health in Agriculture; National Institute for Occupational Safety and Health, 1974.

6. Moore, Onstad, Otterby, Person, Thompson: Preliminary Identification of Literature Models and Data for Evaluating Rural Nonpoint Nutrient, Sediment and Pathogen Sources; University of Minnesota Agricultural Engineering Department, May, 1977.

7. Page, A.L.: Fate and Effects of Trace Elements in Sewage Sludge When Applied to Agricultural Lands.

8. Report to the Congress: Sewage Sludge--How Do We Cope With It?, September, 1978.

9. Schoenbaum, McNeil, Kanet: The Swine Influenza Decision; New England Journal of Medicine, September, 1976.

10. Seal, J.R.: Status Report on the National Immunization Against Influenza; Journal of Infectious Diseases, June, 1976.

11. Thompson and Moore: Predicting Potential Nutrient and Pathogen Loss in Minnesota Agricultural Nonpoint Source Pollution; Department of Agricultural Engineering, University of Minnesota, Oct., 1978.

12. University Extension Division, University of Missouri-Columbia: Proceedings of the Conference on Disposal of Treated Municipal Effluent on Land; March, 1973.

13. United States Environmental Protection Agency: Alternative Waste Management Techniques for Best Practical Waste Treatment; March, 1974.

14. United States Environmental Protection Agency: Proposed Criteria for Water Quality; October, 1973.

Other publications, public health authorities throughout the midwestern United States and University of Minnesota Diagnostic Laboratory personnel were consulted as well. Only those diseases considered significant public health risks for this region were included in our statements. It would have been entirely unrealistic to bias our information and list all the infectious disease conditions known to occur worldwide in swine as potentially hazardous to inhabitants of southeastern Minnesota.

Dr. Tinker continues by commenting that we have not been plagued with these exotic diseases only because of good management and good public health regulations. Two points to argue here are: 1) Poorly managed swine facilities have always existed without devastating results to the surrounding livestock or human communities. I do not mean to say that poorly managed facilities are not dangerous but our concern must be attenuated, 2) Public health regulations still do exist. The danger of these exotic diseases entering the United States is constantly guarded against.

Brucellosis, colibacillosis, salmonellosis, leptospirosis and ascariasis can all occur in swine populations but passage to the surrounding communities is historically rare. The disease organisms listed are either unable to survive in a manure slurry (brucella, E. coli, Salmonella and leptospira) or are rarely encountered in confinement swine facilities (ascarids). Dr. Tinker flatly states that influenza passes from swine to man. The scientific community is not so sure. Resistant E. coli organisms (nor any other resistant bacteria) have not been shown to pass from animals to man nor has the resistance transfer factor been proven zoonotic

In another letter from Ms. Laura A. Oatman dated July 20, 1979, the question of disease transfer by small rodents is raised. Mice and rats can transfer swine dysentery to other swine under laboratory conditions. No documentation of this occurring naturally is available. Other diseases potentially carried to other swine include leptospirosis, toxoplasmosis and pseudorabies. Small rodents also could transfer leptospirosis to man if man ingested or came into contact with contamined water or food.

Sincerely,

David P. Bane

David P. Bane, D.V.M.
Assistant Swine Health Specialist
College of Veterinary Medicine
University of Minnesota

DPB/laa

2 July 6 testimony on Hilltop Pork Producers - proposal in Waranoo Twp - Goodhue County Mn. July 5, 79

Laura Gareth

I am addressing three areas with concerns & suggestions.
P.C.A. Permitting + Zoning
Socio. Economic impact on the Community
Management.
Expansion.

P.C.A. Permits - I feel P.C.A. is contributing to the pollution problem by too often issuing permits - Site checks are a farce, when large quantities of manure are to stored in open Karst topological area, whether by holding pond slurry or slab or composting - soil maps & few questions on construction are insufficient. I find it significant, that taken with E.I.S. We can not get a comprehensive site check - including boil borings - samples of area wells. & personal study of the area are necessary. In the past month I talked to people living within the top Management: Fld E.I.S. has thus far come through saying good management will solve most of the problems - I would agree - provided facility is adequately planned & builds to alleviate many of the problems. Operations where are the proposers does not live on the site, tend to have poor management. Key - from Summer 79 - New Land Reuse Study ? hog Confinements in Nebraska. "Confinement presents managers with a new set of problems, which few have experience in solving." Of 34 new hog confinement units surveyed in Nebraska only 11 still employed their first managers 13 units were on their 2nd manager & 10 units had had 3 or more managers

Thought rep. of PCA at hearing - said hearings are always done where a lagoon are reviewed I find this hard to believe we can't get a adequate check including boring even with an E.I.S.

3 Laura Arrett

Following May 77 Wernersville Township hearing on "Hilltop Pork Ladyess" proposed Perkasie to Jonata hog confinement operation for 5/6 Lancaster, Ahakus Co citizens & the area farmed "Concerned Citizens of Leaduc County" The goals of the group are to pool funds, time, energy to research methods to update Pa laws concerning Township local zoning, P.C.A. Permitting & legislation to deal effectively with multi nonresident multi Investor Confinement Animal operations.

We are well aware that is little (at this time) we can do to prevent the proposed Hilltop facility from being built. And other similar ops are starting proposed in the County & South E. Mesin. Our contention that if large multi-investor hog operations our community must have this type of operation - it must be a success both the community & the proposers. Also, we feel that the proposed investors have not fully investigated the impact such an operation beyond the profitability, financially to themselves We feel, along with the P.C.A Citizen's board, that the state should evaluate the effect this type of operation has had in other states - Illinois, Iowa, Nebraska, Missouri. Also possible effects on hog production, family farm and environment. Hence the Hilltop operation is based to establish a precedence in the County. Lets present many of the obvious disadvantages

4
Laura Ferrell

Most still on their 1st manager have been in operation less than a year. Managers reportedly quit in the middle of harvest when offered higher wages by another unit in need of escape management. Pork Producers are now offering management training & certification of qualified managers. Thus operation will be very sophisticated managers.

Expansion: some states require a review of existing operation before granting additional to expand "Hog Producers Handbook" suggests zoning can be a protection against nuisance law suit. As it is now in Minnesota, once one gets a permit - "almost anything" goes after that - little if any restriction is put on expansion regardless of the effect past present or future on the environment.

Socio. Economic Impact on Family Farm
* Please refer Winter & Summer-79 editions of "New Land Review."
1. Multi-investor (non resident) confinement operations both create an unfair hog market by increasing production, this lower hog market price & they can weather the slump better due to advantage for those in 50% tax bracket - but the income is not primary income source for investors - thus they can walk

5
Laura Leuth

away with a minimum loss if facility fails - Units providing main income source cannot take the loss.

2. E&S - contends "face it, the trend is toward bigness so get out of the way" -

Hail 1970 E&S.

Wanamingo twp - family farms are economically sound - due to:
operator keeping up with changes in farm practices, but not necessarily going with all the trends -
farming is basically diversified rather than following trend & specialization. Hogs are part of this diversification for about 20 farms in twp. but Corporate or limited partnership - operations could soon ~~make~~ change this part of operation out. If you've checked farm magazines this summer - there seems to be a trend back toward diversification the 16+ century farms in the twp found this to be true when they were homesteaded in 1850's - 60's & 70's & the practice has prevailed - contributing to economic stability for twp. So
Contrary to E&S statement on 5/3, I contend facilities will have a decided impact on socio Econ. state - E&S - maintains that 2% of state hog market is insignificant - but the 2% is across the mid-west has already added up to 16+% of the national hog market (New Land Review - summer 77)

over.

People - basically have been disregarded in the E.I.S.

This community, the 1st established in the area 1854, & the early Homesteads 16+ are still in existance as Century farms and about 6 are very close to 100 yrs. The twp was discribed 1878 Goodhue Co. History as one of the best farming areas in the Country.

25 years ago the trend was - rural Churches were a thing of the past. But Wgr. Twp has 2 Lutheran Churches established in the 1860's that are still going strong. Country stores are also a thing of the past But Wgr Twp has a thriving one on its South western border.

One of the Churches - "Holden" was the fore runner of St Olaf College the other was instrumental in the organization of Red Wing Seminary.

2. ~~[illegible]~~ The Norwegian Lutheran Church was formed here & expanded throughout the state

3. Small rural towns are also supposed to be a thing of the past - going down hill - usually store fronts on main street etc But Wanamingo Village is a prosperous, enterprising growing Village - no main street vacant store fronts.

4. The citizens are well educated and world travelers.

5. Interesting, with the trend toward large farms Goodhue County has more smaller farms than it did a few years back.

6 Laura Perrett

6. It's also interesting according the E.I.S - the density of residences near the ~~Hog~~ Hog Building site is greater here than near either of the Rochester sites. 140 vs - 123 & 128.

7. We have strong participation in local twp government. 200 turned out for town-board election in '78 - We are in process of updating twp zoning ordenance - An average of 50 men & women attend the annual town board meeting in March - Surrounding townships have an average of 10 to 15 attending.

8. Surrounding churches are always asking how the two churches here manage to keep their youth in Sunday School after confirmation - answer - There's strong family life in the community.

Enichart - Wawarsing twp has that Good Country Living - has had several generations on - Most would like to continue it.

In Conclusion: The twp described in the 1870's as "very fertile rolling soil, well watered with ~~spring~~ - streams and sloughs - water found but a few feet below the surface." "No other ~~township~~ in the country it is said affords superior advantages to farmers.

over

I contend:

The proposed investors have not expanded the effects of the operation beyond their financially profit.

2. Why should the community risk its primary income, while, for the most part, the investors are risking their 2nd income? Even the losses can be partially covered by tax write-off. I take it, that the proposed structure has decided tax advantages over the average family farm - especially if the investors are in the 50% Tax Bracket / Summer pasture land

It is difficult to comprehend, how people who supposedly made have to put such a study together, could accidently make such a mess of the thing - we would almost be better off without it, as it gives only half the picture and that is not necessarily accurate.

It almost seems P.C.A. wanted the study to come out inaccurate - then it could be said - well it's not a deal anyway - so I will just go ahead doing things as we always done.

Over page 7.

Laura Don Gerrett Park Rd
We reside 2½ miles South West of the proposed site
a 230A - 50 cow, Family dairy farm.

7

P.S.

In the last analysis — In spite of everything - we will probably have to live with a few of these observations - but they must be dealt so they are a success and exampled - for both the geuests and the community - The community cannot afford to take the major risk. It lets have some workable guidelines for P.C.B. and county zoning boards for site check that take into consideration the unique geological situation.

1. Mrs. Laura Perrett indicated that she felt an EIS would provide soil borings, well sampling and site studies.

AGENCY RESPONSE: An EIS brings together information which is currently available, including information on soil maps, borings, if they have been done, well logs and other information. The EIS rules and time constraints do not provide for original studies to be conducted on the site. However, SW 5346 of the regulations governing permits requires the applicant to provide "A description of geological conditions, soil types and ground water elevations, including high water table, to a depth of 10 feet below the lowest elevation of the site."

2. Mrs. Perrett reported that some states review management before expansions are allowed.

AGENCY RESPONSE: This suggestion has been referred to the Division of Waters for consideration during the permitting process.

3. Mrs. Perrett indicated that zoning is a method for avoiding nuisance law suits.

AGENCY RESPONSE: The MPCA agrees that zoning can be a method. Although the Agency has no authority over zoning or land use issues, it encourages local units of government to develop and enforce appropriate zoning plans for their area.

4, Mrs. Perrett raises the issue of the type of ownership giving tax benefits to proposers.

AGENCY RESPONSE: There are distinct legal, estate and tax advantages which result from incorporation of farms (DEIS 5-37).

5. Mrs. Perrett indicated that within Wanamingo Township, farms tend to be diversified rather than specialized in not following national trends.

AGENCY RESPONSE: Comment noted.

6. Mrs. Perrett disagrees with the statement in the draft EIS which indicates that the three farms' hog production would not significantly influence the market.

AGENCY RESPONSE: See Page 123.

7. Mrs. Perrett gave a general history and description of Wanamingo Township.

AGENCY RESPONSE: The MPCA appreciates the general description of the rural community and lifestyle supplied by Mrs. Perrett.

8. Mrs. Perrett expressed dissatisfaction with the investments of the proposers.

AGENCY RESPONSE: The MPCA has no authority over how individuals choose to invest their capital. It is not within the scope of an EIS to address investment methods of proposers.

9. Mrs. Perrett indicated a need for "sensible guidelines for site inspections that take unique geologic situations into consideration both for county zoning boards and the MPCA.

AGENCY RESPONSE: The MPCA agrees that there is a need for siting guidelines. Land use decisions should be made by local units of government.

Testimony given on July 5, 1979
to Hilltop Pork Producers E I S

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JUL 24 1979
OFFICE OF HEARING EXAMINER

My name is Susan Rohl and I am Secretary for Concerned Citizens of Goodhue Co.

We do not feel you have addressed the very important issue of site examination in regard to the Hilltop proposal.

Information was provided regarding shallow wells, springs, sinkholes, a boring done 1 mile NE for a natural gas storage site, & holes in the hillside N of application parcel A. (* page) To the best of my knowledge, no effort was made to contact any of our group who returned the form letter to Janet Cain.

To further show how unfamiliar you are with our area, could you tell me when the township road S of the proposed site became a County road, as stated on pages 3-5 and 3-10? Also, you might like to put the Wanamingo town hall back in Goodhue County. (page 4-83) (other bldgs & church incorrectly located)

On pages 4-56, 4-59, 5-20 you refer to our "intermittent stream" and on page 4-90 state "no fish

population expected to occur."
This spring fed, lime rock bottom stream has flowed the 19 yrs. the Nesseths' have lived in the valley below the proposed site. (Also include pictures of trout my boys and nephew have caught in our stream.)

I'm including a list of people with shallow wells or springs in our area also.

Susan K. Rohl
Rt. 3 Box 82
Kenyon, Mn. 55946
1-507-824-2578
secretary - Concerned Citizens of Goodhue Co.

Shallow Wells in Area of proposed Hilltop Pork Producers site

Darrell Nesseth 40 ft. (new well 260 ft. - Cannon Well)
Reuben Ramstad 132 ft.
Willard Ramstad 80 ft.
Harlan Hjermstad 91 ft.
Kermit Swenson 120 ft.
Robert Rohl 60 ft.
Selmer Foss 60 ft.
~~Melvin Ramstad~~ 80 ft. now Gary Esterby
Alfred Berquam spring
Richard Berquam spring
renters in valley spring (Harley Kitzman)
Sanford Flatten spring
Leonard Larson spring
Arnold Otterness 60 ft.
Len Fueling 104 ft.
Hilliard Nesseth 28 ft.
Laurity Romo 55 ft.
Kenneth Henderson 120 ft.

Cannon Well - Cannon Falls area 507 263-3522
Christenson Well - Dodge Center 374-6587
They have done many of the newer, deeper wells in area.

Shallow wells, springs, sinkholes and the boring were mentioned in our cover letter requesting the EIS.

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On October 11, 1977, R. L. Rohl, L. Nesseth and S. Rohl, visited MPCA in Roseville, and told Wayne Anderson again about our shallow wells and springs and the "Coon Holes" (caves) on the N of application parcel A.

In March & April 1978 I had 2 phone conversations with Dale McMichael of MPCA regarding the preparation of the EIS and the boring done 1 Mile NE of the proposed site. I contacted a member of the Aquafirs Assoc. (the opposition group) and relayed the information to Mr. McMichael — (NSP proposed the natural gas storage facility, borings were done in several places in Wonamingo township and results were too many cracks & fissures for gas storage)

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Additional EIS errors & comments

page 3-10 "Hog manure is spread on hay ground once a year" (parcel A)
page 3-16 same as above
page 3-18 regard to existing operations -
"Swine manure is stored in two concrete pits and spread twice a year on cropland other than those parcels identified as application parcels for the proposed operation."

ERT is "confused" again.

Hog manure from the existing operation is, and has been for some years, spread on Application Parcel A. As for the "once" or "twice" a year — we vividly recall the recent year Mr. Kunde spread a load or two nearly every day for 3 months.

I've listened to neighbors grumble about Mr. Kunde's practices — spreading manure for weeks, leaking liquid manure tank, piles of

dead pigs, filling the manure tank and emptying it (not spreading it) from the road into a field - not once but three times - on Thanksgiving morning. But neighbors don't want to file complaints against neighbors so they just grumble.
Mr. Kunde's neighbors near his Rice County operation, however, have done more than grumble. They did file a complaint and I'm including a copy of a letter from Janet Cain regarding it.

page 3-13 - map of facilities site - this operation appears to be "portable".
First it was "back in the trees" on what is application parcel A, then, according to Wayne Anderson, on Oct. 11, 1977 when he pointed it out to me on a map, it was at the W end of application parcel

A and now it is right on the corner of the township road and a field road. Just where is it going to be?

page 4-65 regarding wells - "number is not known" I'm including the list of shallow wells in area I've had for 2 years. How can ERT determine the "middle aquifer system is the most widely used groundwater source" if they don't know how many wells are completed in each aquifer system?

page 5-14 last paragraph, These estimates are ridiculous! I live in what is considered a more desirable direction, windwise, from the present operation and have "observed" more than "5 minutes" to "2 hrs" per month of just plain raunchy odors

page 6-11 once again "intermittent streams" This stream is not "intermittent" so there most certainly would be "transport of materials - to receiving streams". "If degradation of water quality occurs, control measures can be applied". What control measures? If my well is contaminated what control measure can be applied other than drilling a new well at a cost of $6,000 to $8,000?

As for the socio-economic part of the EIS — ERT seems to poo-poo our concerns in this area. I'm including a couple of editorials — we aren't the only ones who see a problem.

Frankly, I think this EIS is a farce. Since ERT and MPCA "worked closely" in the

preparation, and MPCA had the final say in what was included in the EIS and what was not included, MPCA got exactly the kind of study they wanted. The Obvious next question is, why?

My primary concern at the start of this, over 2 years ago, was the preservation of our water supply. MPCA seems to operate on the theory that they are there to license pollution. MPCA is still doing business as usual — 2 lagoons have been constructed in Waramingo township within the past month (1 is 1/2 mile SE of me in the same section — and 1 is about 4 miles S in a sand hill and possibly on floodplain.

Since MPCA is the designated, responsible agency, just how responsible are they, legally, if an "accident" should occur? (I don't expect you to answer

this question but I am certainly going to find the answers to it)

Susan Rohl
Rt 3 Box 82
Kenyon, Mn. 55946

6. Mrs. Rohl asked where the location of the Hilltop Pork Producers facility site would be.

AGENCY RESPONSE: The facility will be located as shown on the map (DEIS 3-13).

7. Mrs. Rohl indicated the information that the number of wells completed in each aquifer is unknown is incorrect.

AGENCY RESPONSE: The number of wells completed in each aquifer is unknown on the regional scale which the draft EIS was referring to in its statement (DEIS 4-65). The information that the middle aquifer is the most widely used is regional data supplied from the United States Geological Survey (DEIS 4-106, USGS 1974, 1976). This statement, following the referenced twelve residences, is confusing. Mrs. Rohl has supplied well data for residences near the Hilltop Pork Producers sites. This data indicates that the majority of the wells cited are in the upper aquifer.

8. Mrs. Rohl disagreed with the odor predictions projected by the odor model.

AGENCY RESPONSE: See Page 10, Response 9.

9. Mrs. Rohl raised the issue of surface water contamination by runoff from fields where manure would be applied and control measures which could be instituted.

AGENCY RESPONSE: The runoff rates from fields where manure will be spread will be no greater than that which exists at the present time. Actual runoff may be less on fields where injection will be the method of application. Consequently, if manure is applied at the same agronomic rate as chemical ferilizer and manure which is currently being applied, the potential for runoff to degrade streams would not increase above baseline for nitrates. Other components of manure may enter streams depending on runoff volume and velocity. Control measures to control runoff are discussed in the section Runoff Section (DEIS 6-11). Essentially, the control measures are the same as those which would be applied to prevent soil loss due to erosion.

10. Mrs. Rohl inquired what other control measures besides drilling a new well could be taken if her well was contaminated.

AGENCY RESPONSE: If a well is permanently contaminated, no other practical measure could be taken.

1. Mrs. Susan Rohl indicated that the Agency did not individually contact people who sent information regarding the Hilltop Pork Producers site and surrounding area.

AGENCY RESPONSE: The Agency held a public meeting early in the preparation of the draft EIS specifically to discuss questions and issues with citizens. Five MPCA staff members were available as well as the consultant project manager. The Agency staff made every effort to talk to interested citizens at that time about whatever concerns they had or to take information supplied by interested persons. All information submitted by letter was considered during preparation of the draft EIS even though individuals were not personally interviewed later in the process.

2. Mrs. Rohl indicated a township road was misidentified as a county road and that table 4.6-2 has Olmsted County as the referenced county.

AGENCY RESPONSE: Page 3-5; the map should read township road, not county road. Page 3-10; the sentence should read: "The proposed 5 acre facility site is located just north of an unnamed township road." Table 4.6-2 should read Goodhue County, not Olmsted County.

3. Mrs. Rohl indicated that a stream located near the Hilltop Pork Producers site (TR 191) was incorrectly labelled intermittent.

AGENCY RESPONSE: See Page 106, Response 5.

4. Mrs. Rohl disagreed that the statement "no fish population is expected to occur" is incorrect regarding the stream near Hilltop Pork Producers (TR 191).

AGENCY RESPONSE: Mrs. Rohl submitted pictures showing trout that were caught in the stream near the site. The information supplied by the Division of Fisheries, Department of Natural Resources is incorrect in this instance.

5. Mrs. Rohl indicated that manure spreading occurred on parcel A (Hilltop Pork Producers) more than once a year and raised the issue of other alleged management practices.

AGENCY RESPONSE: The proposer supplied the information on the existing operation. These management questions can be addressed in the permitting process.

July 22, 1979

Reference: Draft EIS of Penz Farms, Darwin Shroeder, Hilltop Pork Producers

To: Myron Greenberg, hearing examiner

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I have read and reviewed the draft EIS a number of times. There are a number of errors and erroneous conclusions drawn. Specifically in the geological and hydrological data. These seem to stem from a total lack of field work. I have been informed, however that E. Calvin Alexander has addressed these issues. I have had opportunity to study his letter of July 18, 1979 addressed to Janet Cain. In brief, and since he addressed these much more capably than I, I would urge you to adopt his recommendations. Emphatically, each site area in Southeastern Minnesota must be evaluated on its own merits - with a site examination, not a file cabinet study.

On page 5-41, paragraph 2, there is a reference to hog shortages.

With todays supplies and prices of pork, I wonder what shortages are being referred to. (see clipping)

I was very disappointed in the quality of study which was done. This is such a poor document the whole report should be rewritten.

Sincerely
Robert J Reed
RT 3
Kenyon 55946

1. Mr. Robert Rohl raised the issue of the impact the facilities may have on hog prices and supply.

AGENCY RESPONSE: See Page 123.

Submitted by
Haven Bauer
Kenyon, Minn 55946

Mr Bauer lives 1/4 mi north East of Rice Co operation; Jon Linde James Lenatt M. Johnson

Jadegh Farms

A. Hog House Problems:

1. Pits are too small; need more storage room. Pit should be 8 ft. deep or deeper.

2. Ventilating---
   a. Vent system should be changed so as not to pull everything off of the pits; 75% should come from above the slats.
   b. The air intake is of a minium.
      - Air intake should be made larger and air brought more to the center of the building.
      - As of now the additional fans that run on warmer days, creates a suction; therefore sucking liquid through the fans, leaving strong odors outside.
         (These odors are costly to us.--- we have to dry clothes in the dryer rather than hang them outside; we have to close our windows; and our kids can't enjoy the outdoors.)

3. Dead Animals
   a. I feel a refrigration unit should be installed, instead of an incinerator, which would be no better than now. (unless the management improves.)

B. Requirements
1. one of the owners to live on the place
2. Better management
3. All pit buildings to have 8 ft. deep pits
4. Injection of manure in ground.
5. Annual inspection

1. Mr. Haven Baur indicated some problems associated with and existing facility and suggestions for improvements.

AGENCY RESPONSE: Suggestions have been referred to the Division of Water Quality for consideration during the permitting process.

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Lauritz Romo
Rt. I Box 91
Cannon Falls, Minn.
55009
July 22, 1979

To:MPCA for the record
Conmerning: Draft EIS on hilltop pork producers

Your map fig. 4.6-2 is incorrect. .5-1 mi. radii has 4 deleted residences; I-1.5 mi. 3deleted residences; I.5-2 and 2-2.5 1deleted residences apiece.

Table 4.6-1 states 9 residences on .5-1 mi.; only 7 show on the map fig.4.6-2 when actually there are 11. Table 4.6-1 states 23 residences at 1-I.5 mi.; there are 26. Radii 1.5-2 and 2-2.5 on table 4.6-1 each have 1 additional residence.

Your map fig. 4.6-5 lacks 2 residences in .5-1 mi..Fig. 4.6-6 lacks 1 residence in map on upper right conner.

Table 4.6-2; Wanamingo town hall is not in Olmsted county.

Whats intermittent streams? Many indicacted on fig. 4.5-5 flow open cotinuously year around.

why hasn't someone done an onsite inspection to see if ther are endangered species of plant life? You admit they do and have ocurred in this area. Now is an excellent time to do so. You get opinions from a geologist how about getting a botanist?

Oder is definitly a problem. I live 1/4 mi. from Kund's present confinement and yesterday(July 21)the odors exhausted were intense enough to make it objectionable. I have several hundered hogs which by no means give the magnitude of oder the larger confinment setup of Kund's does.

If, as stated in testimony, the odor is a type of fatty acid, then what impact might this have on two grade A dairy farms with 1/4 mi. of the hilltop site? Milk is also made of fatty acids. I feel this definitly needs more research.

The spring of '79 would not have allowed ample time for manure waste disposal. The spring was late, wet, cold, and the feilds were not fit to inject liquid manure.til the first week in May. This is not unusual or rare. Because of the late spring farmers won't have time to wait for the manure because each day means a reduction in yields.

Kunds operation as proposed at township and county level is not a family farm in any form. I definitly question the statement that it is proposed as or considered a family farm.You have to consider the investment sources. They wer e outside, nonfarm investors looking for tax advantages. This may have changed but the community was left with a different impression than the EIS states. Get the facts straight. → p.5-39 para. 1

In evaluating and setting standards I feel worst case situations must be considered. If the DNR requires bridges built to accommadate the 100 yr. flood I certainly feel any and all factors must be considered and mitigated on worst case basis.

You do not cosider management. Kunde's management has had a miserable affect and impact on the community. Most likly because of the poor management the EIS was petitioned by over 800 residents. "You cant teach an old dog new tricks" so you can see the reason for concern. Why would he do any better on this proposal?

A couple of enclosurers which point out concern for the family farm, farm investment, and concern for legislation.* If our state and federal legislatures are this concerned whats the matter with PCA? This will have to be pointed out to our legislatures.

You seemed to take an armchair approach to nearly every aspect of this Draft EIS. Too much information was ommitted; too much incorrect; and too much vagly touched on or dealt with. This being first of its kind definitly may set presidence therfor problems must be dealt with thoroughly and in there entirity. It semms the use of common sense and logic were omitted It appears time and/or money were limiting factors. What ever this draft EIS cost to this point was too much. The taxpayers, petitioners, and proposers have been shortchanged.

For the record

Lauritz Romo

*two enclosures included for the record

1. Mr. Lauritz Romo asked why on-site inspections were not done to identify endangered species.

AGENCY RESPONSE: The scope of the draft EIS does not include original field surveys for identification of plant species but must rely on existing regional information (DEIS 4-93). However, since construction of the facilities and application of manure would occur only on areas which have been cultivated and cropped for many years, it would be unlikely that rare and endangered species would be growing there.

2. Mr. Romo indicated that at 1/4 mile, he has experienced objectionable odors from a confinement facility.

AGENCY RESPONSE: This information seems to be consistent with the odor model prediction of particularly objectionable odor within about 1/3 to 1/2 mile of the facilities where odor is unmitigated.

3. Mr. Romo indicated that certain residences were not represented on several maps and tables.

AGENCY RESPONSE: Corrected maps with information supplied by Mr. Romo follow.

4. Mr. Romo identified a table (4.6-2) which incorrectly located the Wanamingo Town Hall in Olmsted County.

AGENCY RESPONSE: The Table should read: "Wanamingo Town Hall, Goodhue County."

5. Mr. Romo indicated that streams (Fig. 4.5-5) which were identified on maps as being intermittent actually contain water year round.

AGENCY RESPONSE: The United States Geological Survey maps indicated that the streams were intermittent. Mr. Romo has identified from personal observation streams which are perennial (never dry up) on maps which follow.

6. Mr. Romo raised a concern with possible contamination of milk at two dairy farms within 1/4 mile from the Hilltop site from swine odors.

AGENCY RESPONSE: The MPCA contacted the Minnesota Department of Agriculture and inquired whether there have ever been reports of contamination of milk which could be traced to swine odors. Mr. Orlo Osten, Director of the Dairy Division, indicated that in his experience, there has never been any indication of

contamination of milk due to odors from swine raised on or near dairy farms. The Agency also contacted Ms. Eleanore A. Bredvold from the Department of Agriculture who is involved in the actual testing of milk for the state. She concurred that in her experience, there has not been any complaint of off-taste or odor which has been traced to swine odors. Both people indicated that in grade A dairy operations, milk would have minimal contact with air, due to the technology used for milking, milk transfer and storage. The State of Minnesota allows swine and dairy cattle to be raised on the same farm; the only restriction being that the swine must not have access to the areas where cattle graze, are milked, or are fed. Dr. E. Thomas of the University of Minnesota Department of Food Science and nutrition indicated that in his experience, there has never been any documentation of swine odors contaminating milk either through direct contact of the milk with air nor from cows inhaling odorous air.

7. Mr. Romo indicated that under certain circumstances such as a late spring, manure could not be disposed before crops would have to be planted.

AGENCY RESPONSE: The Hilltop proposal provides for 330 days storage for manure, the Schroeder proposal would provide for 295 days storage, and the Penz farm proposal has 305 days storage.

8. Mr. Romo indicated that in his opinion the Hilltop proposal is not a family farm nor could it be incorporated as a family farm.

AGENCY RESPONSE: The Hilltop proposal in order to be incorporated as a domestic family farm would have to fall into that category as designated by Minnesota law. Mr. Kunde indicated if he incorporated, he would attempt to do so as a domestic family farm. If he does not meet the criteria established, he will not be incorporated in that manner. At the time that the draft was written, his proposal was not incorporated (DEIS 5-39).

9. Mr. Romo indicated that worst case conditions should be considered and mitigation should be considered in this light.

AGENCY RESPONSE: See Page 13, Response 15.

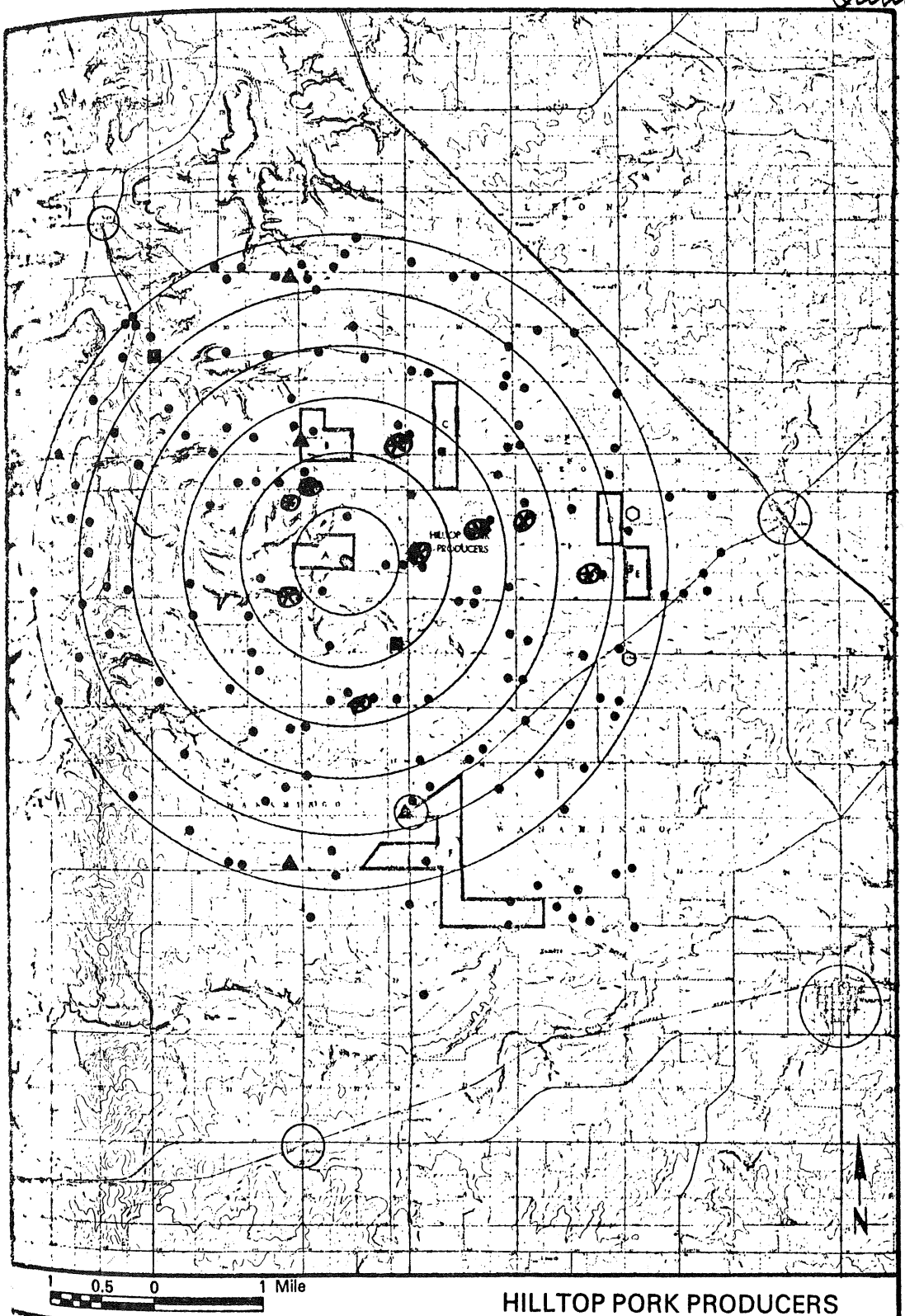
10. Mr. Romo indicated that management was not considered in the draft EIS.

AGENCY RESPONSE: Management procedures were addressed in the section 3.5 Proposed Operational Activities (DEIS 3-28, 3-48) including swine management and manure management. Alternative Manure Management Systems were discussed (DEIS 10-11, 10-21). Operations Management practices were identified as a factor affecting both short-term and long-term impact of the proposal (DEIS 5-19). Additionally, management has been identified as an important part of environmentally sound operations (TR 43). The individual mangement records of the proposers may be considered during the permitting process (TR 30, 31).

11. Mr. Romo submitted two items indicating concern for the family farm.

AGENCY RESPONSE: The items are referenced in Appendix I.

addit. and informations as requested
respectfully submitted, Laura D Romo



⊗ additional residences

HILLTOP PORK PRODUCERS

LEGEND:
- 0.5 – Mile Radii
- Community
- Residence
- Church & Cemetery (4)
- Extractive (2)
- Other Public (2)

MINNESOTA POLLUTION CONTROL AGENCY
RELATED ACTIONS EIS ON
CONFINED SWINE FACILITIES

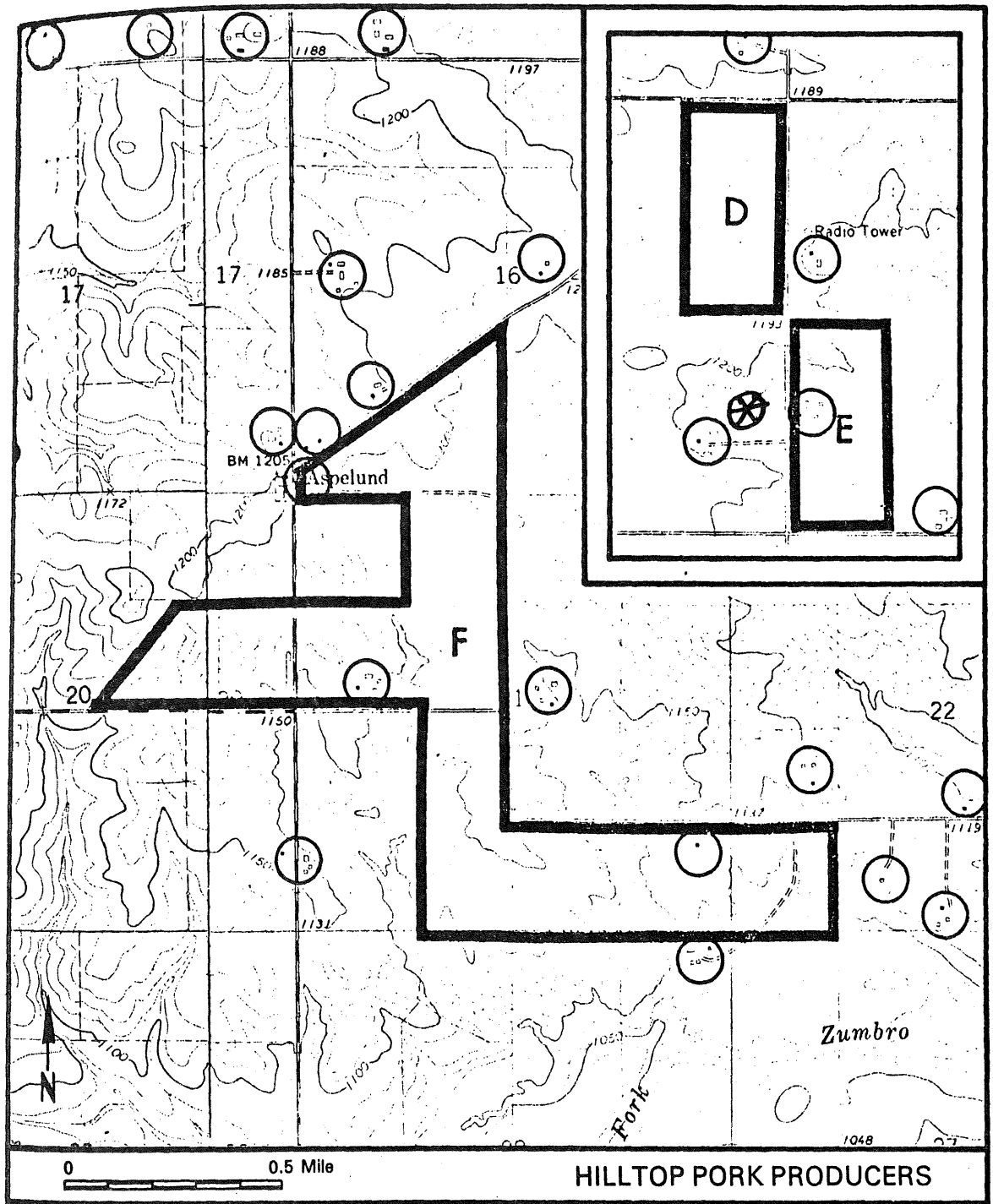
Figure 4.6-2
Existing Land Use within a
3-Mile Radius of Project
in Goodhue County

TABLE 4.6-1

RESIDENCES WITHIN 3-MILE RADIUS OF PROPOSED PROJECT SITES

Project Site	0 to 0.5 miles	0.5 to 1 mile	1 to 1.5 mile	1.5 to 2 miles	2 to 3 miles	Total
Penz Farms Company	2	11	19	17	70+	118+
Darwin Schroeder*	2	11	18	17	75+	123+
Hilltop Pork Producers	3	~~9~~ 11	~~23~~ 26	~~23~~ 24	82+	140+

*Community of Elgin, population approximately 600, is 3 miles east.



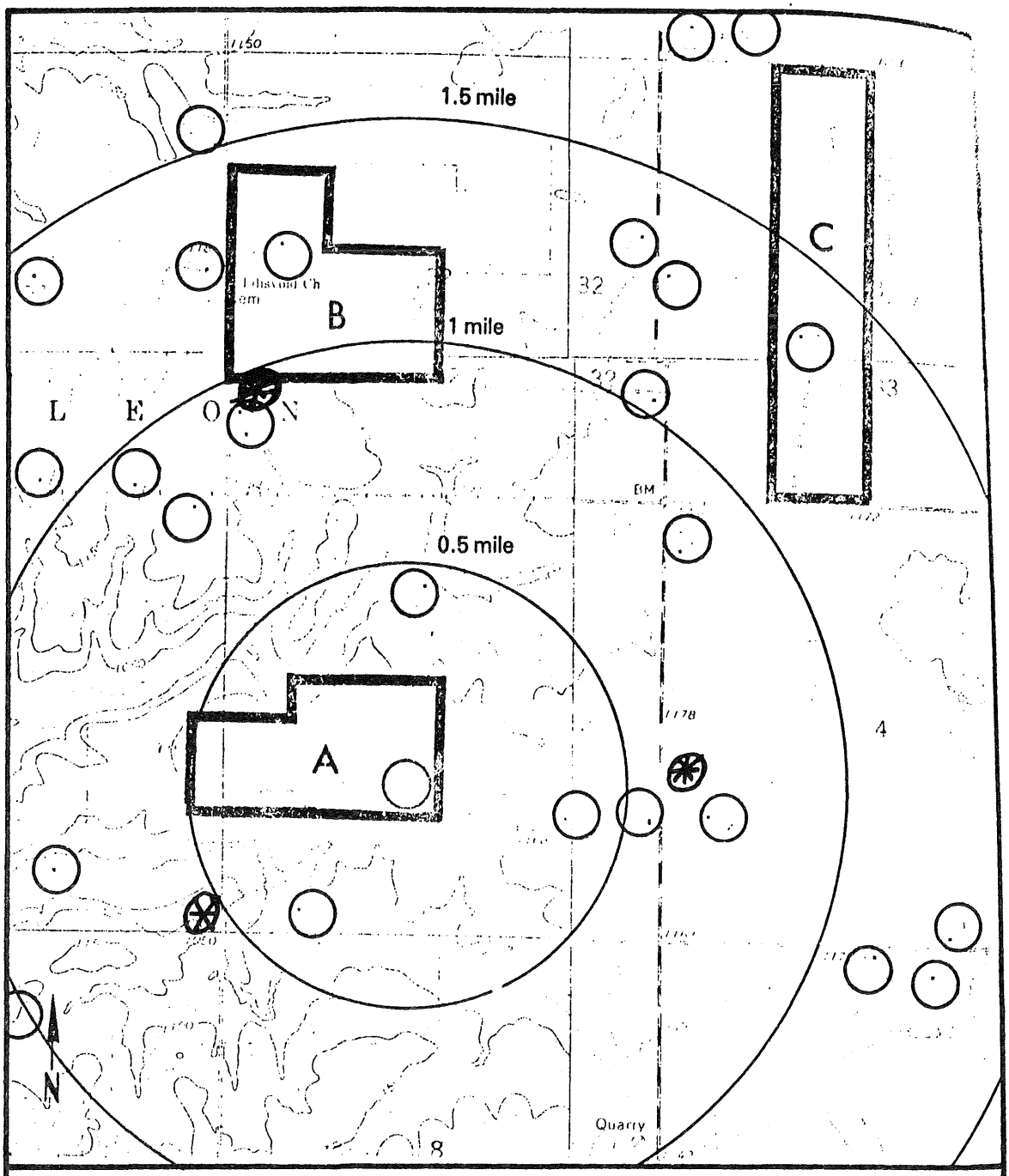
⊗ additional residences

LEGEND

○ Residences

MINNESOTA POLLUTION CONTROL AGENCY
RELATED ACTIONS EIS ON
CONFINED SWINE FACILITIES

Figure 4.6-6
Hilltop Pork Producers Existing Residences (b)



HILLTOP PORK PRODUCERS

⊛ additional residences

LEGEND

Residence

0.5-Mile Radii

MINNESOTA POLLUTION CONTROL AGENCY
RELATED ACTIONS EIS ON
CONFINED SWINE FACILITIES

Figure 4.6-5
Hilltop Pork Producers Existing Residences (a)

additional perennial streams

LEGEND

——— Perennial River or Stream

—·— Watershed Boundary

-------- Intermittent Stream

MINNESOTA POLLUTION CONTROL AGENCY
RELATED ACTIONS EIS ON
CONFINED SWINE FACILITIES

Figure 4.5-5
Surface Drainage of Hilltop Pork Producers Project Region

469-4 7904109 7904251

July 20, 1979

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JUL 23 1979
OFFICE OF HEARING EXAMINERS

Mr. Myron Greenberg
Officer of Hearing Examiners
Room 300
1745 University Avenue
St. Paul, Mn. 55104

Dear Mr. Greenberg:

Re: Proposed EIS--Confined Hog Operations

We live approximately fourteen miles southwest of Rochester and one mile to the southeast of us is Browns Bacon Acres and one third mile to the east of us is International Swine. My husband and I were raised on farms and know what it is to clean out barns and experience the various odors associated with farm animals. The smell generated by the waste from these big confined hog operations is unique. It is unique in magnitude, intensity and stench. It is indescribable and we feel it would be advantageous for a few of the draftees of the EIS and members of the PCA to visit a few of the existing operations. We have experienced all the discomforts due to odor and mismanagement that were described at the hearings.

We are not only concerned about the foul odor but also for the potential hazard to the wells in the neighborhood, runoff into the Zumbro River and mismanagement. There have been violations in the past and very little action was taken. We sincerely hope that as a result of the EIS new rules are created and some type of monitoring system is inacted and failure to comply will result in more than a hand slap.

We are greatly concerned about all the inaccurate information that is stated in the Proposed EIS. We hope it is not applied in the final decisions even with the correct information available. It would be like making a cake with the wrong ingredients, using them because it says so and yet knowing it is wrong. The end result would be a disastrous failure. (Only a bare minimum of substitutions can be used to obtain quality in any project.)

We sincerely hope you will listen to the majority of the people and base your final decisions on truth and facts.

Yours sincerely,
Roger D. Mestad
Mrs. Roger Mestad
Mr. & Mrs. Roger Mestad
R.R. 1 Box 134
Stewartville, Mn. 55976

RDM:bam

1. Mr. & Mrs. Roger Mestad commented on the severity of odor impacts (TR 211-212).

AGENCY RESPONSE: Mrs. Mestad indicated in her testimony (TR 212) that one source of odor was the spray irrigation and spread of manure on the surface without incorporating it into the soil. Two proposals (Schroeder and Hilltop Pork Producers) intend to inject manure below the soil surface. This method reduces odors associated with manure application. The Penz Farm facility proposes to use injection and spray irrigation. Injection as well as other mitigating measures have been identified as a measure to reduce odor impacts of spray systems (DEIS 6-7, 6-9). Other methods of reducing odor impacts are identified including management techniques and facility design (DEIS 6-1, 6-7).

2. Mr. & Mrs. Mestad indicated a concern with the potential for well contamination, surface water runoff.

AGENCY RESPONSE: See Page 223, Response 6; Page 9, Response 5; also Page 40, Responses 24-31.

3. Mr. & Mrs. Mestad raised the issue of new rules for feedlots.

AGENCY RESPONSE: New rules are currently being promulgated. State-wide hearings were held and the new rules (6 MCAR 4.8051 and 4.8052) will most likely go into effect in the fall of 1979.

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Mrs Carol Mistak (Merlin)

Our home is 14 miles south-west of Rochester on Hwy 30. About 500 ft. South east from one pig set-up, plus ⅓ mile north west from another pig set-up.

We have lived 15 yrs. in the country, out of those 15 yrs. 8 yrs have been less than happy, but whether depressing, miserable, unhappy years because of the poor management and development of pig set-ups.

Here are some questions or comments of you will that we have had to contend with.

1. Have you ever wanted to hang your wash on the line and couldn't? because the smell got in your clothes.
2. Have you ever woke from a sound sleep in the night having the taste in your mouth? because your windows were open on a hot summer ~~nite~~ night.
3. Have you ever lost a dog you loved very much? because the dog had been ~~poisoned~~ poisoned with D-con or somebther unknown substances.
4. Have you ever had your house and or windows sprayed, not once but 3 times? because they were emptying the lagoons.
5. Have you ever wanted to cook out or invite friends out for a picnic and couldn't? because the smell is so strong and penetrating.

6. Have you ever had to finish eating your dinner down in the basement? because of strong pig ~~sod~~ odor.
7. Have God ever had your friends and guests ask you what that terrible smell was? because it penetrate through the whole house, even with one window open.
8. Have you ever wondered how it is or has effected your water and well? because of the run off from the lagoon.

The questions are endless, but nobody gets a straight answer.

Mrs Carol Nestad
R1 Box 111A
Stewartville, Minn.
55976

1. Mrs. Carol Mestad commented on the severity of odor impacts from two swine operations located 500 feet and 1/3 mile from her home and attributes the problems to poor mangement.

AGENCY RESPONSE: These comments tend to support the odor model which predicted particularly offensive odors within 1/3 to 1/2 mile of facilities if the odor impacts are not mitigated properly (DEIS 5-14). Additionally, Mrs. Mestad indicated that the facility nearest her home was not injecting nor discing in sprayed manure (TR 213). The three proposals discussed in the EIS use injection as the primary method of application and if spray irrigation is used to disc the manure into the soil soon after application.

Minnesota Farmers Union

1717 University Avenue
St. Paul, Minnesota 55104

Telephone 612-646-4861

STATEMENT OF BOB RUMPZA, ASSISTANT TO THE PRESIDENT
MINNESOTA FARMERS UNION

before a state hearing examiner on the subject of

DRAFT EIS FOR PENZ, SCHROEDER, AND HILLTOP SWINE FACILITIES

Rochester, MN
June 26, 1979

The Minnesota Farmers Union is an organization of 24,000 families who produce dozens of farm commodities -- including hogs.

I am here today to comment on the draft Environment Impact Statement as it relates to socioeconomic conditions. In other words, the Farmers Union is concerned about how these projects under consideration and others like them will -- in the short and long terms -- affect other hog producers.

The EIS dismisses the effects of these huge confinement facilities on other farmers, saying that the Penz, Schroeder and Hilltop facilities won't have an appreciable impact on other farmers. This analysis simply isn't realistic. Hog production is extremely sensitive to supply and demand signals. The EIS drafters ignored the fact that an extra 25,000 hogs in a local marketing area can't help but depress local prices. Because of the huge capital investment being put into these confinement facilities, those operations will most likely be pumping out 25,000 hogs a year, no matter what the market conditions are. It won't matter whether the market is up or down -- the production will remain the same. Money and risk reduction replaces the law of supply and demand. All this means that the competitors of these huge facilities -- smaller family-sized farmers -- are left to take the brunt of market swings. Maybe it's time to look at exactly who we're talking about -- who are these competitive family farmers, and what might happen to them?

There is no easy way to categorize the competing farmer -- his operation may be very large or very small. Our definition of a family farmer is one who uses the labor, capital and management within his own immediate family to run his operation, with some seasonal help. Obviously, farms with two or three full-time employees don't fall under this definition.

The competitive farmer we're most concerned about are those most susceptible to the market price swings that will be exaggerated by the existence of these huge hog factories. Most often, the people who pay the price will not be the well-established, successful farmer in southern Minnesota -- it will be the struggling, beginning family farmer. The only way they can get into farming is to substitute labor for capital -- they are willing to work to make up for their lack of financial resources. Hog production has traditionally been an opportunity for young people. They can fix up existing buildings to accomodate hog production, and the personal care needed for hog production is provided by the family. It's not an easy way to get started in farming, but it is a way, when buying or renting large amounts of land and machinery is out of the question. But when the hog market swings downward, and stays there for a period of time, we all know who is the most vulnerable -- that young family.

We're going about things completely backwards when we allow capital to replace people in agriculture. I'm no talking about mechanization -- I'm talking about capitalization, where only those with wealth can survive. The EIS seems to dismiss such concerns as romantic. We're talking cold, hard, economic facts. Romanticism stops when the law of supply and demand takes over. And a constant flow of supply from highly capitalized hog factories will simply push other suppliers out

of the market. If these hog factories proliferate, the result will be market concentration with its accompanying advantages to a few investors. This is in contrast to a widely dispersed production capacity, with the ultimate beneficiaries being farmers, the townspeople who depend on farmers, and consumers of farm products.

The EIS says that economies of scale and size are pervading agriculture, and this seems to be some natural course of events. It's happening -- but it's sure not natural. Our system has set up a series of tax advantages, including investment credit, rapid depreciation and cash accounting, that repays those with capital and punishes those without it. We have created the artificial economies of scale that give hog factories a greater margin of profit.

The farmers who are members of the Farmers Union see no reason why the State of Minnesota should contribute to some of the mistakes made in our federal policies by granting a permit for operation of these large-scale hog confinement facilities.

1. Mr. Bob Rumpza, representing the Minnesota Farmers Union, raised the issue of economic impacts of the proposed facilities, and larger facilities in general.

AGENCY RESPONSE: Professor Kenneth Eigertson, Extension Economist in Marketing, has supplied information concerning this issue (see letter which follows).

The general issues that Mr. Rumpza raises, such as the economic advantages of size, continuous production, tax and estate advantages, are discussed in the draft EIS (DEIS 5-37 through 5-41). The report "Technology Assessment of Integration of the Hog-Pork Industry," referenced in Appendix III, contains a more general perspective on the trends and issues described by Mr. Rumpza which are of a national scope.

2. Mr. Rumpza raised the issue of tax advantages influencing the direction of farming and that permits should not be issued because of the size and benefits which may be derived by the proposers.

AGENCY RESPONSE: The MPCA issues permits based on the ability of proposers to meet certain regulated environmental requirements (SW 51-61, proposed 6 MCAR 4.8051 and 4.8052). It is not within the authority of MPCA to issue or deny permits based on size, type of ownership, or tax benefits which may be derived by the proposers.

3. Mr. Rumpza indicated that although there are few statistics available to quantify the effects that facilities of this type have on farming, the information submitted into the record from The Center Rural Studies of Wakehill, Nebraska, would be of value (TR 110).

AGENCY RESPONSE: The information submitted is referenced in the final EIS Supplementary Information Section. The information is not directly transferable to Minnesota because of the many differences between the states but may indicate possible impacts which might result if hog farming takes a similar direction in Minnesota.

UNIVERSITY OF MINNESOTA
TWIN CITIES

Department of Agricultural and Applied Economics
231 Classroom Office Building
1994 Buford Avenue
St. Paul, Minnesota 55108

October 4, 1979

Ms. Janet Cain
Minnesota Pollution Agency
1935 West County Road B2
St.Paul MN 55113

Dear Ms. Cain,

In my opinion the increase of 25,000 hogs in southeastern Minnesota would have no measurable impact on the price level for hogs either nationally or in that area. Twenty-five thousand hogs seems like a large number but when compared with the 77,315,200 slaughtered nationally in 1978 and the 5,111,000 slaughtered in Minnesota, it is small.

As a general rule we can say that for each 1 percent of change in hog production nationally, hog prices will change by 2.5 percent assuming that demand doesn't shift over the same time period.

In the case you are working with, an increase in production at the national level of only 4 one-thousandths of a percent (25,000 ÷ 77,315,000) is too small to impact on the national average hog price.

It is possible to get weakness in price at the local level if the hogs would have to be transported out of the local area for some distance in order to find slaughter capacity. The decline would about equal the added amount of transportation cost. I doubt that this would be the case here with Hormel and Wilson both being located in the area and having ample capacity to kill another 25,000 head (approximately 2 percent of each company's kill) and both looking to expand their hog slaughter in the future.

Sincerely,

Kenneth E.Egertson

Kenneth E.Egertson
Professor and
Extension Economist in Marketing

KEE:mb

4805 13th Avenue South
Minneapolis, Minnesota 55417

July 11, 1979

RECEIVED
JUL 12 1979
OFFICE OF HEARING
EXAMINERS

Mr. Myron Greenberg
Office of Hearing Examiner
Room 300
1745 University Avenue
St. Paul, Minnesota 55104

RE: DRAFT (OF) RELATED ACTIONS
ENVIRONMENTAL IMPACT STATEMENT
PENZ FARMS COMPANY, DARWIN
SCHROEDER, HILLTOP PARK PRODUCERS
AND CONFINED SWINE FACILITIES

Dear Mr. Greenberg:

I herewith offer the following suggestions on the above referred to report.

(1) 4-49- Mineral Resources sandstone is not quarried in central Olmsted County for its highest and best use such as glass sand. However it is removed by pitting mostly to provide sites for buildings and the materials removed are normally used for fill uses.

(2) 4-66 Second paragraph Karst Hydrology. Tropical weathering conditions during the Cretaceous period on into the Tertiary Period did not form karst features in the carbonate rocks. Karstification occurred during the Pleistocene Epoch. Refer to Caves of Minnesota (1967) for a detailed explanation.

I hope these and other suggestions will aid in improving the description of the local environmental conditions affecting the proposed facilities.

Sincerely,

Rudolph K. Hoagberg

Rudolph K. Hoagberg, CPGS 1267
Geologist

1. Mr. Rudolph K. Hoagberg indicated that sandstone is not quarried for glass sand but is usually excavated during construction and used as fill.

AGENCY RESPONSE: Page 4-49, 2nd paragraph, 4th sentence, should read: "Sandstone, usually removed during construction, is normally used as fill."

2. Mr. Hoagberg indicated karstification occurred in the Pleistocence.

AGENCY RESPONSE: Karstification may have begun in the Cretaceous, continued during the Pleistocence and, as Dr. Alexander points out (Page 127), continues at the present time.

UNIVERSITY OF MINNESOTA
TWIN CITIES

Minnesota Geological Survey
1633 Eustis Street
St. Paul, Minnesota 55108
(612) 373-3372

EPRU

July 18, 1979

Ms. Janet Cain
Environmental Plannings and Review Unit
Minnesota Pollution Control Agency
1935 West County Road B2
Roseville, MN 55113

Dear Ms. Cain:

This letter is in response to your request of June 12, 1979 for our comments on the Draft Environmental Impact Statement for three proposed swine feed lot facilites in southeastern Minnesota. As we tried to point out in the public hearings, we are not qualified to comment on many of the issues raised in the draft EIS. We are not residents of the area and have no particular axe to grind against swine feed lots in general. We view our role in the EIS process as trying to assure that the MPCA and local resident's decision on the proposed swine feed lots is based on the best available geologic and hydrologic information. We make no recommendations as to whether the proposed facilities should or should not be built.

As geologists, we have been interested in the geology and hydrology of southeastern Minnesota for a number of years, and are currently studying this complicated karst area as part of the Minnesota Geological Survey's ongoing research project funded by the Legislative Committee on Minnesota Resources. When presented with a Draft EIS, which purports to address those aspects of the geology and hydrology of the area relevant to the envirnomental impact of the proposed facilities, we were naturally quite interested. In the planning and construction of any facility which has potential for contaminating the environment, geology and hydrology are extremely important matters to consider. This is especially true in karst areas, in which there is generally an immense potential for groundwater contamination. Most of southeastern Minnesota, including the area of the three proposed facilities sites, is a karst area.

It is our opinion that the assessment of the geology and hydrology provided by the Draft EIS is completely inadequate. It is riddled with careless errors, omissions, and misrepresentations of references and has major interpretations based on information which is demonstrably false.

Again, our involvement with the specific issues is minimal, and we are not trying to level any personal accusations. We simply feel that without much additional effort, a much better job could have been done of preparing the Draft EIS.

The purpose of this letter is: (1) to point out some of the many serious errors and omissions in the geology and hydrology sections of the EIS, (2) to present some maps and other work which we have quickly assembled, (3) to suggest that major portions of the geology and hydrology descriptions need to be partially or completely rewritten, (4) to make suggestions and recommendations of procedures which can reduce and/or monitor the enviornmental impact if it is decided to permit the facilities to be constructed, and (5) to comment on the EIS process itself.

We hope that our comments will be taken constructively, and that serious consideration will be given to them in the preparation of the final EIS.

Errors, Omissions, and Misrepresentations in the Draft EIS

Page 3-3, Fig. 3.1-2: The contour lines in this Figure range from 1236 to 1250 ft. but the contour map (Fig. 3.2-1) shows the site sitting on the 1280 contour line. The lines are 30 to 40 feet off in one of the figures.

Page 4-21, 2nd paragraph: According to the definitions on page 3-1, this Draft EIS concerns two "project regions." In neither is there "A sufficient thickness of saturated sand and gravel to be widely used as an aquifer."

Page 4-47, 1st sentence: Wright (1972a) states that the Rochester Till Plain is a "pre-Wisconsin till plain with a partial cover of loess." It does not state that "Over most of the Rochester till plain, the glacial till is overlain by loess."

Page 4-47, 2nd paragraph, 1st sentence: The well in question: 1) is a water well not a "test well", 2) it encountered 93 feet of sand - not "95 feet of unconsolidated surficial deposits," and most importantly 3) is not there. The well in question was drilled about six miles south of the Penz Farms site. The information in the well log is irrelevant and misrepresented.

Page 4-47, 2nd paragraph, 2nd sentence: The only information in Hogberg and Gilmer (1976) which bears on the surficial deposits at the Penz Farms site is a very general map. Neither our field work nor the test boring data in Table 4.5-1 give any indication of the presence of glacial till at the site.

Page 4-47, 2nd paragraph, 3rd and 4th sentences: Why are the locations of these borings not shown on Fig. 3.1-2? Without that information the borings are much less useful and we have no assurance that the borings are even on the facilities site. You either know where the borings were located or you don't. Which is it? Note that the borings did

not record any glacial till - despite what the preceding sentences say. Note also that one of the borings bottomed at 20 ft. In most cases the "obstruction" referred to in the foot note is bedrock. Twin Cities Testing normally records the level of the water table (if it is encountered) as part of their test borings. Why is that information not given in the tables?

Page 4-47, 3rd paragraph, 1st sentence: Why are the locations of the borings not shown on Fig. 3.1-3? According to the SCS people the locations of the borings are shown on their drawings. Why were the borings only 15 feet deep?

Page 4-47, 3rd paragraph, 2nd sentence: The SCS soils sheets are of only very limited validity at the "facilities site" scale.

Page 4-47, 3rd paragraph, 3rd sentence: The uppermost bedrock at the "project site" is not the St. Peter. The uppermost bedrock at the "facilities site" may be the St. Peter - if there is any of it left. The uppermost bedrock in the "project site" is the Decorah or perhaps the Galena (in parcel C).

Page 4-47, 4th paragraph, 1st sentence: The "University of Minnesota Agricultural Experiment Station 1973" reference is to the St. Paul sheet of the Minnesota Soil Atlas. The Soil Atlas sheets are 1:250,000 scale sheets which can yield only the most general description at the "project site" scale and are useless at the "facilities site" scale. Nevertheless it is educational to read what the reference actually says. The Hilltop, Penz Farms and Schroeder sites all lie within the region labeled the Harmony-Plainview Uplands on the St. Paul Sheet of the Minnesota Soil Atlas.

The following is what the reference actually reads: [italtics added]

"The Harmony-Plainview Uplands consists of a loess mantled plateau ranging from 1,100 to 1,300 feet above sea level. Slopes range from nearly level to steep near drainageways. Most topography is controlled by the underlying glacial till (probably Kansan) which is many feet thick on the western side of the region but thins to less than two feet over bedrock on the eastern side. Where glacial till is thin or absent, topography is bedrock controlled. Loess thickness ranges from 8 to 20 feet. The loess probably was deposited during the main Wisconsin Glaciation.

Old remnant landforms extend upward from the general plateau level and form rather prominent hills within the region. Sinkholes are a common landscape feature from Spring Valley to Wycoff to Fountain and south toward Preston. Caves are present in the underlying limestone strata. No lakes exist in this region. Water tables are deeper than 20 feet." (Minn. Agr. Expt. Station, Misc. Rpt. 120, 1973, p. 28).

The authors of the Draft EIS have chosen to omit all of the qualifiers and warnings and in a later section use a different source for the depth to water table.

Page 4-47, last sentence and page 4-49, 1st three lines: This is a completely absurd way to deduce soil cover in a rolling, hilly area. The wells referenced give the thickness of surficial deposits directly. A well on the Daryl Nesseth farm directly south of Parcel A hit bedrock at 6 ft. A well on the Johnny Flom farm directly north of Parcel A hit bedrock at 24 ft. Bedrock is at or very near the surface along the north and south sides of Parcel A. There are probably thicker layers of surficial materials of some of the other parcels in the Hilltop Project site.

Page 4-51: This is an approximately x3 enlargement of the Sloan and Austin (1966) map. It is poorly registered and is mislabeled. The white areas along the top of the figure and around the community of Elgin are not Galena as indicated on map legend but are Prairie du Chien.

Page 4-52: This figure is poorly registered and the detail available in the original 1:250,000 scale map is inadequate for the task at hand.

Page 4-59, to follow 2nd paragraph: The Draft EIS completely neglects to mention that parts of several of the manure application parcels at the Hill Top Project site are partially tiled. Our conversations with local farmers indicates that parts of parcels C, D and E may be tiled. The presence of tiling completely changes the surface water picture. Tiling is designed to drain fields. It will greatly increase the speed with which pollutants from the manure can reach local streams. It will short circuit the biological filtration of the soil on which the whole concept of manure spreading rests. Finally, since parcels D and E are located astride the surface divides, tiling may invalidate the statements in the second paragraph on 4-59.

Page 4-59 and 4-62: The discussion of the complicated flow patterns in karst regions is completely inadequate. The various aquifers are perched relative to one another and the recharge parameters are almost completely unknown.

Page 4-62, last sentence 3rd paragraph. Hult (1979) did not report "the presence of numerous uncased multiaquifer wells in the project region". His work was in southern Fillmore Co. and not northeastern Olmsted and Goodhue Counties. Mark Hult looked hard for uncased multiaquifer wells in a five township area. He was able to find records of only nine multiaquifer, uncased wells. "Of these, two were in use and could not be geophysically logged, three could not be located, and four were located and evaluated" (Hult, 1979, p. D-23). Three of the holes had sealed themselves at the Decorah and (or) Glenwood Shale. The statement in the Draft EIS is a complete misrepresentation.

Page 4-62, last paragraph: There is no evidence that there is anything like 100 feet of "unconsolidated surficial deposits" at the Penz Farm project site. One of the borings at the site hit what was probably bedrock at 20 ft. The second boring only penetrated 28 ft. A well drilled at the Calvin Penz farm on Parcel B encountered bedrock at 18 ft. A well drilled for Darrell Brown just northwest of the northwestern corner of Parcel F hit bedrock at 10 ft. A well drilled on

the John Scanlan farm one half mile east of Parcel D hit bedrock at 20 ft. Silver Creek crosses the south end of Parcel D and is running on Galena bedrock. A small, abandoned limestone quarry along the west edge of sec. 25 of Haverhill Twp. reveals 5 to 10 feet of soil overlying bedrock.

There is nothing like 200 ft. of Galena at the site. The uppermost bedrock is near the middle of the Galena. There is about 100 ft. of Galena present at the site.

Page 4-64, 1st line: This statement is completely incorrect. The Calvin Penz well discussed above was completed in the Galena and had a water table level of 58 feet. There may be very local perched water tables in the soil but these are probably not very extensive.

Page 4-64, 2nd paragraph, 1st sentence: There is absolutely no assurance that the underground drainage in the Galena "generally coincides with local surface water systems." We have documented several cases where underground drainages in the Galena cross from one surface drainage basin to another. We have also documented cases in which the underground drainage serves to disperse surface waters into two or more drainage basins. With the Penz site located on a topographic divide the latter situation is almost assured.

Page 4-64, 2nd paragraph, last 4 sentences: The only reason the number of wells in each system is unknown is that you didn't bother to ask. This information is absolutely vital to an informed decision on the sites. We have tabulated such data for the Hill Top site (see below). The Draft EIS is inexcusably lax in not listing this data.

Page 4-64, 3rd paragraph: As noted above: 1) you do not know the depth to water table at this site (The Minnesota soil Atlas says +20 ft). The SCS sheets are so general that they simply can not yield useful information on the facilities site scale. 2) you can only document 15 feet surficial cover over the St. Peter. The hole for the lagoon must be at least 12 feet deep. You have no way of knowing if more than 3 feet of till will underlie the lagoon.

Pages 4-64 and 4-65, last 3 lines and 1st 4 lines: Why do you suppose Dry Creek has that name? It most likely is a losing stream during most of the year. The near surface subcrop of the St. Peter may well act as a local or regional recharge region for the middle aquifer. You have no evidence that "lateral ground water movement in the unconsolidated deposits is approximately coincident with surface water drainage." If Dry Creek is indeed a losing stream the lateral ground water flow may be directly away from the surface creek. The SCS office indicates that at least part of Parcel A has been tiled. Again, the presence of tile invalidates most of the discussion in the Draft EIS.

Page 4-65, 2nd paragraph: As above, to label the depth of the wells as unknown is simply a dereliction of your responsibilities in the Draft EIS.

Page 4-65, 3rd paragraph: Again, you simply can not pick a very general statement from the SCS sheets and believe that is has anything except a coincidental relationship to a specific site. Springs issue from the Galena-Decorah contact on the northwest and southwest sides of the ridge on which the facilities site is located. These springs are all near the 1050 ft. contour. Since the facilities site sits on the 1150 contour, the water table must be well below the surface at the sites.

Page 4-65, last paragraph: With the help of several local residents we have gathered data on well depths in the Hill Top project region. These data are shown in Appendix A to this letter. Of the 12 residential water sources within one mile of the facilities site, 3 (25%) are wells cased into the middle aquifer; 8 (67%) are wells that only penetrate the upper aquifer; and 1 (8%) is a spring which drains water from directly under the facilities site.

The number of wells completed in each aquifer system is not unknown - the authors of the Draft EIS simply did not ask. The middle aquifer is not the most widely used groundwater source in the project region. 75% of the residences within one mile of the facilities site obtain their water from the upper aquifer. There are about 18 residents between 1 and 1.5 miles from the facilities site. We have tabulated data from 10 of these 18 houses. 8 of the 10 sources, 80% are from the upper aquifer.

Page 4-66, 2nd paragraph, 2nd sentence: The solution of limestone and dolomite which produces karst feature may well have started during the Cretaceous. There are certainly many paleokarst features buried under Pleistocene glacial deposits in the area. The process, however, is an ongoing one and new features are being produced continuously in southeastern Minnesota.

Page 4-67, 1st paragraph, 1st sentence: This sentence is very misleading and may be wrong. One can identify "4- to 5-acre" facilities sites in the midst of the densest sinkhole fields in the state which contain no "surficial karst features". The SCS sheets are a completely inadequate source from which to locate all of the surficial karst fratures in an area. The areas must be carefully field checked - and are certainly underlain by limestone and dolomite containing solution enlarged features.

Page 4-67, 1st paragraph, 3rd sentence. Remove the word "may". Extensive subsurface systems of solution-enlarged channels certainly exist under the Penz Farms and Hill Top Park Producers sites and probably exist under the Schoeder site.

Page 4-67, 2nd paragraph, 1st sentence: This sentence is only partially correct and is completely misleading. First one must differentiate between slow or "normal" formation of sinkholes and catastrophic sinkhole formation. A recent study of the geologic controls on "normal" sinkhole formation in mantled karst (Palmquist, 1979 - see copy in Appendix E) on the Galena in extreme northeastern Iowa indicated that "the dominant geologic controls [on sinkhole formation] are

secondary porosity, groundwater recharge, regolith strength and thickness, and hydraulic gradient" (p. 90). No one parameter could account for as much as 50% of the observed distribution. On-the-other-hand, castastrophic sinkhole collapse seems to require "thick surficial deposits". Kinser (1979 - see copy in Apppendix E) notes that "most [catastrophic] collapses we have observed or have been recorded in the literatue occur where there is a moderately thick mantle of soil. In Missouri few collapses occur where the soil cover is less than 60 feet (18 m) thick. Collapses are rare where soil thickness is less than 40 feet (12 m)....Sinkholes do occur in areas where no previous evidence of sinkhole collapse existed." (p. 93). Kinser (1979) notes that about half of the catastrophic sinkhole collapses can be directly related to man's activities and the second largest cause of these collapses is the construction of sewage lagoons and lakes.

Second, you have not demonstrated into which of the catagories each of the facilities sites belongs.

Page 4-67, 2nd paragraph, 2nd sentence: This sentence should read "In addition, thick deposits of fine-grained geologic materials may retard the downward flow of any effluents released at the land surface and reduce the potential for contamination of underlying carbonate aquifers."

Page 4-67, 2nd paragraph, last three sentences: These sentences completely misrepresent Walton's (1977) letter and imply that the sites meet the recommendations of Walton's letter and/or the Midwest Plan Service (1975). The relevant portions of Walton's (1977) letter are as follows: "This raises the question of what constitutes a safe site in the karst area. Basically it is a site in which all of the area that may be affected by the proposed land use is covered by a substantial thickness of relatively impervious soils or geological formations and where all the drainage from the site can be contained and treated before being released. Suitable cover materials in the area generally consist of clay-rich glacial drift, but in much of the area glacial drift is sporadic and uneven and drift is absent in some areas. The Decorah Shale, which is one of the bedrock formations, is also an adequate cover material where a substantial thickness directly underlies surficial materials.

In my mind a substantial thickness would mean at least 20 feet and preferably twice that thickness, but this is a variable dependent on both the nature of the material and the bedrock formation that it overlies. Obviously one or two test borings are not adequate to investigate a site of any significant size. I should think a minimum of four holes at the corners, or regularily distributed around the perimeter of an irregular site, and at least one hole near the center of the site would be a minimum. The ground should also be inspected by a qualified person familiar with the geology and geomorphology of the area to identify features that may be indicative of shallow bedrock or buried sinkholes. Such features include breaks in slope, undrained depressions and variations in soil moisture and vegetation. Additional holes should be put down to test these and any other anomalous features. It is also important that test holes be drilled under state inspection and logged by a competent person with some soils, engi-

neering, or geological background and that samples of the materials penetrated be collected at five foot intervals or less and at every change in formation and that these samples be properly bagged and labeled and submitted with the logs. Test holes should be required to be drilled at least to bedrock or to a depth of 40 feet, whichever comes first, and if materials within the top 40 feet are not suitable for retaining water, holes should be drilled until at least 40 feet of suitable materials have been penetrated or bedrock is encountered. At any site where test holes encounter less than 40 feet of suitable materials further test drilling may be required to show that the lesser thickness of suitable materials is continuous over the site and has adequate water-retention properties" Walton (1977).

The borings and studies outlined in this Draft EIS do not even come close to meeting Walton's suggestions.

Page 4-74, 2nd paragraph, last sentence: The village of Elgin is east not west of the Schroeder site.

Page 5-19, 2nd paragraph: What possible justification is there for this incredible assertion?

Page 5-19: This discussion totally fails to mention that some of the manure application parcels are tiled. The presence of such tiling obviously will affect the run off situation.

Page 5-22, 3rd paragraph: This whole paragraph is simply amazing - and totally misleading! First there are two completely separate modes of groundwater contamination to be considered: 1) the castastrophic formtion of a sink hole somewhere beneath the facilities site and 2) the more wide spread contamination from the downward movement of groundwater under the waste storage facilities.

The castrastrophic formation of sinkholes in karst regions is much more common than is normally thought. A waste treatment lagoon at Altura Minnesota (approximately 20 miles east of the Penz Farms site) was drained in 1976 by the formation of sinkholes in the lagoon. In one of the public hearings a representative of ERT, Inc. asserted that the geologic situation at Altura was completely different than that present at any of the "facilities sites". As geologists familar with the area, we see many simularities between the Altura facility and the proposed facilities sites. It is clear that a known history of lagoon failure due to karst features exists in the region. The impact of such a failure is potentially so enormous (800 cases of flu-like illness were reported after the drainage of a lagoon in West Plains Missouri in 1978, Camin (1978) - see copy attached in Appendix E) that the problem must be specifically addressed in the EIS - not ignored.

A new soil pipe is developing in the field of Rueben Ramstad about 1.5 miles from the Hill Top site. We are reasonably certain that field work would produce additional sinkholes in the vicinity of the other sites. In April, 1979 a sinkhole opened catastrophically under one corner of an equipment shed on the Arthur Feyereisen farm south of Hudson Wis. (St. Paul Pioneer Press, April 10, 1979, pp. 1 and 4). The geologic situation is similar to the facilities sites. The collapse destroyed one corner of the equipment shed, "ate" a combine and

narrowly missed a trailer house. The initial hole was 35 ft. across and at least 45 ft. deep. Similar holes have developed this spring near Greenleafton MN (The Preston Republican, May 17, 1979). Such events do occur in the karst regions all too frequently.

The discussion in section 5.5 is completely inadequate.

Rupture of the earthen storage basins will not release only "ammonium and nitrates" to the local groundwater - it will dump large quantities of an aerobically digested swine manure into the groundwater.

We doubt that even the above-ground storage tanks would fail to rupture if a hole 35 ft. across and 50 ft. deep suddenly opens under one of them.

Page 5-23: The plastic liners will almost certainly leak sooner or later. We do not have access to the Miller et al. (1976) or Ciravolo ef al. (1977) references but suspect from the references that the studies described did not occur in karst regions. A major difference between karst and normal drainages is that a seep leading down into an open joint or other karst cavity will tend to enlarge itself as material is withdrawn from below. This process will tend to negate any "biological sealing found in manure-holding ponds and basins".

The data in Table 4.5-1 demonstrate only 15 feet of cover at the Schroeder site and indicate that bedrock exists at as little as 20 ft. at the Penz Farms site. Since the lagoons are 10 feet deep with another foot of excavation to allow the plastic liners to be buried under a foot of soil, the hole must be at least 12 feet deep. That leaves less than 8 feet of soil over the bedrock at the Penz Farms site. The references listed in the EIS indicate that the seepage will get that far. The seepage is then into the open channel network in the Galena and all filtration is decreased or totally lost.

Page 5-24, 2nd paragraph, 2nd sentence: Table 4.5-1 does not record the presence of "20 to 28 feet of clay till" at the Penz Farms site. The words are "0-2 ft. of silty clay soil", "2-15 ft. silty clay and sandy clay (or sandy soil)" and "15+ft. - clay". The word "till" is not used. Can't you read your own tables?

Page 5-24, 2nd paragraph, 3rd sentence: "Regional data" does not suggest that the "thickness may be much greater". Only one mislocated water-well indicates thicker surficial deposits. Water wells in the immediate area, field observations, and unbiased readings of the regional maps all indicate soil covers of 20 ft. or thinner. The only anomalous datum is the 28 ft. boring. It is entirely possible that that boring penetrated a buried sinkhole under the facilities site!

Page 5-24, last half of 2nd paragraph: See comment above. Again the references are simply not applicable to a karst situation. As soon as the seepage hits the first solution enlarged joint (and such certainly exist under the site) then all filtration stops.

Page 5-24, 3rd paragraph, 2nd sentence: Beautiful! 40 to 55 ft. minus 28 to 43 ft. equals 12 ft. Why do you assume that the excavation of the lagoons in this paragraph will be 12 ft. deept but will only need to be 10 ft. deep in the preceeding paragraph? Once again you have magically turned sand and loess into "unconsolidated deposits" and then trans-

formed these into "clay till" in two sentences. You have documentary evidence for 3 feet of till beneath the lagoons once they are dug. You have no idea what lies below 15 feet.

Page 5-24, 3rd paragraph, 3rd sentence: The St. Peter is not underlain by the Platteville. It is underlain by the Praire du Chien (Shakopee).

Page 5-47, 4th paragraph: What an amazing, unsupported assertion! Is this document actually asserting that the most adverse potential "effect" on the local aquifers would be depletion of the aquifer? The draw down of the local aquifer will certainly be very local - it will however increase the hyraulic gradient within each facilities site and thereby agravate the potential for local sinkhole collapse.

Page 5-47, last paragraph: Twice on page 5-22 you refer to a discussion of the sinkhole potential of the sites in section 5.5. All you say here is that "The sinkhole potential and susceptibility to groundwater contamination of each site are related to the thickness and type of geologic materials overlying these carbonate formations". That statement, while rigorously correct, is such an incredible oversimplification as render it totally incorrect. In Appendix E we have included copies of several relevant papers on karst hydrology and sinkhole formation. These papers have been referred to above, and together, with the refrences contained within the papers, serve to document that an extensive, mature scientific literature exists on the hydrology and geomorphology of karst regions. That literature has been completely ignored in the preparation of the Draft EIS.

The most significant generalization that can be drawn from the literature on karst is that you can not generalize. Each site must be investigated on its own.

Page 5-48, 1st paragraph, 1st sentence: No! The major concentrations of sinkholes in southeastern Minnesota occur where the "unconsolidated surficial deposits" and bedrock geology are indistinquishable from the Penz Farms and Hill Top Pork Producers facilities sites. Significant concentrations occur in locations essentially indistinguishable from the Schroeder site. No one knows why major concentrations of sinkholes occur in one place and not another which has apparently identical geology. Your assertions do not change this fact.

Page 5-48, 1st paragraph, 2nd sentence: Once again common water wells have been elevated to "deep test holes" status. You do not have enough information about any of the sites to evaluate the sinkhole potential for any of them.

Page 5-48, 1st paragraph, 3rd sentence: No matter how many times you say it the data in Table 4.5-1 does not record the presence of till at the Penz Farm site - and you have presented no other "site-specific" data. The <u>maximum</u>, not minimum, depth of soil cover at the Penz Farms site is 28 feet.

Page 5-48, 1st paragraph, last sentence: You have presented no "site-specific" data which indicates that a "high water [table? is] present at each of these sites" or that if it were that such would prevent the

"rapid groundwater movement (which is characteristic of karst areas)". Our reading of the regional descriptions indicates that the former is certainly incorrect for the Penz Farms and Hill Top sites and very dubious for the Schroeder site. Anyone's reading of the literature of karst hydrology indicates that the latter is irrelevant.

The whole two preceding paragraphs boil down to an unsupported and unsupportable assertion that sinkholes do not exist and will not form at the sites. It is conceivable that you are right but it is by no means probable.

Page 5-48: There is simply no discussion at all of the potential environmental impacts to the hydrology - both surface and subsurface - of the routine speading of the manure and effuent waters on the fields. There is no mention of, or discussion of the implication of the presence of tiled fields on the Hill Top and Schroeder Project sites. There is no mention of the literature that exists (c.f. Tennyson and Settergren, 1977 - copy included in Appendix E) of the impact of spray irrigation of sewage effluent on a karst hydrology.

Page 5-74: We are unable to find your reference "USDA SCS 1977". We are not sure what the document is - but we can find no evidence that the document is a "Washington D.C., U.S. Government Printing Office" product.

Page 6-10, 1st paragraph, 2nd sentence: What "corrective measures could be applied" to correct a deterioration of the water quality? We are not aware of any such measures short of stopping the pollution. The time scale required to clean up the system following the detection of pollution may well be years.

Page 6-11, 2nd paragaph, 1st sentence: There is simply no meaningful discussion of the impact of the manure spreading - particularly on tiled fields - in this Draft EIS. This sentence is an unsupported assertion. It is, in our opinion, almost certainly wrong.

Page 6-11, 3rd paragraph, 1st sentence: You want to have your cake and eat it too. Take your choice. The water must either 1) run off and pollute the surface streams or 2) sink downward and pollute the ground water. You are asserting that it will do neither. In reality it will probably do both.

Page 6-11, 3rd paragraph, 3rd sentence: Again, what "control measures can be applied"? The only effective one would be to close down the facility in question.

Page 6-19, 2nd paragraph, 1st sentence: As noted above you do not have enough site specific information to allow any rational estimate of the sinkhole potential of each site. The potential has not "been determined to be low". You have simply asserted that it is low.

Page 6-19, 2nd paragraph, 3rd sentence: Again, you have completely misunderstood the mechanisms of sinkhole formation. Sinkholes do not form very readily on the surface of bare carbonate bedrock. The presence of several meters of cover is a necessary part of the process.

Catastrophic development seems to require several tens of meters of soil cover.

Additional borings are, however, needed.

Page 6-19, last sentence, Page 6-20, 1st sentence: These sentences misquote the spirit of Walton 1977 leter. Walton stated "[Potentially polluting land uses] should be located in the karst area only where the necessity is sufficiently great to justify the cost of taking adequate measures to protect the water resource." No such justification has been offered in this Draft EIS.

Furthermore there is a disturbing tendency to discuss the whole matter in terms of the number and depth of bore holes - as though a bore hole is some kind of a magic talisman capable of "protecting" the groundwater of an area. A boring is simply a means of gaining information about the subsurface of an area. That information when coupled with experience in karst areas is what allows one to make informed estimates of the risks at each area. Given such a risk estimate one can then rationally ask if the potential rewards outweigh the potential risks. This Draft EIS does not make rational estimates of the risks - nor does it present enough information to allow an informed reader to make such a judgement.

In summary, we find that the geology and hydrology sections of this Draft EIS are wrong, misleading and totally inadequate. The Draft EIS has totally ignored a large body of scientific literature on the geomorphology and hydrology of karst regions. The Draft EIS demonstrates a complete lack of understanding of how karst areas "work". In that state of ignorance, the Draft EIS makes numerous statements which are misleading and/or demonstrably false - and bases major conclusions on those statements. The Draft EIS systematically misquotes and/or misrepresents many of the references it does quote. The Draft EIS attempts to select portions of very general descriptions of the areas and to assert that these represent adequate descriptions of specific sites. The Draft EIS has labeled as "unknown" many pieces of critical information which are unknown only because the authors failed to tabulate such information. The Draft EIS bases a major "site-specific" conclusion on information from a well that is not at the site - and in the process ignores other contradictory well data that are at or near the sites.

Tom Aley observed that people "who inhabit karst are not living on an infinite filter, but on a very finite sponge." This Draft EIS is thinking "filter" - it should be thinking "sponge".

The comments above resulted mainly from a critique of sections 4.2, 4.5, 5.2, 5.5, 6.2, and 6.5, in the Draft EIS. Most of the rest of the document was not considered. The density of errors in the sections critiqued is so high that we are concerned that the other sections may also be seriously in error.

Results of Our Own Work

Enclosed as Appendices B, C and D are hastily assembled geologic maps of the project sites on a 1:24,000 scale. These maps were drawn based on

data from water well logs which were easily obtainable from the drilling companies (and are included in the appendices), and from large scale manuscript maps which Dr. Robert Sloan used in the preparation of the Minnesota Geological Survey's St. Paul Sheet map. A brief field check showed that the maps are reasonably accurate. The maps are a considerable improvement over the maps included in EIS which are merely blow-ups of a much smaller scale map. Such changes of scale cannot be made without greatly sacrificing detail and acccuracy.

We also scanned SCS aerial photography for potential sinkholes in the project site area. The results are plotted on separate "karst features" overlays attached to the topographic base maps. In photos from late summer-early fall of very dry years (such as the years 1937-1939) one can often see what appear to be dark spots or "freckles" on the landscape. These represent areas of higher soil moisture content or more concentrated vegetation. Our experience in areas further south, such as Fillmore County, indicates that many of these spots may represent buried or incipient sinkholes. We are not categorically stating that all of these spots are sinkholes, but we are suggesting that many of them could be. These patches line up along a northwest-southeast axis, which corresponds to one of the predominant joint or fracture directions in the area. This leads us to conclude that we were not just "seeing spots."

We witnessed a number of other karst features in our limited excursions, including springs, sinking steams, and the general crevassed character of the carbonate bedrock. We have plotted the features we have seen or the "karst features" overlays. These are by no means all the karst features in the area, just the ones we personally witnessed.

We visited the farm of Reuben Ramstad (located in the SW¼ of section 6, Wanamingo Twp., 1.5 miles east of the Hilltop Park Producers facilities site) and personally saw two sinkholes. One was a soil pipe which, according to Mr. Ramstad, had opened up just recently in his field, and was growing steadily. The other was a large, closed depression, about 30 m in diameter. The ridge on which we found these sinkholes is geologically completely analogous to that of the Hilltop Park Producers proposed facilities site.

We observed a buried sinkhole in a quarry on the eastern edge of section 8, Wanamingo Twp, about a mile southeast of the Hilltop facilities site. It is in a direct NW-SE line with the sinkholes on Mr. Ramstad's farm.

A number of springs are present in the valley to the southeast of the Hilltop facilities site. One of these provides the sole source of drinking water for a residence. The springs are located at the contact between the Decorah Shale and the overlying Galena Formation. Water from the ridges (one of which is the site of the Hilltop facility and application parcel A) percolates downward through the fractured Galena Formation until it encounters the Decorah shale, where it flows laterally and emerges at the springs. Any pollution that occurs on the ridge will either show up in the springs or flow into the valley as surface runoff.

In the quarry previously mentioned near the Hilltop site, the bedrock (Galena Formation) is thoroughly fractured and penetrated by joints. There is at most 10 feet of soil cover. It is obvious that surface water would have little trouble penetrating downward. Three springs in the bottom of this quarry are further evidence for downward percolation of surface water.

In a quarry about a mile SW of the Penz Farms facilities site (NW1/4 of SW1/4, section 25, Haverhill Twp.) the bedrock (Galena Formation) is also thoroughly fractured and jointed, and there is at most a few feet of soil cover.

A number of karst featues are visible on the Penz Farms project site. In the SE1/4 of the NE1/4 of section 24, Havenhill Twp., water emerges from a spring, flows for a short distance, and then seeps back into the ground. SCS air photos taken in 1964 showed evidence for a disappearing stream about 1 mile NE of the Penz Farms facilities site (NW1/4 of NE1/4, section 19, Haverhill Twp.) The stream has since been dammed, but according to Calvin Penz, the resulting pond "had trouble holding water for a few years." We are not in the least surprised, in view of the geological situation. The stream drains application parcel F of the Penz farms site - appreciable groundwater contamination should be expected from application of manure to this parcel. The concentration of "potential" sinkholes in the Penz farms site is high (see map), and the NW-SE trend, observed near the Hill Top site, is followed.

It is obvious to us from our limited field work that an immense potential for ground water contamination exists at these project sites, both from possible "catastrophic" development of sinkholes (such as the one which recently opened on Mr. Ramstad's farm) and from leakage of waste through the thin soil cover into already existing joints, fissures, and sinkholes. Such leakage would mean almost certain immediate contamination of the upper aquifer, and has the possibility of contaminating the middle and lower aquifers on a longer time scale.

These pertinent karst geologic and hydrologic features were skirted, ignored, or simply not recognized in the draft EIS. In view of these deficiencies, we feel that the geology and hydrology sections of the EIS should be completely or partially rewritten or ammended. We would hope that the information we have supplied would not be relegated to an appendix, but could somehow be taken into consideration in the main body of the document.

Recommendations for Procedures that should be Adopted if Permits are Issued for the Facilities

If indeed it is decided to permit the facilities to be constructed, there are several important steps which we feel need be taken.

It will be important to prepare accurate geologic and hydrologic maps of the project regions at a scale of at least 1:24,000. The maps in the Draft EIS are totally inadequate and incorrect. Without reasonably precise information on the geology and hydrology, it is ludicrous to attempt

to make accurate predictions. The maps should be based on field work and should contain information on: 1) The bedrock geology, 2) the location of all wells and other sources of domestic and agricultural water 3) the location of all springs and other karst features, including sinkholes, caves, etc., 4) realistic information on surficial cover, and 5) piezometric surfaces on all of the relevant aquifers.

A systematic analysis of the surface and ground waters in the project area should be initiated as soon as possible - before the facilities are constructed and in operation. A number of wells, springs, and tile drain outlets should be identified and monitored on at least monthly intervals for at least one year before the facilities go into operation. It is vital that a sufficiently long data base be established so that any changes in the water quality in the area caused by the facilities can be documented.

Accurately located soil test borings should be conducted - at least five per site as recommended in Walton's 1977 letter. These borings should penetrate to bedrock. Such borings will be necessary for a realistic and accurate assessment of surficial cover.

We would highly recommend that a geologist with authority to stop construction be present during the excavation of the facilities sites. The presence of a geologist would help to insure that potential environmental hazards in the site are recognized before the site is put in operation.

Finally, we feel it would be worthwhile to continue the water quality monitoring process for at least five years after the facilities start operating. This will make possible the documentation of more long-term environmental change caused by the facilities.

The steps we suggest will probably prove costly and will require substantial time and effort. But we sincerely feel they will prove worthwhile. The old addage "an ounce of prevention is worth a pound of cure" bears some relevance to the situation. The time, money, and effort required in taking these steps will be insignificant compared to the costs involved in dealing with a major water pollution problem - which could result if careful planning is not implemented. We have long since reached the point when people must begin to take responsibility for the possible environmental consequences of their actions. Part of this responsibility involves careful planning - trying to assess the possible environmental risks <u>before</u> they occur. A price must be paid for this responsibility; perhaps production will be slowed down and money will need to be spent on a careful environmental analysis. But <u>especially</u> for such a "high-risk" area as southeastern Minnesota, such precautionary measures are an absolute necessity.

<u>Comments on the EIS Procedure</u>

Finally, we would like to comment on the EIS procedure in general. We wholeheartedly believe in the basic idea behind the preparation of environmental impact statements. When properly prepared, they represent a valuable tool for assessing the balance of possible damage to the environ-

ment against the economic gains of the project. However, in this case, something in the procedure went wrong and this inadequate document was prepared. Much of this trouble may have been due to the MPCA staff having its hands unduly tied by procedual restrictions and limitations. While it is necessary to establish a procedure, we feel that many aspects of it were and hindrance in this case.

According to the Draft EIS, the final EIS will consist of the Draft EIS with an appended supplement summarizing comments from the public hearings and presenting the MPCA's response to those comments. If this procedure is rigidly adhered to, then there is something wrong. It would mean that the Draft EIS with all its errors, incorrect maps, and misrepresentations of references, would constitute the major part of the final document. We feel it is very important to be able to change the statements made in a Draft EIS, should they prove blatantly wrong, as they did in this case. A "draft" should be just that, a rough draft subject to change. In this case a major overhaul is required.

Many of the problems encountered in preparing this document seem to have stemmed from time limitaions imposed by the EIS procedure. While it is only realistic to establish some time constraints - in this case the time restrictions may have contributed to the inadequacy of the document. Where an appraisal of the geology and hydrology is required, at least some field checking is required. It came out in the public hearings that the sites were only visited twice. The first trip was on a day in February when everything was covered with snow. The second visit was on the day of the first public hearing - after the Draft EIS has been prepared! It is ludicrous to think that an accurate assessment of the geology could have been made on an afternoon in the dead of winter!

We question the process by which MPCA hires its consultants. While ERT is probably a reputable firm, and perfectly capable of doing good work, and while the project scientists probably did the best they could under the circumstances, the fact remains that they completely blew it. A large chunk of the tax payer's money was wasted in hiring a consulting firm with no experience or familiarity with the area, and in expecting them in a matter of four winter months to be able to produce an adequate appraisal of the environmental inpact. We hope that the MPCA will begin to exercise care in the selection of their consultants, perhaps opting for people a little more familiarity with the area and its particular environmental problems.

We are not trying to lambaste anyone in particular, nor are we saying that the MPCA staff did not perform to within the best of its abilities. But things got bogged down somewhere, and the result was an inexcusably inaccurate Draft EIS. We hope that the MPCA in the future will strive for a more scientifically accurate document - even if this requires more flexible procedures.

We are sending the original maps to Ms. Cain and copies to Mr. Greenberg and Dr. Walton. We would appreciate the return of the original maps at the completion of the EIS process.

Sincerely yours,

E. Calvin Alexander Jr.
Associate Professor of Geochemistry

Eric Mohring
Geologist

cc: Myron Greenberg
Office of Hearing Examiners
1745 University Ave.
St. Paul, MN 55104

Matt Walton
Minnesota Geological Survey

Appendix A

Residential Water Sources

near the proposed

Hill Top Pork Producers Facility

Residential Water Sources

near

the Hill Top Pork Producers Site

	Residence	Location	Water Source	Aquifer
Within 0.5 miles of Facilities site				
1.	Darrell Nesseth	Wanamingo Twp SW1/4 of SW1/4, Sec. 5	260 ft. well	middle
2.	Johnny Flom	Wanamingo Twp NE1/4 of NW1/4, sec. 5	342 ft. well	middle
3.	Kermit Swenson	Wanamingo Twp NW1/4 of SE1/4, sec. 5	120 ft. well	upper
Between 0.5 and 1.0 miles from Facilities Site				
1.	Arnold Oterness	Wanamingo Twp NW1/4 of NW1/4, sec. 5	60 ft. well	upper
2.	Donald Kunde	Wanamingo Twp NW1/4 of SW1/4, sec. 4	380 ft. well	middle
3.	Harlan Hjermstad	Wanamingo Twp NE1/4 of SE1/4, sec. 5	91 ft. well	upper
4.	Hilliard Nesseth	Wanamingo Twp SE1/4 of NW1/4, sec. 8	28 ft. well	upper
5.	Harley Kitzman	Wanamingo Twp SW1/4 of SE1/4, sec. 6	spring	upper
6.	Robert Ramstad	Leon Twp SW1/4 of SE1/4, sec.31	80 ft. well	upper
7.	Leslie Flom	Leon Twp SW1/4 of SW1/4, sec.32	50 ft. well	upper
8.	Ida Lilleskov	Leon Twp SW1/4 of SW1/4, sec.32	80 ft. well	upper
9.	Gary Esterby	Wanamingo Twp NE1/4 of NE1/4, sec. 6	65 ft. well	upper

Between 1.0 and 1.5 miles from Facilities Site

1.	Rueben Ramstad	Wanamingo Twp SW1/4 of SW1/4, sec. 6	132 ft. well	middle
2.	Alfred Berquam	Wanamingo Twp SE1/4 of NW1/4, sec. 6	spring	upper
3.	Johnny Svien	Wanamingo Twp NE1/4 of NW1/4, sec. 6	230 ft. well	middle
4.	Marie Romo	Wanamingo Twp SE1/4 of NE1/4, sec. 4	55 ft. well	upper
5.	Robert Rohl	Wanamingo Twp NE1/4 of NW1/4, sec. 9	60 ft. well	upper
6.	Richard Berquam	Leon Twp SW1/4 of SE1/4, sec.31	spring	upper
7.	Joanne Flom	Leon Twp SW1/4 of SE1/4, sec.31	120 ft. well	upper
8.	Burton Melhouse	Leon Twp NE1/4 of SW1/4, sec.23		
9.	Sherman Hommedahl	Leon Twp SW1/4 of NW1/4, sec.33		
10.	Truman Skaro	Leon Twp SE1/4 of NE1/4, sec.31		
11.	Matilda Ohnstad	Leon Twp NW1/4 of SE1/4, sec.31		
12.	Morley Thompson	Wanamingo Twp SW1/4 of SE1/4, sec. 4	127 ft. well	upper
13.	David Wicksell	Wanamingo Twp SE1/4 of SW1/4, sec. 8		
14.	Glennis & Arthur Anfinson	Wanamingo Twp SE1/4 of SW1/4, sec. 8	50 ft. well	upper
15.	Walter Hessedat	Wanamingo Twp SW1/4 of SE1/4, sec. 8		
16.	James Foss	Wanamingo Twp SE1/4 of SE1/4, sec. 8	127 ft. well	upper
17.	Henry Swiggum	Wanamingo Twp SW1/4 of SW1/4, sec. 9		

18. Clifford Flatten Wanamingo Twp
NW1/4 of NE1/4, sec. 7

Notes: The lists above were constructed from the 1978 Goodhue County, Minnesota Rural Resident Directory and maybe somewhat out of date. The well depths were supplied by the individual residents. Mrs. Susan Rohl gathered most of the information.

Appendix B

Maps of Bedrock Geology and Surficial Karst Features and Selected Water Well Logs

From the

Penz Farms Project Site

KEY TO MAPS

The following maps were prepared by the Minnesota Pollution Control Agency from maps submitted by Dr. Calvin Alexander and Mr. Eric Mohring which were not conducive to direct reproduction. The karst feature maps were prepared by observing dark areas on aerial photographs which have often been found to be associated with existing karst features or areas of potential sinkhole development.

O_g	- GALENA FORMATION
O_d	- DECORAH FORMATION
O_{pg}	- PLATTEVILLE AND GLENWOOD FORMATIONS
O_{sp}	- ST. PETER FORMATION

SYMBOLS USED

- GEOLOGIC CONTACT

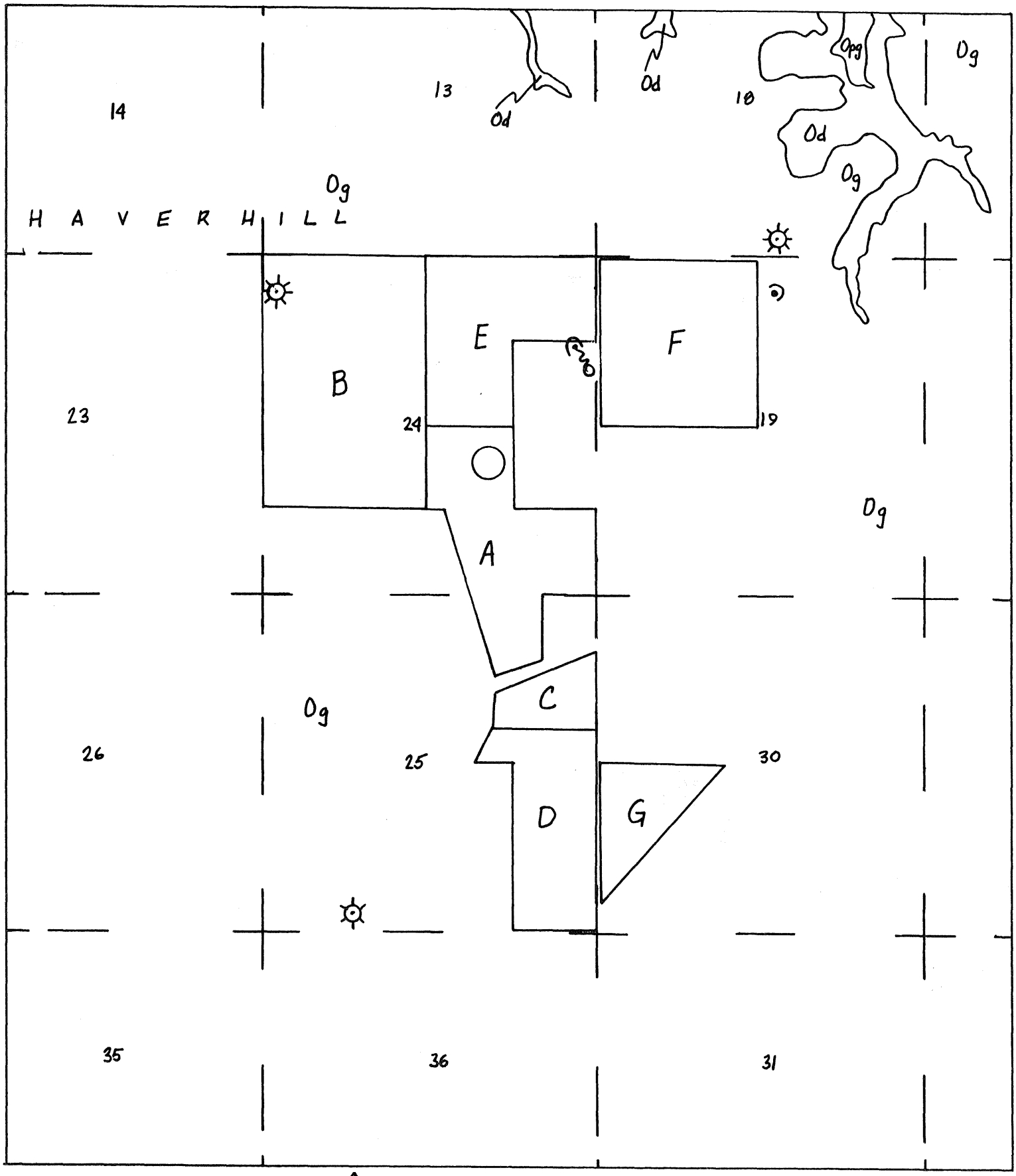
- AREAS OF POTENTIAL SINKHOLE DEVELOPMENT (AS CONSTRUED FROM AERIAL PHOTOGRAPHS)

- SPRING

- SINKING STREAM

- WATER WELL WITH RECORD OF UNDERLYING GEOLOGY

scale - 1 inch = 2,000 ft.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13
Od
Od
10
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Og
Od
Og
Og
HAVERHILL
B
E
F
23
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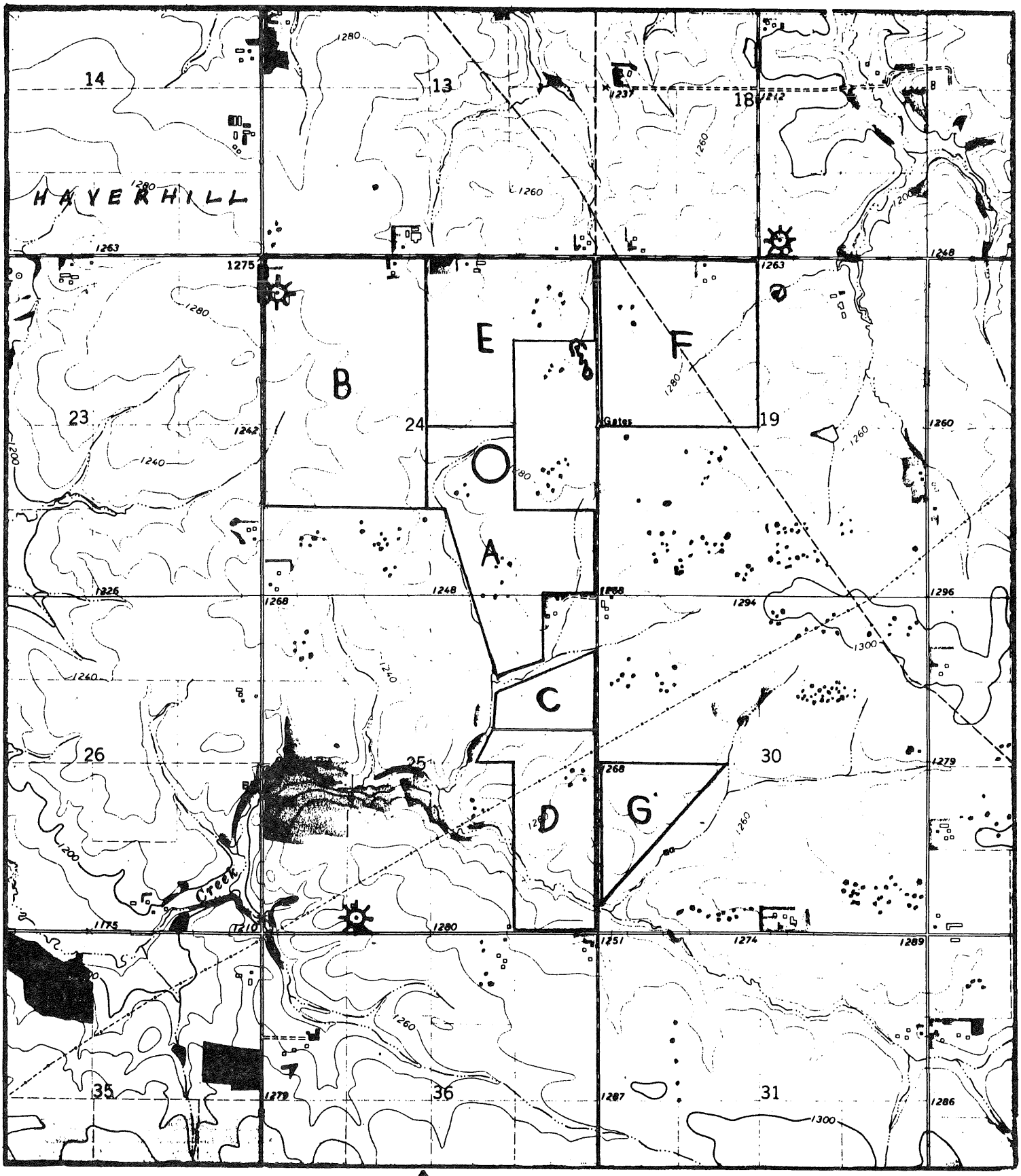
26
25
30
D
G
35
36
31
PENZ FARMS
N
GEOLOGY



PENZ FARMS ↑ N POTENTIAL KARST FEATURES

Well Log

Source: Chuck Duryea
Duryea Well Drilling
5105 College View Rd E.
Rochester, MN
(507) 282-7069

telephone conversation (6-28-79)

Location: John Scanlan farm
Sec. 25, Haverhill Twp (107N, 13W)
SW¼ of SE¼ of SW¼
Location not field checked

Well drilled: 1959-1960

Elevation of well head: 1260 ft. (not field checked)

Log:

0- 20 ft.	Brown Clay
20-145 ft.	Galena
146-185 ft.	Decorah
186-205 ft.	Platteville
206-208 ft.	Glenwood
208-305 ft.	St. Peter
306-345 ft.	Shakopee

Notes: Static water level of 245 ft.

Well Log

Source: Chuck Duryea
Duryea Well Drilling
5105 College View Rd E.
Rochester MN
(507) 282-7069
telephone conversation (7-2-79)

Location: Calvin Penz
Sec. 24, Haverhill Twp (107N, 13W)
NW¼ of NW¼ of NW¼
Location not field checked

Well drilled: 1963

Elevation of well head: 1280 ft (not field checked)

Log: 0- 18 ft. Clay
18-100 ft. Galena

Notes: 8" hole. Cased to 20 ft. 58 ft. to water.
Well drilled a source of livestock water-
May have been abandoned.

Well Log

Source: Rowland Well Co. MGS well# 105012
Chatfield MN

Location: Darrell G. Brown
Elgin, MN
(507) 876-2808
Sec. 18, Viola Twp (107N, 12W)
SW¼ of SW¼ of SE¼
Location not field checked

Well drilled: Sept. 8, 1976

Elevation of well head: 1250 ft. (not field checked)

Log:

0- 10 ft.	Drift
10- 28 ft.	Galena
28- 70 ft.	Decorah
70- 92 ft.	Patteville
92-101 ft.	Glenwood
101-204 ft.	St. Peter
204-284 ft.	Shakopee
284-350 ft.	Oneota

Notes: Cased to 292 ft. Water at 156 ft.

Appendix C

Maps of Bedrock Geology and Surficial Karst Features and Selected Water Well Logs

from the

Darwin Schroeder Project Site

KEY TO MAPS

The following maps were prepared by the Minnesota Pollution Control Agency from maps submitted by Dr. Calvin Alexander and Mr. Eric Mohring which were not conducive to direct reproduction. The karst feature maps were prepared by observing dark areas on aerial photographs which have often been found to be associated with existing karst features or areas of potential sinkhole development.

O_g - GALENA FORMATION

O_d - DECORAH FORMATION

O_{pg} - PLATTEVILLE AND GLENWOOD FORMATIONS

O_{sp} - ST. PETER FORMATION

SYMBOLS USED

- GEOLOGIC CONTACT

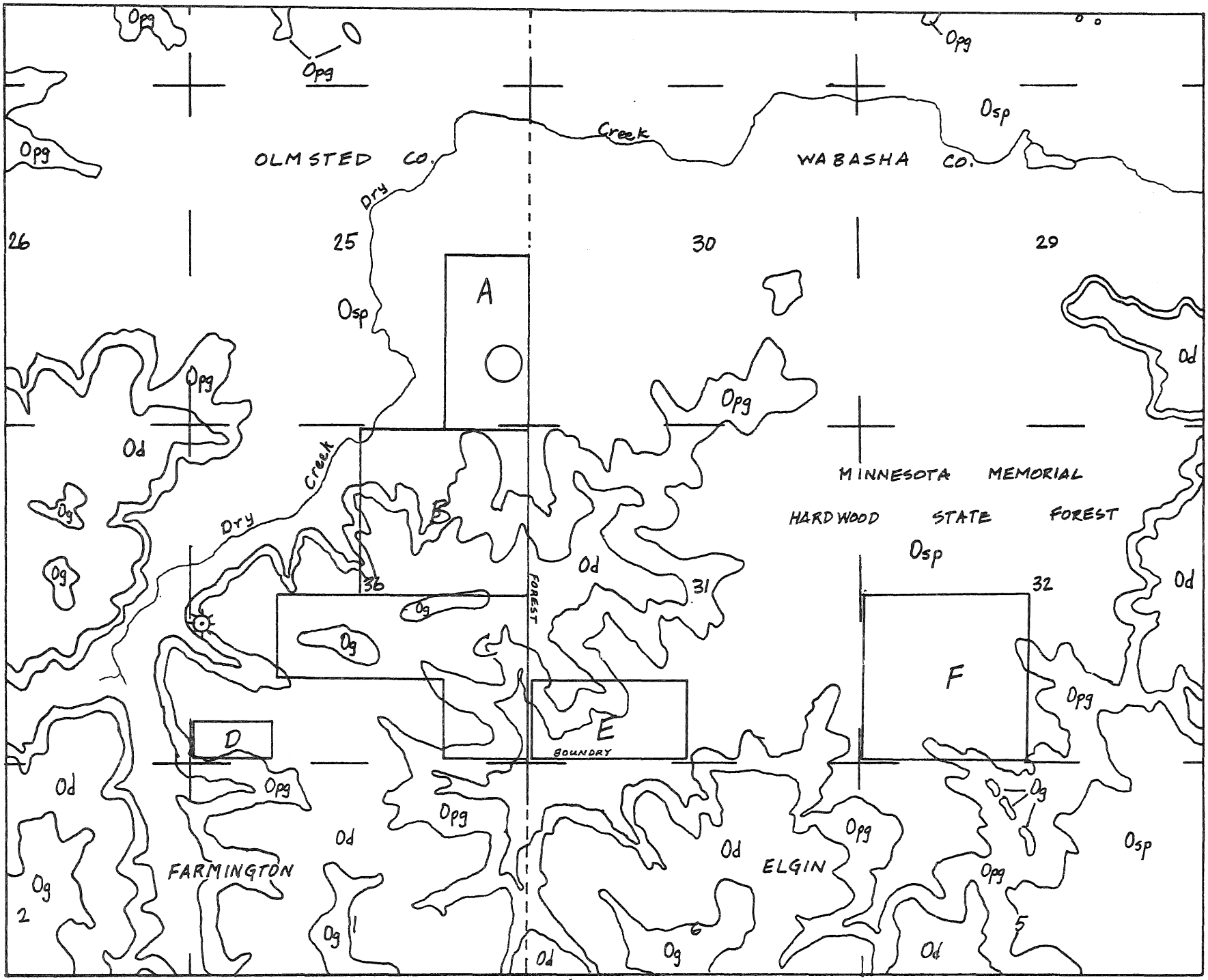
- AREAS OF POTENTIAL SINKHOLE DEVELOPMENT (AS CONSTRUED FROM AERIAL PHOTOGRAPHS)

- SPRING

 - SINKING STREAM

- WATER WELL WITH RECORD OF UNDERLYING GEOLOGY

scale = 1 inch = 2,000 ft.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Opg
Opg
Opg
Osp
Creek
OLMSTED CO.
WABASHA CO.
Dry
26
25
30
29
A
Osp
Od
Opg
Opg
Od
Dry Creek
B
MINNESOTA MEMORIAL
HARDWOOD STATE FOREST
Osp
Od
36
31
32
Od
FOREST
Og
Og
F
Opg
D
E
BOUNDRY
Od
Opg
Opg
Od
Og
Opg
Od
Opg
Osp
FARMINGTON
ELGIN
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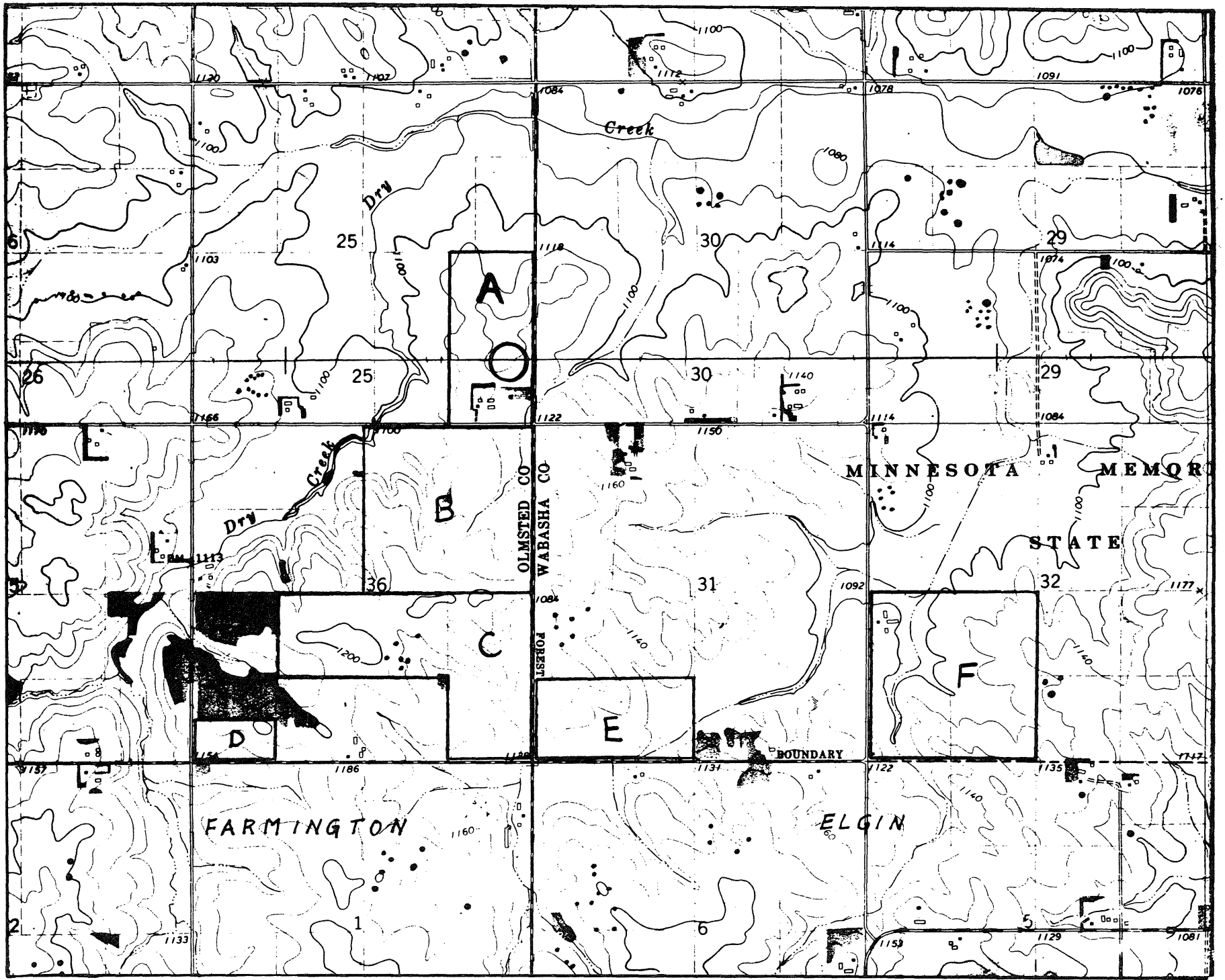
Opg
2
1
6
5
Od
Og
Od
DARWIN SCHROEDER FARM
N
GEOLOGY



DARWIN SCHROEDER FARM ↕ N POTENTIAL KARST FEATURES

Well Log

Source: R.A. Christenson Well MGS well #220884
R.R. #1 Box 56
Dodge Center, MN 55927
(507) 374-6587

Location: Gerald A Miller
Sec. 36, Farmington Twp (108N, 13W)
S½ of N½ of NW¼ of SW¼
Location not field checked

Well Drilled: 22 Sept., 1972

Elevation of well head: 1160 ft. (not field checked)

Log:

0- 30 ft.	Shale
30- 50 ft.	Platteville
50- 57 ft.	Glenwood
57-155 ft.	St. Peter
155-440 ft.	Shakopee, Oneota
440-500 ft.	Jordan

Notes: Cased to 460 ft., 177 ft to standing water.

Well Log

Source: Chuck Duryea
Duryea Well Drilling
5105 College View Rd. E
Rochester, MN
(507) 282-7069

telephone
conversation (7-2-79)
MGS Well #105493

Location: Warren Beighley
Sec. 2, Haverhill Twp (107N, 13W)
SW1/4 of SW1/4 of SW1/4
Location not field checked

Well drilled: 16 Oct., 1977

Elevation of well head: 1240 ft. (not field checked)

Log:

0- 4 ft.	Soil
5- 47 ft.	Galena
48- 92 ft.	Decorah
93-114 ft.	Platteville
115-116 ft.	Glenwood
117-213 ft.	St. Peter
214-295 ft.	Shakopee

Notes: Cased to 267 ft. Standing water at 203 ft.

Well Log

Source: Chuck Duryea
Duryea Well Drilling
5105 College View Rd. E
Rochester, MN
(507) 282-7069

telephone
conversation (7-2-79)

Location: Louis Reider
Sec. 36, Farmington Twp (108N, 13W)
"middle of south side of section"
Location not field checked

Well drilled: 1963

Elevation of well head: 1180 ft (not field checked)

Log:

0- 60 ft.	Clay
60- 82 ft.	Platteville
82-182 ft.	St. Peter
183-240 ft.	Shakopee

Notes: Cased to 191 ft. Standing water at 170 ft.

Appendix D

Maps of Bedrock Geology and Surficial Karst Features and Selected Water Well Logs

from the

Hill Top Pork Producers Project Site

KEY TO MAPS

The following maps were prepared by the Minnesota Pollution Control Agency from maps submitted by Dr. Calvin Alexander and Mr. Eric Mohring which were not conducive to direct reproduction. The karst feature maps were prepared by observing dark areas on aerial photographs which have often been found to be associated with existing karst features or areas of potential sinkhole development.

O_g	- GALENA FORMATION
O_d	- DECORAH FORMATION
O_{pg}	- PLATTEVILLE AND GLENWOOD FORMATIONS
O_{sp}	- ST. PETER FORMATION

SYMBOLS USED

- GEOLOGIC CONTACT

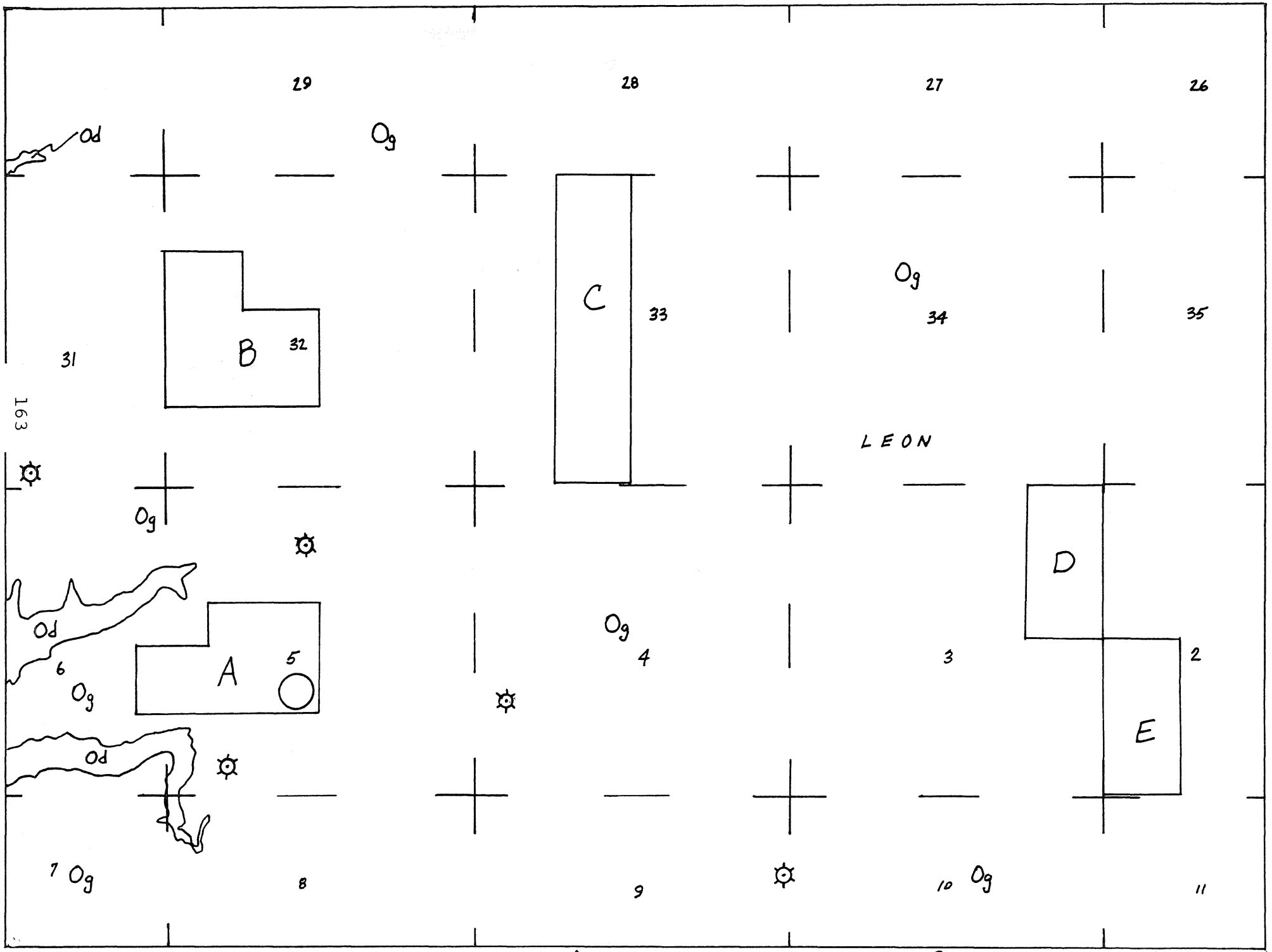
- AREAS OF POTENTIAL SINKHOLE DEVELOPMENT (AS CONSTRUED FROM AERIAL PHOTOGRAPHS)

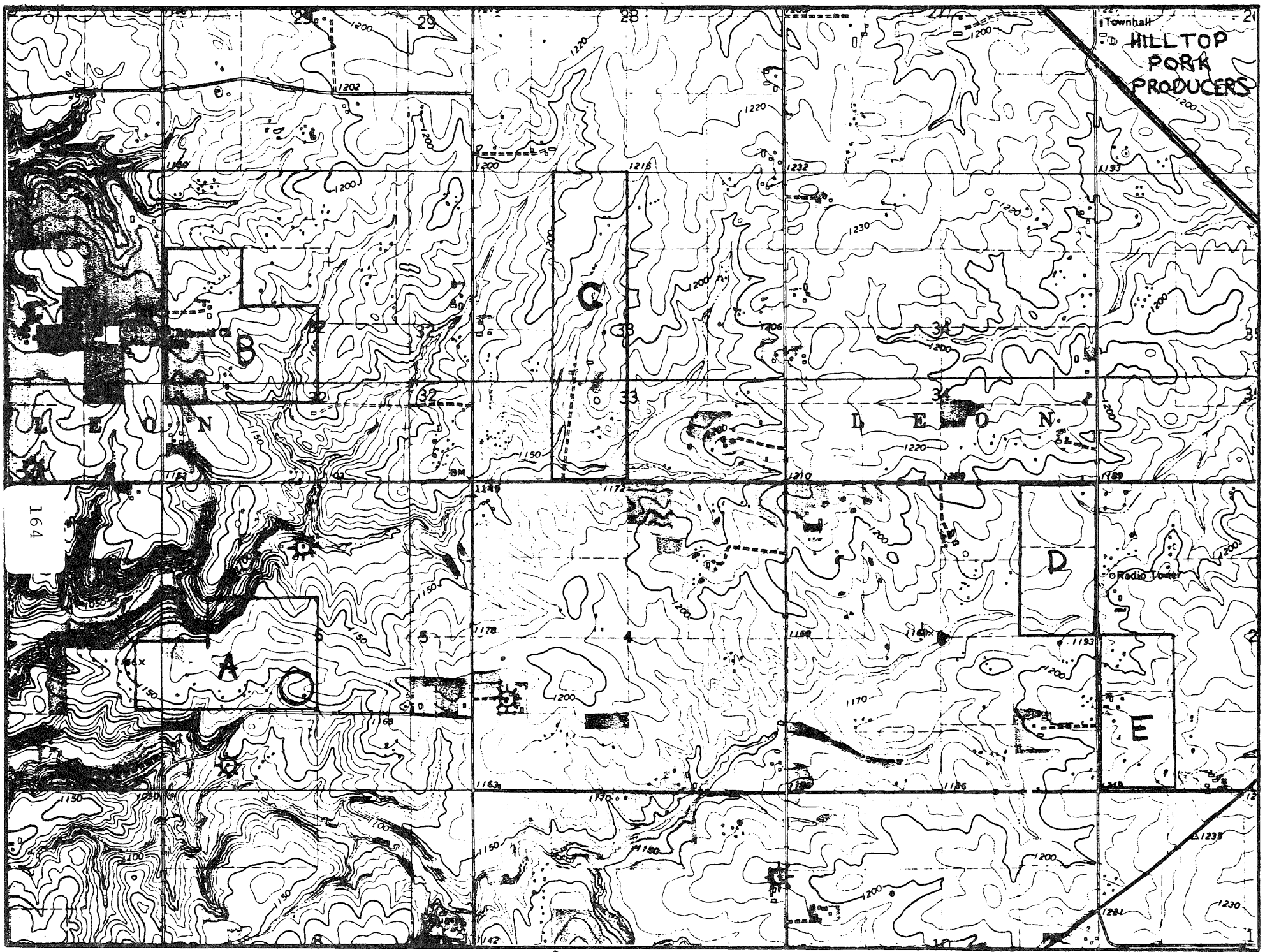
- SPRING

- SINKING STREAM

- WATER WELL WITH RECORD OF UNDERLYING GEOLOGY

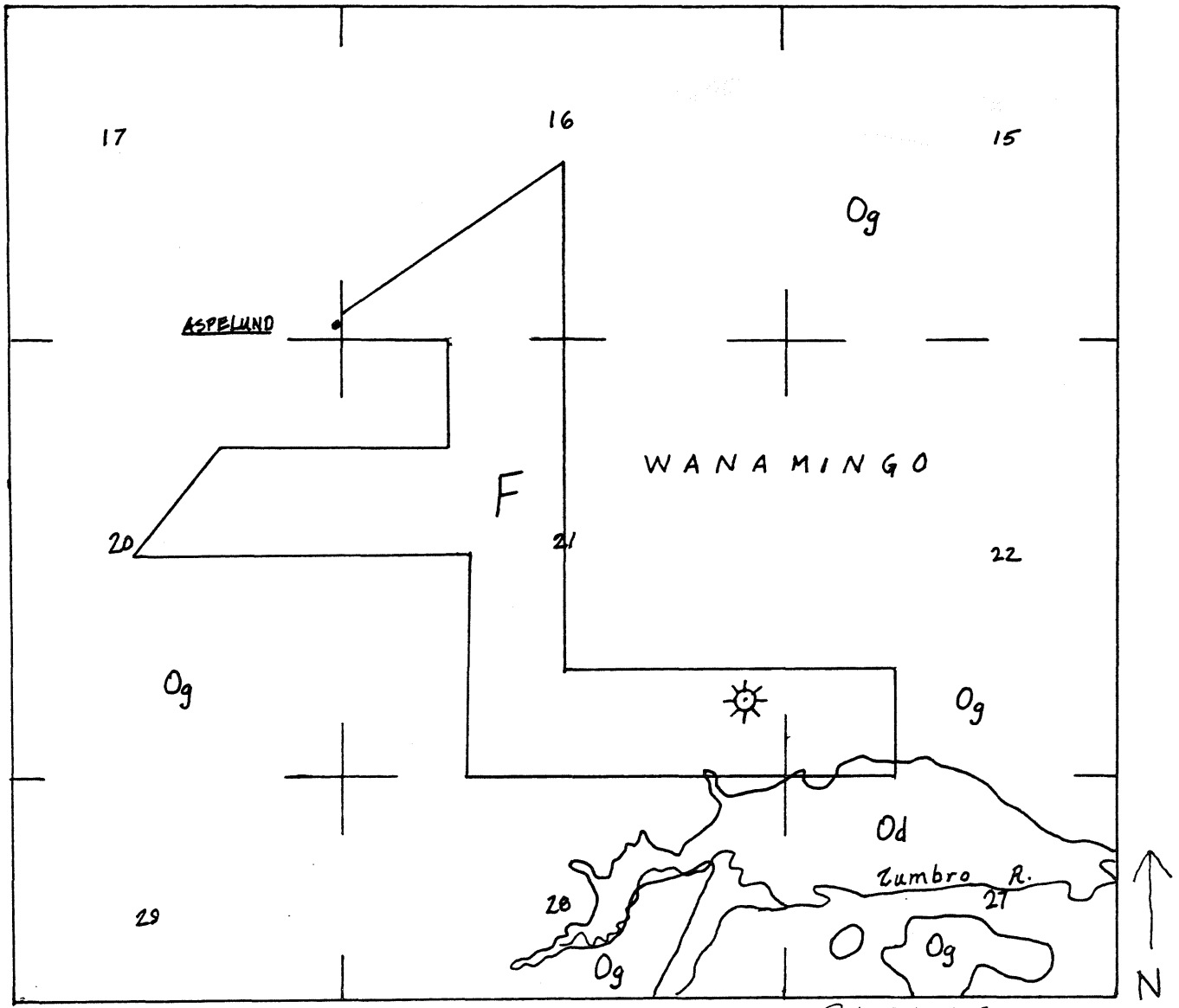
scale - 1 inch = 2,000 ± ft.


29
28
27
26
Od
Og
C
33
Og
34
35
31
B
32
163
LEON
Og
D
Od
Og
4
3
2
6
A
5
E
Od
7 Og
8
9
10 Og
11
HILLTOP PORK PRODUCERS
N
GEOLOGY

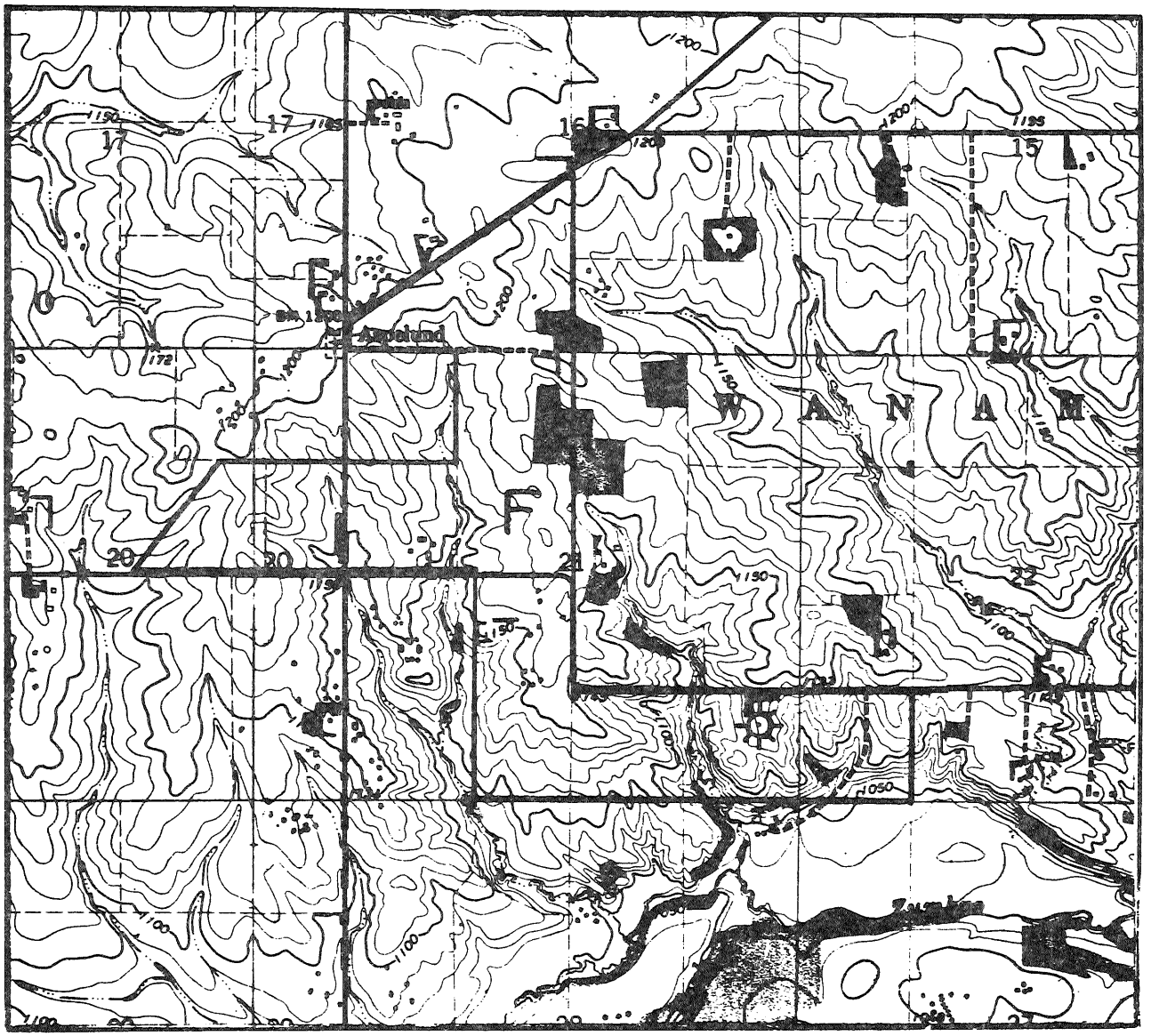


HILLTOP PORK PRODUCERS ↑ N

POTENTIAL KARST FEATURES



HILLTOP PORK PRODUCERS GEOLOGY



HILLTOP PORK PRODUCERS POTENTIAL KARST FEATURES

Well Log

Source: Herb Pfeffer
Christenson Well
R.R. #1 Box 55
Dodge Center, MN 55927
(507) 374-6587

telephone
conversation (6-28-79)
MGS #140992

Location: Donald Kunde
R.R. #3
Kenyon, MN 55946
Sec. 4, Wanamingo Twp (110N, 17W) CBCABC

Well drilled: May 22, 1978

Elevation of well head: 1180 ft.

Log:

0- 42 ft.	Drift
42-116 ft.	Galena
116-205 ft.	Decorah
205-217 ft.	Platteville
217-230 ft.	Glenwood
230-337 ft.	St. Peter
337-380 ft.	Shakopee

Notes: Cased to 340 ft. Standing water at 216 ft.
Galena Limestone very creviced - 6.9 yards
of grout required to seal the casing.

Well Logs

Source:	Herb Pfeffer Christenson Well R.R. #1 Box 55 Dodge Center, MN 55927 (507) 374-6587	telephone conversation (6-28-79) MGS well #144691

Location: Mrs. Joan Flom
R.R. #1,
Dennison, MN 55018
Sec. 31, Leon Twp (111N, 17W) DCDCAD

Well Drilled: Oct. 4, 1977

Elevation of well head: 1162 ft.

Log:

0- 55 ft.	existing dug well in Galena
56-100 ft.	Galena
100-120 ft.	Decorah

Notes: Well completed in the Decorah

Well Log

Source: Herb Pfeffer
Christenson Well
R.R. #1 Box 55
Dodge Center, MN 55927
(507) 374-6587

telephone
conversation (6-28-79)
MGS well #218593

Location: Charles Olstead
Wanamingo, MN
Sec. 23, Wanamingo Twp (110N, 17W) CBBBBD

Well Drilled: Nov. 1966

Elevation of well head: 1162 ft.

Log:

0-153 ft.	Existing well
160-177 ft.	Platteville
177-181 ft.	Glenwood
181-243 ft.	St. Peter

Notes: Standing water at 130 ft.

Well Logs

Source: Herb Pfeffer
Christenson Well
R.R. #1 Box 55
Dodge Center, MN 55927
(507) 374-6587

telephone
conversation (6-28-79)
MGS well #218590

Location: Don Perrett
Wanamingo, MN
Sec. 21, Wanamingo Twp (110N, 17W) DDADAB

Well drilled: April, 1962

Elevation of well head: 1145 ft.

Log:

0- 85 ft.	Drift
85-143 ft.	Decorah
143-159 ft.	Platteville
159-166 ft.	Glenwood
166-273 ft.	St. Peter
273-311 ft.	Shakopee

Notes: Cased to 280 ft. Standing water at 149 ft.

Well Log

Source: Herb Pfeffer
Christenson Well
R.R. #1 Box 55
Dodge Center, MN 55927
(507) 374-6587

telephone
conversation (6-28-79)
MGS well #218784

Location: Elroy Flom
Kenyon, MN
Sec. 20, Wanamingo Twp (110N, 17W) CCCDBC

Well drilled: Dec. 1969

Elevation of well head: 1155 ft.

Log:

0- 12 ft.	Drift
12- 85 ft.	Galena
85-155 ft.	Decorah
155-170 ft.	Platteville
170-175 ft.	Glenwood
175-255 ft.	St. Peter

Notes: Standing water at 165 ft.

Well Log

Source:	Herb Pfeffer Christenson Well R.R. # 1 Box 55 Dodge Center, MN 55927 (507) 374-6587	telephone conversation (6-28-79) MGS well #132667

Location: Reuben Lee R.R. #3
Kenyon MN 55946
Sec. 9, Wanamingo Twp (110N, 17W) ADAADC

Well drilled: July 22, 1976

Elevation of well head: 1190 ft.

Log:

0- 51 ft.	Drift
51-125 ft.	Galena
125-206 ft.	Decorah
206-226 ft.	Platteville
226-232 ft.	Glenwood
232-340 ft.	St. Peter
340-381 ft.	Shakopee

Notes: Cased to 342 ft. Standing water at 217 ft.

Well Log

Source:	Cannon Well Company Cannon Falls, MN (507) 263-3522	telephone conversation (6-28-79)

Location: Daryl Nesseth (507) 824-2532
Sec. 5, Wanamingo Twp (110N, 17W)
SE¼ of SW¼ of SW¼

Well drilled: Oct., 1977

Elevation of well head: 1080 ft.

Log:

0- 6 ft.	Dirt
6-145 ft.	Lime Rock
146-246 ft.	Sand Rock
246-289 ft.	Lime Rock

Notes: Cased with 4" casing to 246 ft.

Well Log

Source: Herb Pfeffer
Christenson Well
R.R. #1 Box 55
Dodge Center, MN 55927
(507) 374-6587

telephone
conversation (6-28-79)
MGS well #219004

Location: John Flom
Sec. 5, Wanamingo Twp (110N, 17W) BADDBC

Well Drilled: Oct 24, 1973

Elevation of well head: 1110 ft.

Log:

0- 24 ft.	Drift
24- 50 ft.	Galena
50-135 ft.	Decorah
135-155 ft.	Platteville
155-163 ft.	Glenwood
163-269 ft.	St. Peter
269-342 ft.	Shakopee

Notes: Cased to 274 ft. Standing water level 234 ft.

Appendix E

Copies of selected References

Relevant to the Draft EIS

The following references were supplied by Dr. Calvin Alexander and are available for review at the Minnesota Pollution Control offices in Roseville and Rochester, Minnesota.

Speleological Workshop Manual 1979
Sponsored by Ozark Highlands Grotto
National Speleological Society, Department of Geography and Geology, Southwest Missouri State University

"Problems in Karst Environments"
Edited by Marjorie Sweeting
Zeitschrift Fur Geomorphologie
Annals of Geomorphology, Supplement 32, 1979, 90-106
Berlin-Stuttgart
(Z. Geomorph, Suppl-Bd 32, 90-106, Berlin-Stuttgart, April 1979)

"Hydrologic Problems in Karst Regions"
Edited by Ronald R. Dilamaster and Sandor C. Csallany
Western Kentucky University, Bowling Green, Kentucky

Report of West Plains, Mo. Lagoon
Incident 1978
Kathleen Q. Lamin, PhD.
Regional Administrator
Environmental Protection Agency
Region 7
1735 Baltimore
Kansas City, Missouri 64108

1. Page 3-3, Fig. 3.1-2:

AGENCY RESPONSE: The elevation contours shown on Figure 3.1-2 are mislabelled and should read "1280 at the eastern most portion of the site, sloping down to 1266 in the northwest corner."

2. Page 4-21, 2nd paragraph:

AGENCY RESPONSE: The first sentence should read "Surficial deposits cover most of the study area...."

3. Page 4-47, 1st sentence:

AGENCY RESPONSE: This sentence should read "...over part of the Rochester till plain, the glacial till...." (See Attachment 1)

4. Page 4-47, 2nd paragraph:

AGENCY RESPONSE: The sentence should be withdrawn. The well was incorrectly located on the well log obtained from the Minnesota Geological Survey files. As it turns out, the information the well provides is irrelevant to this study.

5. Page 4-47, 2nd paragraph, 2nd sentence:

AGENCY RESPONSE: Available regional data including Hogberg and Gilmer (Pl76), Wright (1972a) and University of Minnesota Agriculture Experiment Station (1973) (Attachment 2) indicate the surficial deposits at the project site consist of glacial till overlain by loess.

6. Page 4-47, 2nd paragraph, 3rd and 4th sentences:

AGENCY RESPONSE: Attachment 3 contains the location of the borings and the description prepared by Twin Cities Testing. Note that the driller was unable to determine whether the obstruction in boring #1 was bedrock or a boulder and that #2 was terminated, not refused. Twin Cities Testing stated that information concerning the water table derived from these tests were unreliable due to the type of borings and the duration of observation; thus, no water table data was included in Table 4.5-1.

7. Page 4-47, 3rd paragraph, 1st sentence:

AGENCY RESPONSE: The location of borings and a description by George Poch are given in Attachment 4. The depth of the borings was determined by the Soil Conservation Service.

8. Page 4-47, 3rd paragraph, 2nd sentence:

AGENCY RESPONSE: An excerpt from the reference for this statement (U.S.D.A. S.C.S. 1977) is included as Attachment 5. The reference was not a SCS soil sheet but rather an "Inventory and Evaluation" conducted by District Conservationist Hildebrandt, 1977 (see Attachment 5).

9. Page 4-47, 3rd paragraph, 3rd sentence:

AGENCY RESPONSE: This sentence should have read "The uppermost bedrock unit at the facilities site...."

10. Page 4-47, 4th paragraph, 1st sentence:

AGENCY RESPONSE: The St. Paul sheet of the Minnesota Soil Atlas series was the best available data made known to the MPCA at the beginning of the process; however, it is not appropriate for site specific information and should not be used beyond a general discussion level. Note, however, that none of the project sites are located on the "eastern side" of this region. Note further that the "warning" concerning sinkholes refers to "Spring Valley to Wycoff to Fountain and south toward Preston." This statement is in agreement with the EIS assertion that sinkholes are found throughout the study area but the major concentrations of such features are found to the south of the project regions.

11. Page 4-47, last sentence, and Page 4-49, 1st three lines:

AGENCY RESPONSE: Since the draft EIS was written, a field check of application parcel A has indicated that the bedrock may be at or near the surface.

The thickness of surficial deposits was estimated for the facilities site, borings at the site may well indicate a different thickness.

12., 13. Pages 4-51 and 4-52:

AGENCY RESPONSE: The most important data to be derived from these maps are the uppermost bedrock units underlying each facilities site, and the units generally present below each project area. The detail and registration of these maps are adequate for this purpose. Due to a graphical error, certain areas along the northern and northeastern border of Figure 4.5-1 are incorrectly depicted as Galena (they are Praire du Chien). These areas are, however, sufficiently distant from the project sites such that this error is of no major consequence.

14. Page 4-59, to follow 2nd paragraph:

AGENCY RESPONSE: The "whole concept of manure spreading" does not rest on filtration. Studies cited in Section 5.3 indicate that most of the organisms that may be contained in applied manure are held in the upper few inches of soil and die primarily as a result of factors not related to movement in the soil (see Attachment 6). A list of the tiled applications parcels is contained in Attachment 8.

15. Pages 4-59 and 4-62:

AGENCY RESPONSE: Ground water flow patterns are extremely complicated in karst regions, the draft EIS supports this. The sources of information provided on flow patterns and general hydrogeologic conditions are as cited.

16. Page 4-62, last sentence, 3rd paragraph:

AGENCY RESPONSE: This statement should read "Additionally, the presence of uncased multiaquifer wells in southeastern Minnesota may provide a greater opportunity for downward interaquifer flow." Although only five existing wells were tested in the USGS study, Hult (1979, page D-28) noted that "Undoubtedly, there are many other old multiaquifer wells for which there are not public records, particularly in the Praire du Chien-Jordan and lower aquifers."

17. Page 4-62, last paragraph:

AGENCY RESPONSE: This statement does overestimate the probable thickness of unconsolidated surficial deposits, primarily due to the erroneous well log data previously discussed. Again, note that Attachment 3 stated it was not possible to say whether boring #1 encountered bedrock or a large boulder.

18. Page 4-64, 1st line:

AGENCY RESPONSE: The depth to the water table is apparently greater than that specified in the draft EIS. Additional borings would be useful to the determination of the elevation and extent of perched water tables at the sites. The existence of extensive perched water tables would indicate that a complicated connection exists between the surface and underlying carbonate bedrock.

19. Page 4-64, 2nd paragraph, 1st sentence:

AGENCY RESPONSE: In karst regions, surface drainage ground water flow patterns do not necessarily coincide with networks at the facility site scale; the draft EIS does not disagree with this.

20. Page 4-64, 2nd paragraph, last 4 sentences:

AGENCY RESPONSE: Collection of such data from individual landowners was not considered feasible within time and other constraints imposed by the process.

21. Page 4-64, 3rd paragraph:

AGENCY RESPONSE: 1) In the absence of site specific data, the draft EIS reported the data available from the general SCS sheets--the scale of which is certainly more appropriate than the Minnesota Soil Atlas. Beginning at the third sentence, the EIS should read as follows: "The depth to water table at the project site generally has a seasonal high from 8 to 10 feet. The water table during the rest of the year may be several feet lower." 2) The estimate of soil cover thickness was based on Attachment 5. On-site borings driven to bedrock (as described in Section 6.5) would provide a definitive measure of soil cover thickness below the proposed facilities.

22. Pages 4-64 and 4-65, last 3 lines, and 1st 4 lines:

AGENCY RESPONSE: Dry Creek is not an unreasonable name for any intermittent stream, whether it be gaining or losing. In karst regions, ground water flow patterns may not coincide with surface water drainage patterns at the facility site scale. The presence of tiling does not invalidate the discussion in the draft EIS, see Attachment 6.

23. Page 4-65, 2nd paragraph:

AGENCY RESPONSE: Same as response to comments on page 4-64, 2nd paragraph.

24. Page 4-65, 3rd paragraph:

AGENCY RESPONSE: On-site borings are needed to provide a definitive description of regional and perched water tables at the site. Although it is of limited value at the facility site scale, regional data was presented in the absence of borings.

25. Page 4-65, last paragraph:

AGENCY RESPONSE: At the regional scale, this is correct. Information on wells in the Hilltop project region has been provided, see Appendix A, page 143 of the comments submitted by Dr. Calvin Alexander and Mr. Eric Mohring.

26. Page 4-66, 2nd paragraph, 2nd sentence:

AGENCY RESPONSE: The draft EIS does not conflict with this statement.

27. Page 4-67, 1st paragraph, 1st sentence:

AGENCY RESPONSE: The SCS sheets are an inadequate source to locate all of the surficial karst features in the area; the draft EIS does not disagree with this. However, the Penz and Schroeder sites are not within the densest region of sinkholes in the state.

28. Page 4-67, 1st paragraph, 3rd sentence:

AGENCY RESPONSE: Sentence should read: "...systems of solution enlarged channels are likely to exist...."

29. Page 4-67, 2nd paragraph, 1st sentence:

AGENCY RESPONSE: Since catastrophic sinkhole development is rare, and generally requires thick surficial deposits, it is not considered a significant risk at the three facilities sites. The potential for normal sinkhole development has been estimated.

30. Page 4-67, 2nd paragraph, 2nd sentence:

AGENCY RESPONSE: The reference to minimize should be replaced with reduce.

31. Page 4-67, 2nd paragraph, last 3 sentences:

AGENCY RESPONSE: On April 30, 1979, the entire last paragraph of page 4-67 and the 2nd and 3rd paragraphs of page 6-19 (continued on to 6-20) were read over the phone to Matt Walton, at which time he agreed that these statements accurately paraphrased those portions of his letter. The importance of this letter is that it offers the opinion that there is such a thing as a reasonably safe site

in the karst area and that such areas have certain surficial geologic characteristics. One of the purposes of the draft EIS was to determine whether available geologic data suggest that such required geologic characteristics are present at the site, and then to identify additional investigations (such as borings) where uncertainties in the available data base exist. The EIS study did not purport to have conducted the detailed investigations outlined in Dr. Walton's letter. The full text of Matt Walton's letter is included in Attachment 7.

32. Page 4-74, 2nd paragraph, last sentence:

AGENCY RESPONSE: True.

33. Page 5-19, 2nd paragraph:

AGENCY RESPONSE: The sentence should read as follows: Although the ratio of different nitrogen forms will change, the impact of nitrogen on water quality should be unnoticeable and may result in a net decrease in nitrogen reaching streams. The justification for this statement involves, for one thing, the fact that in an EIS, impacts are measured as a change over baseline conditions. All of the proposed manure application parcels currently receive chemical fertilizer or some combination of chemical fertilizer and livestock manure. The proposed nitrogen loading is similar to current practices. There is no evidence to the effect that replacing nitrogen in fertilizer with organic nitrogen in manure would result in a greater release of nitrates to the environment and, furthermore, nitrates ultimately formed from manure would behave no differently than those of fertilizer origin. (See Attachment 6).

34. Page 5-19:

AGENCY RESPONSE: See Attachments 6 and 8.

35. Page 5-22, 3rd paragraph:

AGENCY RESPONSE: The draft EIS recognizes these two separate potential modes of ground water contamination and the discussions on pages 5-22 through 5-25, address both. The possibility of catastrophic sinkhole formation is recognized and is considered to be of low probability. The MPCA is aware of no one that is of the opinion that catastrophic sinkhole development is <u>probable</u> at these sites. (If Dr. Alexander is of this opinion, he has not made it known at the hearings or in the written testimony.) The "representative of ERT" did not state that the "geologic situation at Altura was completely different than that present at any of the facilities sites" but rather that there are some very important

geologic differences. The Altura site contains thin loess deposits overlying poorly cemented sandstone. Moreover, the proposed actions are not as directly comparable (in terms of sinkhole inducement) to waste treatment lagoons such as Altura as the comment would suggest. As previously discussed, the Penz and Schroeder facilities would not involve comparable surface loading (due to soil excavation) and all three facilities would be designed not to permit seepage (the Altura storage pond design allowed a seepage rate of approximately 400 gallons per acre per day).

In the event of sinkhole collapse of sufficient magnitude whereby the entire thickness of regolith collapsed into the underlying cavern, swine manure would be directly released to ground water. If the much more common type of sinkhole developed, some soil cover would remain between the collapsed cavern and the land surface, in which case seepage through the (presumably ruptured) liner would contain ammonium and nitrates as its most significant constituents.

The draft EIS does not state that a sinkhole large enough to rupture a slurry tank is impossible, but that a sinkhole of such magnitude is considered unlikely.

36. Page 5-23:

AGENCY RESPONSE: The studies from the references did not include complications presented by karst topography. Given proper selection of materials and proper construction, the proposed basin liners would be virtually impermeable. If seepage from a storage lagoon were to occur, the mobile liquid may receive some limited treatment cation absorption. However, the development of a karst feature may release swine manure directly to the ground water.

The minimum depth to bedrock below the proposed Penz basin (10 feet) is discussed previously.

37. Page 5-24, 2nd paragraph, 2nd sentence:

AGENCY RESPONSE: On-site borings record silty clay, sandy clay, and clay. The presence of till is inferred from regional data.

38. Page 5-24, 2nd paragraph, 3rd sentence:

AGENCY RESPONSE: The erroneous well log has been discussed previously. Additional borings driven to bedrock (as discussed in Section 6.5) would provide definitive data regarding the depth to the bedrock.

39. Page 5-24, last half of 2nd paragraph:

AGENCY RESPONSE: See response to comment on page 5-23 (above). The concept of lack of filtration afforded by underlying carbonate rock is clearly recognized in the draft EIS (DEIS 4-66).

40. Page 5-24, 3rd paragraph, 2nd sentence:

AGENCY RESPONSE: As shown on Table 3.3-1, the proposed Darwin Schroeder storage basin is 12 feet deep while the Penz basin is 10 feet deep. The first sentence refers to the entire thickness (which includes loess, sand and till) whereas the 2nd sentence of this paragraph refers to the thickness remaining after excavation of the basin (which according to SCS estimates would then consist of 28 to 43 feet of till and clay).

The draft EIS notes that this thickness is based on an estimated thickness of soil cover at the site. Again, on-site borings would provide a more definitive measure of the on-site soil cover.

41. Page 5-24, 3rd paragraph, 3rd sentence:

AGENCY RESPONSE: This comment is correct.

42. Page 5-47, 4th paragraph:

AGENCY RESPONSE: The statement in the draft EIS clearly states that the ground water usage associated with the proposed action is predicted to have no adverse effects on ground water supply. An increase in the hydraulic quadient "within each facilities site" would occur only if the new wells were pumping from the uppermost aquifer system at each site, and not if water was withdrawn from lower aquifer systems.

43. Page 5-47, last paragraph:

AGENCY RESPONSE: The sinkhole potential and susceptibility to ground water contamination of each site are related to the thickness and type of geologic materials overlying these carbonate formations. This statement may be a simplification; however, it is not rendered totally incorrect because of this.

Generalizations from the literature concerning the surficial and bedrock hydrology of a site, particularly in a karst region can never be as revealing as a site specific investigation.

44. Page 5-48, 1st paragraph, 1st sentence:

AGENCY RESPONSE: Minnesota Geological Survey (1979) does not supply data regarding the type or thickness of soil cover in the areas mapped as containing high densities of sinkholes; thus, it is difficult to compare these areas with the project sites. There is, however, evidence in the literature that in areas of transported regolith (such as till and loess), doline density is greatest in areas of thin regolith overlying carbonates (see Palmquist in Appendix E of the comments on the draft EIS).

45. Page 5-48, 1st paragraph, 2nd sentence:

AGENCY RESPONSE: The reference to deep test holes should be changed to water wells.

46. Page 5-48, 1st paragraph, 3rd sentence:

AGENCY RESPONSE: The presence of till is inferred from regional data. Twenty-eight feet represents the minimum thickness of surficial deposits at the location of boring number 2, since boring was terminated prior to encountering bedrock.

47. Page 5-48, 1st paragraph, last sentence:

AGENCY RESPONSE: The depth to the water table at these sites is apparently greater than depicted in the draft EIS. Site specific evidence of near surface perched water tables at the Penz and Schroeder sites does, however, indicate that direct ground water recharge (to the underlying carbonate aquifers) is restricted at these sites. The amount of ground water recharge is a significant parameter controlling doline initiation (see Attachment 9).

The draft EIS does not state that sinkholes "will not form at the sites," but rather that the probability is low. Specifically, the draft EIS states that the probability of sinkholes forming beneath the Penz and Schroeder storage facilities is low and that the probability of a sinkhole forming beneath the Hilltop storage facilities of sufficient magnitude to threaten the structural integrity of the tanks, is low.

48. Page 5-48:

AGENCY RESPONSE: See Attachment 6.

49. Page 5-74:

AGENCY RESPONSE: A copy of the first few pages of USDA SCS 1977 is included as Attachment 9.

50. Page 6-10, 1st paragraph, 2nd sentence:

AGENCY RESPONSE: The second sentence should read as follows: "Should the water quality of the surface aquifer deteriorate, corrective measures could be applied to abate continued and future contamination."

51. Page 6-11, 2nd paragraph, 1st sentence:

AGENCY RESPONSE: This comment is addressed previously. The draft EIS predicts no signficiant change over baseline conditions. Note also that manure spreading as proposed is not unique to large confinement facilities. (See Attachment 6).

52. Page 6-11, 3rd paragraph, 1st sentence:

AGENCY RESPONSE: The draft EIS recognizes that precipitation on manure application parcels will partially run off and partially infiltrate. However, infiltration and runoff are not projected to increase pollutant loadings to surface of ground water above existing pollutant loading rates.

53. Page 6-11, 3rd paragraph, 3rd sentence:

AGENCY RESPONSE: Manure loading rates could be adjusted; contour farming could be implemented where it does not already occur; buffer strips could be established.

54. Page 6-19, 2nd paragraph, 1st sentence:

AGENCY RESPONSE: On the basis of available information, the draft EIS has estimated sinkhole potential. The uncertainties involved in such estimates are noted in Section 6.5, and measures to provide more definitive data are described.

55. Page 6-19, 2nd paragraph, 3rd sentence:

AGENCY RESPONSE: The statement within the parenthesis should read: "Since such features are generally associated with carbonate formations near the land surface."

56. Page 6-19, last sentence; Page 6-20, 1st sentence:

AGENCY RESPONSE: The Walton letter has been previously discussed. The discussion of borings is clearly given in the context of "the level of geologic data necessary to adequately ascertain site suitability." The draft EIS does not state that borings themselves protect ground water. Several letters from Matt Walton to the Director of the MPCA, including the letter in question, have been included as Attachment 7.

57. Response to "Result of Our Own Work."

AGENCY RESPONSE: Dr. Alexander and Mr. Mohring, in their field of work, identified many potential karst features in the project region. It must be remembered that an environmental impact statement measures or estimates impacts above baseline conditions. All fields that Dr. Alexander and Mr. Mohring observed are receiving and will continue to receive fertilizer, both chemical and/or manure whether these facilities are constructed or not. For example, the field adjacent to the proposed construction site for Hilltop Pork Producers currently receives 11 tons/acre/year of manure. The draft EIS indicates that application of manure at predetermined agronomic rates on fields which are currently receiving fertilizer will not result in significant changes above baseline conditions.

Dr. Alexander states: "It is obvious to us that an immense potential for ground water contamination exists at these project sites, both from possible "catastrophic' development of sinkholes ...and from leakage of waste through the thin soil cover into already existing fissures and sinkholes."

The potential for ground water contamination from manure application will essentially be no different than from existing agricultural practices. Regarding the development of catastrophic sinkholes, the MPCA concurs with Dr. Alexander's testimony that it is an improbable event, but it is a possible event. (TR 88, TR 171)

58. Response to Recommendations for Procedures that Should Be Adopted if Permits are Issued for the Facilities:

AGENCY RESPONSE: Recommendations will be available to the Division of Waters for consideration during the permitting process.

59. Response to Comments on EIS Procedure:

AGENCY RESPONSE: Dr. Alexander indicated his personal opinions on EIS procedure and consultant selection. This information is more appropriately addressed to the Environmental Quality Board for consideration of rule changes and to the Office of Contract Management, Department of Administration which has authority under the Administrative Procedures Act to determine how agencies may select consultants.

GEOLOGY OF MINNESOTA: A CENTENNIAL VOLUME

In honor of George M. Schwartz

P. K. Sims and G. B. Morey, *editors*

Published by the Minnesota Geological Survey
on the occasion of its 100th Anniversary

1972

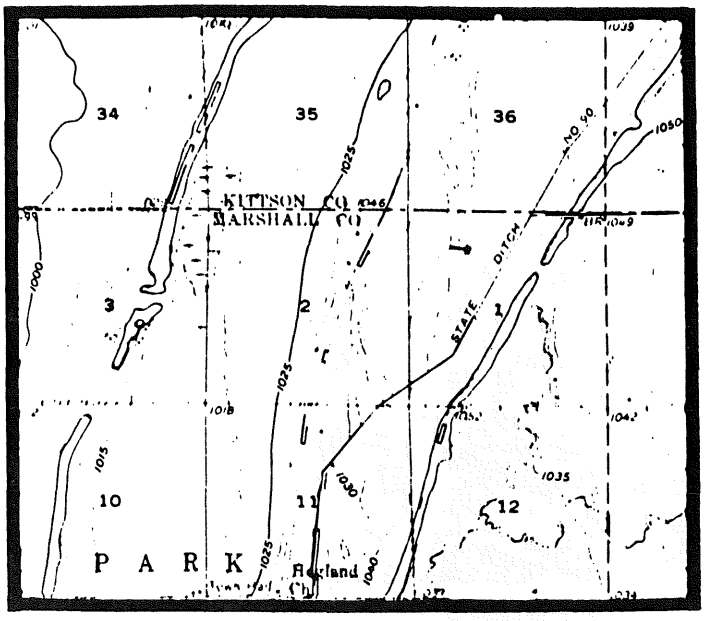


Figure VII-42. Three Lake Agassiz beaches south of Karlstad, Kittson County, northwestern Minnesota. Beach crests at 1,055, 1,045, and 1,030 feet. Note beach pond (now a marsh) behind the 1,030-foot beach. Also note the roads and gravel pits along the beaches; Karlstad quadrangle (scale 1:62,500; contour interval 5 feet).

the Flandreau, Rock, and Kanaranzi, carried meltwater and sediment from the margin of the Des Moines lobe across the region.

Numerous outcrops of Sioux Quartzite bear the polish and striations of several ice advances from different directions.

27. ROCHESTER TILL PLAIN

In southeastern Minnesota beyond the Wisconsin moraines of the Owatonna area is a nearly featureless pre-Wisconsin till plain with a partial cover of loess that thickens eastward toward the Mississippi River (fig. VII-43). The eastern part of the area is deeply dissected by tributaries of the Mississippi—the Cannon, Zumbro, Whitewater, and Root Rivers. The till has been mapped as Iowan, but Ruhe (1969) has shown in adjacent Iowa that Iowan till is probably Kansan till from which the weathering profile was largely removed before burial by loess. In the eastern part of the plain the loess seems to rest directly on the bedrock, although few exposures exist, and this area has often been mapped as "driftless," like the portion of southwestern Wisconsin directly across the Mississippi River.

The area of thick loess takes on a slight relief of its own, resulting from local deposition of loess in long hill-like forms (paha). The loess presumably dates from the main Wisconsin glaciation, having been derived from the Mississippi River outwash or from tributary outwash plains (Foss and Rust, 1962). The upland of till and loess is intensively farmed.

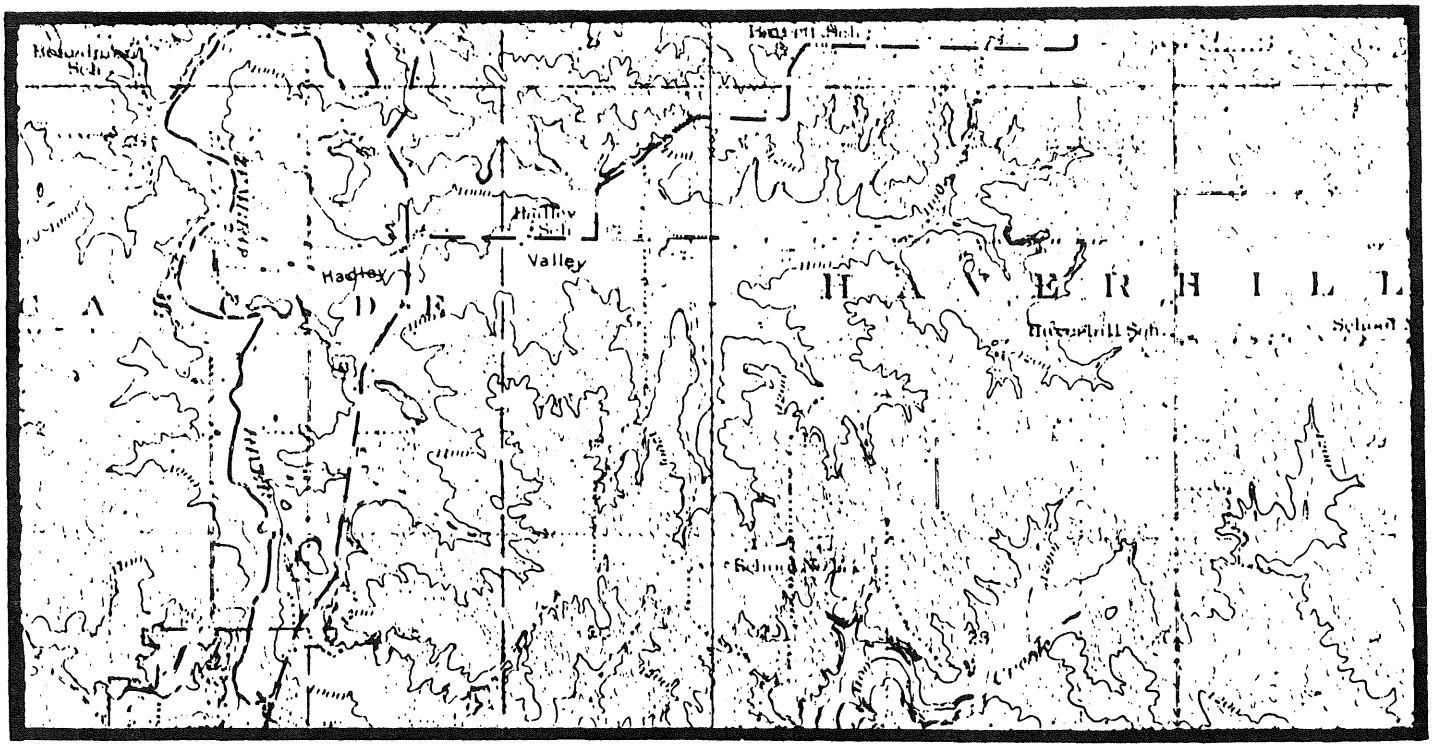
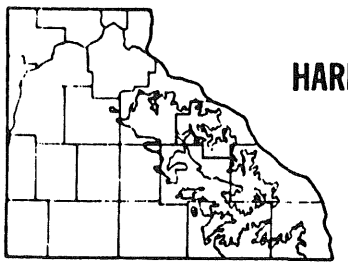


Figure VII-43. Rochester till plain north of Rochester, locally dissected by the South Fork Zumbro River. Paleozoic bedrock is overlain by pre-Wisconsin till and thin loess; Rochester quadrangle (scale 1:62,500; contour interval 20 feet).

ATTACHMENT 2



HARMONY-PLAINVIEW UPLANDS, SILTY, GENTLY ROLLING (39)

This region has an area of approximately 1,054,132 acres or 15.9 percent of the St. Paul Sheet.

The Harmony-Plainview Uplands consist of a loess mantled plateau ranging from 1,100 to 1,300 feet above sea level. Slopes range from nearly level to steep near drainageways. Most topography is controlled by the underlying glacial till (probably Kansan) which is many feet thick on the western side of the region but thins to less than two feet over bedrock on the eastern side. Where glacial till is thin or absent, topography is bedrock controlled. Loess thickness ranges from 8 to 20 feet. The loess probably was deposited during the main Wisconsin glaciation.

Old remnant landforms extend upward from the general plateau level and form rather prominent hills within the region. Sinkholes are a common landscape feature from Spring Valley to Wykoff to Fountain and south toward Preston. Caves are present in the underlying limestone strata. No lakes exist in this region. Water tables are deeper than 20 feet.

Original vegetation (part of Big Woods area) consisted of aspen-birch hardwoods, aspen-oak land, brush prairie from east to west and north to south. Aspen-birch hardwoods consisted of mainly aspen and birch, but also included ash, elm, maple, oak, and basswood. Aspen-oak land consisted of small, dense stands of aspen and scattered oaks. Brush prairie consisted of grass, brushy aspen-oak, and hazel. Prairie was mainly composed of tall prairie grasses. Present crops are corn, soybeans, alfalfa-brome hay, oats, and wheat. About 10 percent of the region is pasture and 5 to 10 percent is woodland.

On moderately sloping valleys and with suitable aspects, soils are frequently suitable for orchards (figure 11).

Seven soil landscape units are mapped in this region: LLWL, LLWD, RLWD, RLWL, A, STWD, and LLPD. Table 14 gives selected features of the units. Additional information follows:

LLWL—The Seaton soils (figure 12) comprise a major part of this unit. About 10 percent of this unit consists of dark-colored soil. Some small areas have bedrock at 5 feet or less and are indicated by rock outcrop symbols on the map.

LLWD—About 10 percent of this unit consists of light-colored soils. Some small areas have bedrock at 5 feet or less and are indicated by rock outcrop symbols on the map.

RLWD—About 10 percent of this unit consists of deep (more than 5 feet) soil.

RLWL—About 10 percent of this unit consists of deep soil.

A—Small islands of sandy terrace soils are included in this unit and are shown by sand symbols.

ATTACHMENT 3

Kuhn City Testing
and Engineering Laboratory, Inc.
609 SIXTH AVENUE NW
ROCHESTER, MINN. 55901
PHONE 507/288-7060

October 11, 1976

HOME OFFICE
662 CROMWELL AVENUE
ST. PAUL, MN. 55114
PHONE 612/645-3601

Calvin Penz
R.R. #4
Viola, Minnesota 55980

RE: Soil Investigation
Proposed Treatment Lagoon
on Calvin Penz Farm
#80-3906

OFFICERS:
CHARLES W. BRITZIUS, P.E.
President
JOHN F. GISLASON, P.E.
Executive Vice-President
NORMAN E. HENNINGS, P.E.
Vice President Engineering
ALBERT C. HOLLER, F.A.I.C.
Vice-President Chemistry
CLINTON R. LUE
Secretary-Treasurer

Dear Mr. Penz:

This letter concerns our recent soil investigation performed on your property in Haverhill Township in accordance with your verbal authorization on September 27, 1976. The purpose of our work at the site was to determine the soil types and bedrock and ground water information in an area proposed for use as a sewage stabilization pond.

BRANCH OFFICES:
BISMARK, N.D.
FARGO, N.D.
GRAND FORKS, N.D.
MINOT, N.D.
EAU CLAIRE, WIS.
LA CROSSE, WIS.
MANKATO, MINN.
SIOUX FALLS, S.D.
WATERLOO, IOWA

On September 27, 1976, two borings were put down at the site in question. The borings were put down with a 4" diameter flight auger provided and operated by Fraser Construction Company of Rochester, Minnesota. Boring #1 was located at the western side of the site, and boring #2 was in the northeastern corner. Prior to putting the borings down, it was discussed with you that the exact classification of the soil types and general soil profile at the site could not be determined with the 4" flight auger because of the disturbed samples which are obtained. It was decided the borings would be put down for general information, and if more specific information is required, they would be supplemented by standard penetration borings at a later date.

The general soil profile encountered by both borings consisted of black to dark brown silty clay topsoil extending to depths of about 2' then underlain with a brown to dark brown silty clay and sandy clay. At depths of about 15' to 20', a gray and brown mottled medium fat clay was encountered. Boring #1 was extended to a depth of 20' beneath the surface where obstruction was encountered. It is impossible to say if this was bedrock elevation at the site, or merely a large boulder within the gray and brown mottled medium fat clays. Boring #2 extended to a depth of 29' and terminated within the medium fat clays. Since the exact depth of each strata could not be determined in the field, we have not provided any

boring logs for the borings. However, it should be noted each of the soil types described were present at the boring locations, and the two borings would be considered representative of the site.

Ground water was encountered by both of the borings at varying levels. Boring #1 had a water level at 8½' immediately after completion. Much of this water was present in lenses and layers of waterbearing sand within the sandy clay soils present from 2' to 10' beneath the surface at this location. At boring #2, only a small amount of ground water was present at the bottom of the boring. However, since the soil types at both boring locations are relatively cohesive and impermeable, it would be necessary to monitor the ground water over an extended period of time to obtain accurate information. The level water is encountered at the site could be expected to vary as both post-seasonal and annual fluctuations occur.

Based on the results of the borings at the site, we believe the area would be suitable for construction of a stabilization lagoon. We would suggest additional information be obtained as to ground water depths in the area prior to determining the final grade for the bottom of the lagoon. The soil samples returned from the borings also indicate a suitable liner material would be available near the area investigated. We would suggest samples of the proposed liner material be submitted to a laboratory for tests to determine the suitability of the soils as a liner.

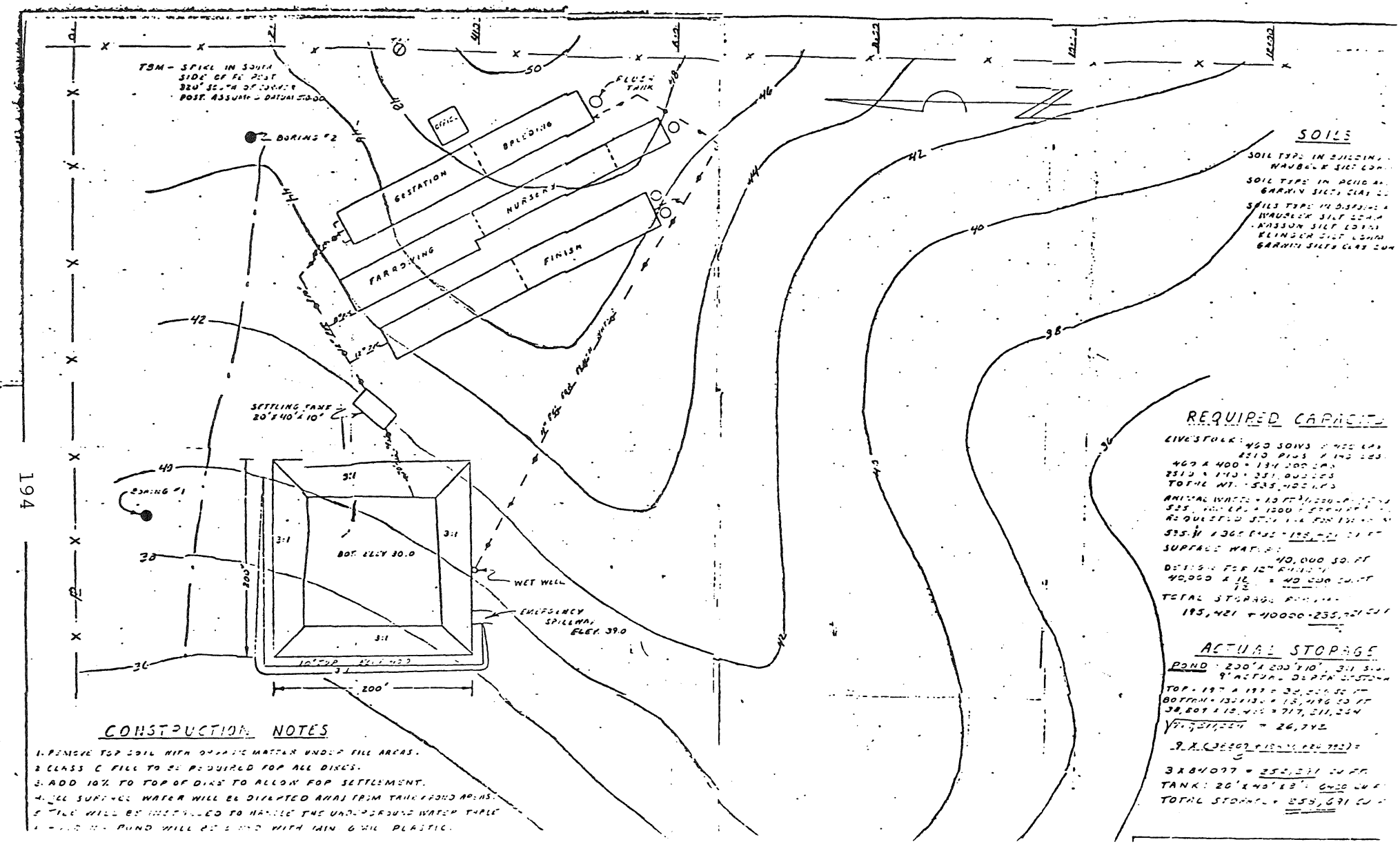
If you have any questions concerning this letter, or if additional investigation is required at the site, please do not hesitate to contact us at your convenience.

Very truly yours,

David Morrill

David L. Morrill

DLM/jk


TBM - SPIKE IN SOUTH SIDE OF FENCE POST 320' SOUTH OF CORNER POST. ASSUME DATUM 50.00
BORING #2
BORING #1
OFFICE
BREEDING
GESTATION
NURSERY
FARROWING
FINISH
FLUSH TANK
SETTLING TANK 20'x40'x10'
3:1
BOT. ELEV 30.0
WET WELL
EMERGENCY SPILLWAY ELEV. 39.0
200'
SOILS
REQUIRED CAPACITY
ACTUAL STORAGE
CONSTRUCTION NOTES
1. REMOVE TOP SOIL WITH ORGANIC MATTER UNDER FILL AREAS.
2. CLASS C FILL TO BE REQUIRED FOR ALL DIKES.
3. ADD 10% TO TOP OF DIKE TO ALLOW FOR SETTLEMENT.
4. ALL SURFACE WATER WILL BE DIVERTED AWAY FROM TANK & POND AREAS.
5. TILE WILL BE INSTALLED TO HANDLE THE UNDERGROUND WATER TABLE
6. THE POND WILL BE LINED WITH 10 MIL PLASTIC.

ATTACHMENT 4

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SUBJECT: Soil Boring Information For Animal Waste Storage Facility

DATE: November 19, 1976

TO:

Darwin Schroeder
R R
Elgin, Minnesota 55932

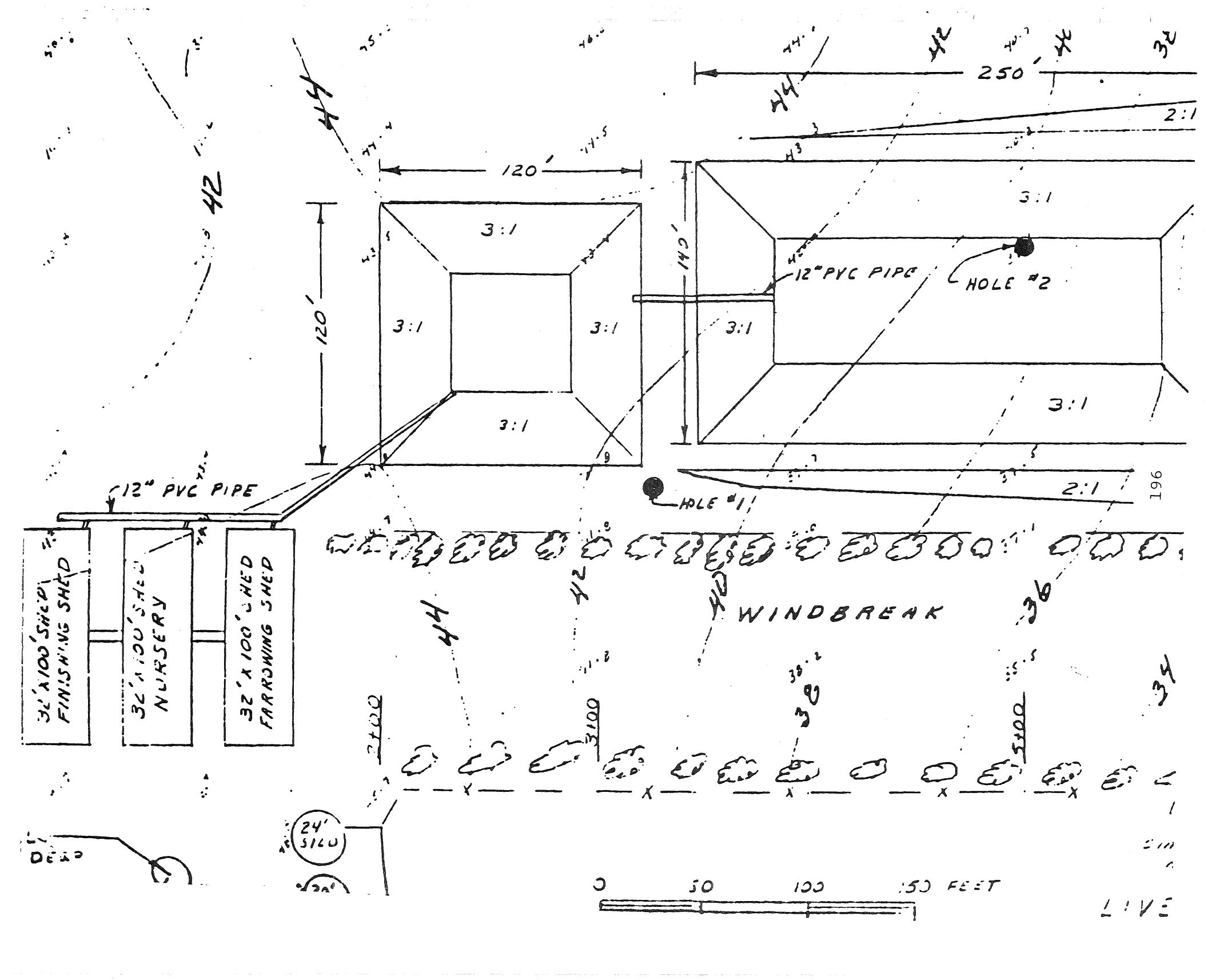
On November 18, 1976, George Poch made 2 borings to depths of 15 feet to determine soils and kinds of material. In each of the borings the soil was Port Byron. In the first boring, loess, a silty material, extended to a depth of about 8 feet, below this was about 2 feet of sand and the remaining part a clay loam glacial till. This till also tended to restrict downward movement of moisture. In the second boring loess was about 5 feet thick, about 1 foot of sand separated the loess from the flacial till that extended for many feet. In each of the borings restrictions in the downward movement of water by the glacial till was observed. Although the soil was dry at this time of the year, the presence of mottlings indicated this restriction resulted mostly because of the imperviousness of the glacial till.

No bedrock was observed to this depth and the possibility of any active sinkholes in this immediate area is not likely because of the glacial till.

See attached Port Byron soil description.

George A. Poch

George Poch,
Soil Scientist


250'
120'
120'
140'
3:1
3:1
3:1
3:1
3:1
3:1
2:1
2:1
12" PVC PIPE
12" PVC PIPE
HOLE #1
HOLE #2
32'x100' SHED
FINISHING SHED
32'x100' SHED
NURSERY
32'x100' SHED
FARROWING SHED
WINDBREAK
24' SLAB
DEAD
0 50 100 150 FEET
LIVE

ATTACHMENT 5

SCS-CONS-5
REV. 11-73
FILE CODE CONS-14-5

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

INVENTORY & EVALUATION

* { INDIVIDUAL / GROUP / UNIT OF GOVERNMENT

REQUESTED BY Minn. Pollution Control Agency LOCATION Farmington Township

ASSISTED BY J. G. Hildebrandt, District Conservationist DATE 1-12-77

RECOMMENDATION:
SITUATION:

2. The clay material is very slowly permeable and the bottom of the holding ponds will be lined with a minimum of six mil plastic to insure that seepage will not occur.

The foundation material has a high strength and a high density. No foundation problems are expected with this material.

3. A high seasonal water table may occur at a depth of 8-10 feet during periods of unusually high precipitation. For this reason, plastic curtain or a positive drain for cutting off lateral movement of the water will be installed.

SUGGESTED SOLUTION(S):

4. According to geological information developed for Olmsted County by Mr. R. K. Hogberg, sinkholes may occur only in areas where there is a thin layer of material overlying the bedrock in combination with changes in hydrological features. Under the site there is at least 40 to 55 feet of clay till and clay material overlying the bedrock formation. The Shakopee limestone formation is approximately 100 feet deep and the area is completely absent from any Karst topography feature. All of these lead us to conclude that in this area there is no possibility of sinkholes occurring.

* Circle appropriate category.

The zone of nutrient attenuation in medium and fine textured soil s generally considered to be in the area of three to four feet in depth. This zone contains the majority of plant roots and a relatively high percentage of organic and clay colloids. If a waste product is applied to a soil, the soil will physically filter out insoluble organic constituents within the top few inches. Most positively charged ions (NH_4^+, Ca^+, Mg^+, Na^+, K^+, Ni^+, Zn^+, Cu^{++}, etc.) will be adsorbed onto organic and clay colloid surfaces within the top few feet of soil. Phosphorous is fixed by soil in the top few inches of soil. Negatively charged ions (NO_3^-, Cl^-, $SO_4^=$, etc.) have the potential to move through soil with percolation water; however, these ions can be absorbed by plant roots while they move through the soil. The downward movement of negatively charged ions is dependent on soil permeability and water conditions. In relatively dry soils or soils with low permeability, anion movement is very slow.

When comparing the relative impacts of organic waste and chemical fertilizer applications to soil on the potential for contamination of tile water, one must consider the nutrient load and depth of tile line. If an organic waste and a chemical fertilizer were applied to a soil at equivalent nitrogen rates, the chemical fertilizer would have greater potential impact on tile water contamination. Nitrogen in chemical fertilizers are either in the nitrate form or are readily nitrified to nitrates. Nitrate, an anion, is available for leaching to tile lines if it is not used by plants and if the right water conditions exist. On the other hand, nitrogen in organic wastes is slowly mineralized to nitrates and chances are will be absorbed by plants before it will be leached to tile lines. If the organic waste contains ammonium nitrogen (NH_4-N), it will either be adsorbed by soil colloid and/or nitrified to nitrates.

Mr. Steven Stark, Soil Scientist
Minnesota Pollution Control Agency
1979

4-67 MW
6-5 MW

ATTACHMENT 7

UNIVERSITY OF MINNESOTA
TWIN CITIES

Minnesota Geological Survey
1633 Eustis Street
St. Paul, Minnesota 55108
(612) 373-3372

July 10, 1979

Ms. Terry Hoffman
Commissioner, Minnesota Pollution Control Agency
1935 W. County Road B2
Roseville, MN 55113

Dear Terry:

The Draft Related Actions Environmental Impact Statement on the Penz Farms Company-Darwin Schroeder-Hilltop Pork Producer Confined Swine Facilities of May, 1979, has been reviewed by me and members of my staff. We wish to take exception to several aspects of this document, and I would like to go on record as expressing the opinion that it is inadequate. My opinion is based on the fact that the document evades or avoids or makes deceptive use of a number of facts, cites erroneous information which should have been checked and quotes or makes reference to certain passages to a letter I wrote August 1, 1977, to Sandra Gardebring in a way which implies that the concerns that I expressed in that letter have been adequately considered, when in fact the opposite is true.

To cite a couple of specific examples; on page 1-4 and 1-5 the report states, "Available geological information indicates that the sink hole potential at the Penz Farm Company and Darwin-Schroeder facility sites is low. Although the potential for sink hole development at the Hilltop Pork Producer's site is not well known, etc." The fact is that there is abundant evidence of sink holes and sink hole formation processes within the "study area," the "project regions," and the "project sites." It is evasive to refer only to evidence limited to the "facilities site." An objective evaluation of the available geological information would conclude that there is abundant evidence for sink hole development potential at the sites comparable to that commonly found throughout the area.

On page 4-47 the report makes reference to a "test well" drilled approximately 3,500 feet west of the Penz Farms Company facility site. The fact is that this was not a test well at all. It was a common farm water well, the log for which was obtained from a copy of an unfield-checked water well driller's record obtained from our raw data files. At the time your investigator consulted our files we advised him, as we always do, that until these records are field-checked, it is not safe to rely on the location given by the driller. In this case, the

well site was mis-located by six miles as the result of a mistaken township citation, and the geology cited in the log is not typical of the study area and irrelevant to the problem. On the other hand, our records show that there are waterwell drillers' records submitted in compliance with the Waterwell Drillers' Licensing Act for wells actually on the farms where the facilities are to be located, and these well logs, which are in our files, show entirely different subsurface geology from the cited well, indicating karsted limestone near the surface. One more example, tiling is a wide-spread practice in Minnesota. If any of the agriculutral areas affected by these projects have been tiled, then an entirely different factor has been introduced into the drainage and infiltration problem. Tiling could conduct leaching effluent directly into stream channels, and all stream channels of that area communicate with subsurface karst drainage systems. I do not find any mention in the report of the presence or absence of tiling within the project areas, but I have been informed that tiling is present. It should be dealt with.

There are other instances which could be cited, but I believe that this is sufficient to indicate that the investigation was not adequate and the use of information was evasive and deceptive. With respect to the use of my letter in a way which suggests it supports the investigation, I hereby request that if my letter is used or referred to at all, it shall be incorporated in its entirety in any document prepared by or for the Minnesota Pollution Control Agency, and I wish to go on record in the present case that the investigations carried out to date do not meet the standards and criteria which I discussed in that letter.

I also wish to go on record that I am not, I repeat, am not, categorically opposed to the construction of confined swine facilities in the so-called study area. However, I do not want this statement quoted out of context either, because I strongly insist at the same time that the area presents serious problems which must be properly addressed if the water resources of southeastern Minnesota are to be maintained in a generally useful condition for all citizens of the area. If facilities creating potential pollution hazards are to be built, they must be built right, based on thorough and honest investigation. I do not regard an environmental impact statement as a vehicle for painting over difficulties. The present document appears to me to be just such a vehicle.

I know that you are strongly committed to enhancing and protecting the professional competence and credibility of the Minnesota PCA and are in complete agreement with the sentiments which I have just expressed. Otherwise, I would not write such a blunt letter. I think we all want to start out by telling it like it is to the best of our ability. We can't be blamed for creating the geology, but we do have to deal with it.

Sincerely,

Matt Walton

MW:jp

UNIVERSITY OF MINNESOTA
TWIN CITIES

Minnesota Geological Survey
1633 Eustis Street
St. Paul, Minnesota 55108
(612) 373-3372

AUG 19 1977
MINN. POLLUTION CONTROL AGENCY

August 1, 1977

Ms. Sandra Gardebring
Commissioner
Minnesota Pollution Control Agency
1935 West County Road B2
Roseville, Minnesota 55113

Dear Commissioner Gardebring:

I recently wrote to you concerning the susceptibility of a large area in southeastern Minnesota to groundwater contamination from feedlot effluent and seepage, sewage lagoons and other sources of polluted water. The major aquifers of the region convey water by direct flow through open channels, a condition referred to as karst drainage. The natural groundwater supply of southeastern Minnesota, while very large and of good natural quality, is easily contaminated.

Evidence of groundwater contamination in this area and fears of further contamination have raised the question of whether some major potential contaminating uses of the land should be suspended or denied until the subsurface geology is sufficiently well known so that safe areas for these land uses can be designated. However, it will take a number of years of diligent investigation to provide the knowledge of the subsurface geology and the thickness and composition of overlying surficial deposits needed to delineate such areas with reasonable confidence in this region, and probably we can never hope to be completely certain. In the meantime a very substantial economic loss is entailed in totally denying profitable or badly needed land uses when there may well be areas within the region that are safe. A more moderate policy would be to require soils and geological investigations of proposed feedlot, sewage and waste disposal sites sufficiently detailed and thorough to reduce the initial risk to a very low level and to follow with monitoring systems adequate to give early warning of developing trouble.

While there are definitely some risks involved in the latter course with the existing state of knowledge of the geology of the region, I believe that with sufficient care the risks can be reduced to an acceptable level. In order to carry out a policy of this kind, the burden of the costs of an adequate investigation must be accepted either by the permit applicant or the state. However, if the costs of thorough investigation and monitoring are borne by the applicant, there is an economic incentive to locate polluting land uses in less vulnerable areas of the state to the extent feasible. Such uses should be located in the karst area only where the necessity is sufficiently great to justify the cost of taking adequate measures to protect the water resource. Such an economic constraint may be preferable to an arbitrary zoning policy based on incomplete knowledge.

This raises the question of what constitutes a safe site in the karst area. Basically it is a site in which all of the area that may be affected by the proposed land use is covered by a substantial thickness of relatively impervious soils or geological formations and where all the drainage from the site can be contained and treated before being released. Suitable cover materials in the area generally consist of clay-rich glacial drift, but in much of the area glacial drift is sporadic and uneven and drift is absent in some areas. The Decorah Shale, which is one of the bedrock formations, is also an adequate cover material where a substantial thickness directly underlies surficial materials.

In my mind a substantial thickness would mean at least 20 feet and preferably twice that thickness, but this is a variable dependent on both the nature of the material and the bedrock formation that it overlies. Obviously one or two test borings are not adequate to investigate a site of any significant size. I should think a minimum of four holes at the corners, or regularily distributed around the perimeter of an irregular site, and at least one hole near the center of the site would be a minimum. The ground should also be inspected by a qualified person familiar with the geology and geomorphology of the area to identify features that may be indicative of shallow bedrock or buried sinkholes. Such features include breaks in slope, undrained depressions and variations in soil moisture and vegetation. Additional holes should be put down to test these and any other anomalous features. It is also important that test holes be drilled under state inspection and logged by a competent person with some soils, engineering, or geological backgroumd and that samples of the materials penetrated be collected at five foot intervals or less and at every change in formation and that these samples be properly bagged and labeled and submitted with the logs. Test holes should be required to be drilled at least to bedrock or to a depth of 40 feet, whichever comes first, and if materials within the top 40 feet are not suitable for retaining water, holes should be drilled until at least 40 feet of suitable materials have been penetrated or bedrock is encountered. At any site where test holes encounter less than 40 feet of suitable materials further test drilling may be required to show that the lesser thickness of suitable materials is continuous over the site and has adequate water-retention properties.

Many tough decisions will have to be made over the years in evaluating sites proposed for polluting land uses, but I do not feel that the complete prohibition of major land uses and facilities that are important to the economy of the region is justified. I feel that the cost of extreme care in locating and monitoring is relatively small by comparison with the economic loss to the region if significant deterioration occurs in the quality of its groundwater supply. If such costs are borne by the individuals or communities that proposed the potentially polluting land use, it at least provides an economic incentive to find other alternatives or locate such land uses in less vulnerable areas of the state.

Please be assured that the Minnesota Geological Survey regards the investigation of this problem as one of our prime objectives. We hope that in a few years the basis will be established for delineating critical areas and providing other guidelines to reduce the cost, the difficulty and the uncertainty inherent in the present situation.

Sincerely,

Matt Walton
Director

UNIVERSITY OF MINNESOTA
TWIN CITIES

Minnesota Geological Survey
1633 Eustis Street
St. Paul, Minnesota 55108
(612) 373-3372

SW Log # 0817

RECEIVED
JUL 11 1977
MINN. POLLUTION CONTROL AGENCY

July 8, 1977

JUL 12 1977
MINN. POLLUTION CONTROL AGENCY

Ms. Sandra S. Gardebring
Executive Director
Minnesota Pollution Control Agency
1935 West County Road B-2
Roseville, Minnesota 55113

SUBJECT: Swine and cattle feedlots in Olmsted County

Dear Sandra:

In connection with the present actions relating to the proposed siting of large feedlots in Olmsted County, I believe the Minnesota Geological Survey should point out that Olmsted County is in an area of Minnesota characterized by subsurface karst drainage. In karst areas much of the surface water runs directly into sinkholes or infiltrates rapidly through shallow soils into a system of open solution channels, fissures and caverns in underlying limestone and dolomite formations. Karst drainage provides little opportunity for filtration, soil absorption and biological degradation of pollutants. Consequently ground water resources are very readily polluted, and pollutants can travel long distances rapidly without significant attenuation.

Because problems of ground water pollution in karst terrane in southeastern Minnesota are already becoming manifest, the Legislative Commission on Minnesota Resources has funded a series of investigations organized by the Minnesota Department of Health covering key aspects of the ground water contamination problem and public health consequences in the karst area. These projects include:

1. Minnesota Geological Survey: geology and subsurface drainage in the karst region of southeastern Minnesota.

2. College of Veterinary Medicine: epidemiological study of human and animal health effects of well water.

3. United States Geological Survey (matching funds): analysis of the interflow in uncased multi-aquifer wells.

4. Minnesota Department of Health: coordination of investigations and modeling of results.

I believe it is fair to say that feedlots of any size, but especially very large ones, have a very real potential for rapid, widespread ground water pollution in karst areas. Consequently if they are to be located in such areas, they should be located with great care and on the basis of very thorough subsurface geological and hydrological studies. Ideally karst areas should be avoided for this type of use, and in fact it is only in an area from the Twin Cities southward and

from Blue Earth County eastward that subsurface karst conditions exist in Minnesota, so there are large areas of the State that are better suited to this type of land use.

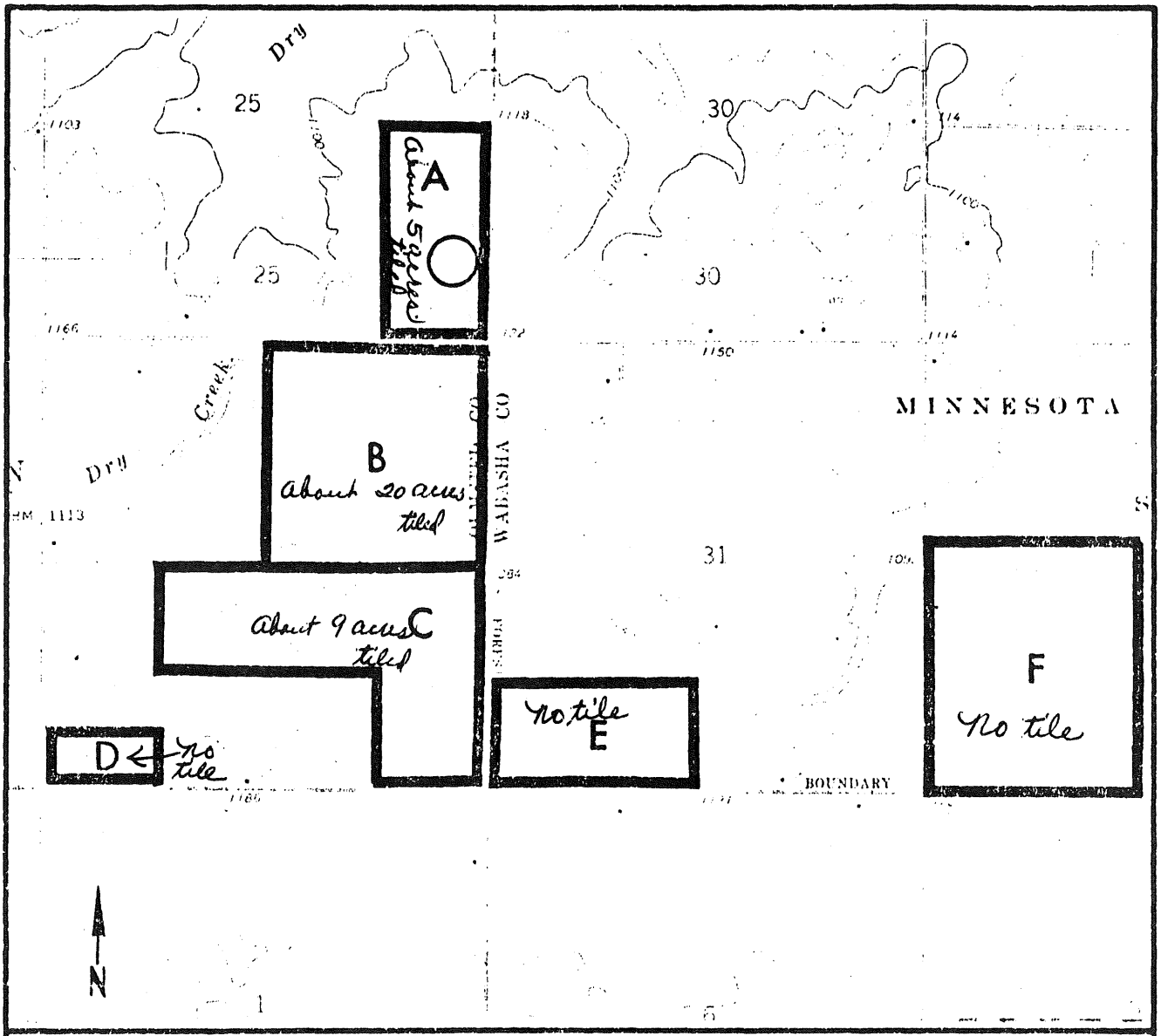
In the present state of our knowledge of the subsurface geology it is very difficult to give firm, site-specific evaluations of the pollution potential in a given area of the karst region of the State. We hope that as the results of studies now underway become available a few years down the line we will be able to give better definition to this problem. In the meantime I would suggest that extreme caution be exercised in locating any potentially significant sources of water pollution in the karst area of the State which cannot be effectively isolated from contact with the ground.

Sincerely,

Matt Walton
Director

cc. Minnesota Environmental Quality Council
Philip Miller, Minnesota Pollution Control Agency
Robert Hansen, Legislative Commission on Minnesota Resources
Kenneth Fritz, Rochester-Olmsted Council of Governments

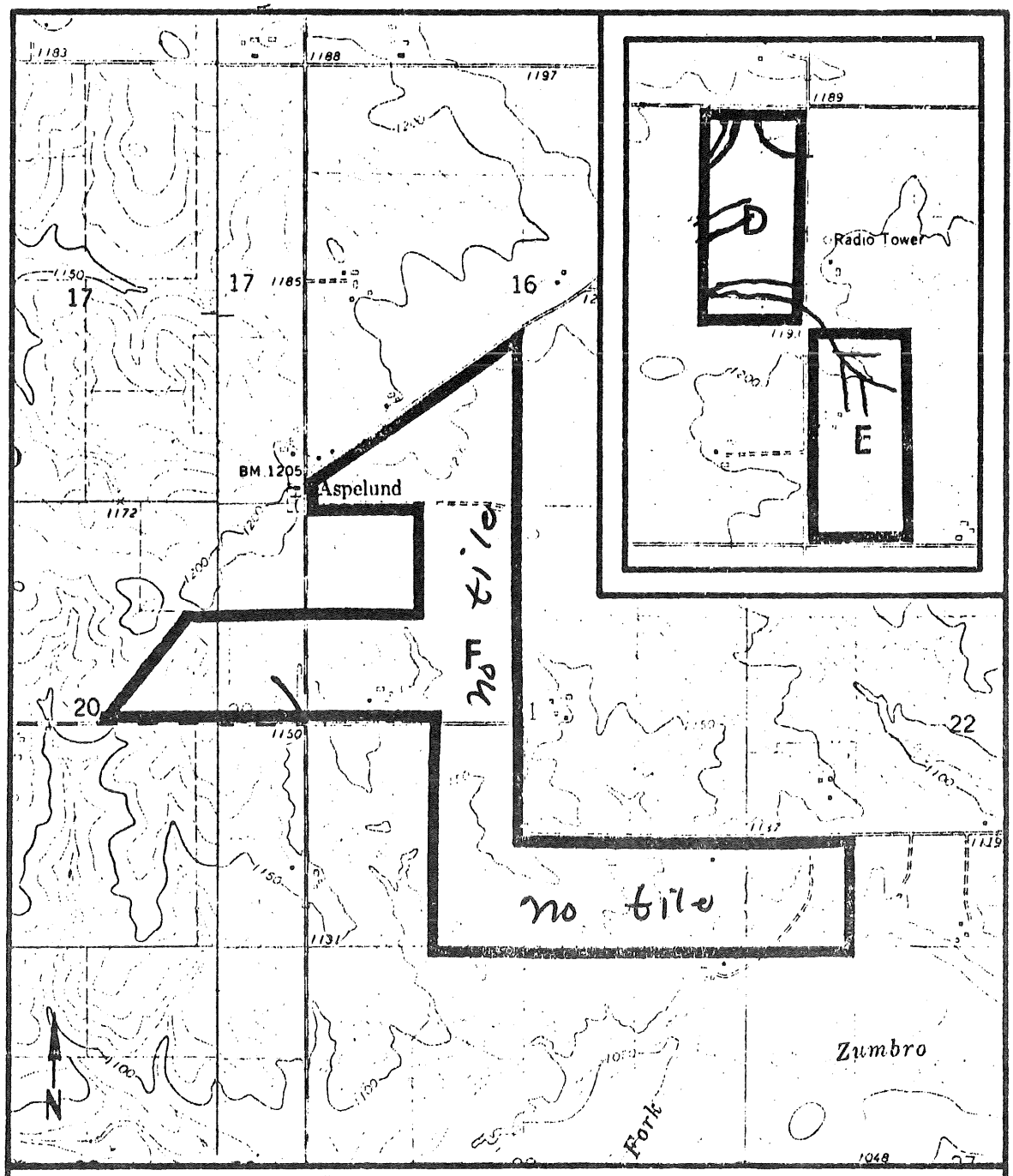
MW:kk



MINNESOTA POLLUTION CONTROL AGENCY
RELATED ACTIONS EIS ON
CONFINED SWINE FACILITIES

Figure 1-8
Darwin Schroeder Project Site

75C4033 7904034

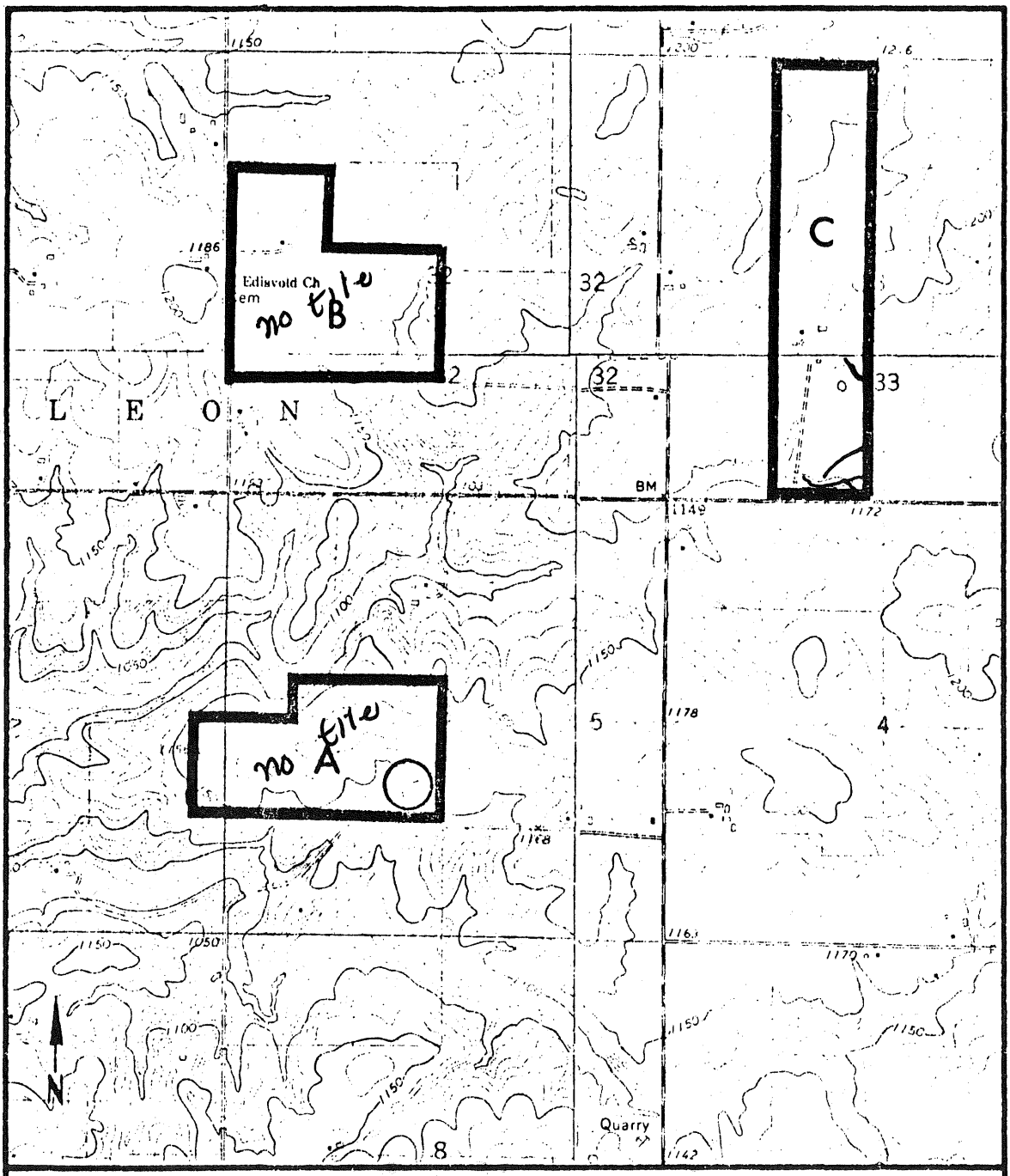


HILLTOP PORK PRODUCERS

MINNESOTA POLLUTION CONTROL AGENCY
RELATED ACTIONS EIS ON
CONFINED SWINE FACILITIES

Figure 1-10
Hilltop Pork Producers Project
Site (b)

7904027 7904028



HILLTOP PORK PRODUCERS

MINNESOTA POLLUTION CONTROL AGENCY
RELATED ACTIONS EIS ON
CONFINED SWINE FACILITIES

Figure 1-9
Hilltop Pork Producers Project
Site (a)

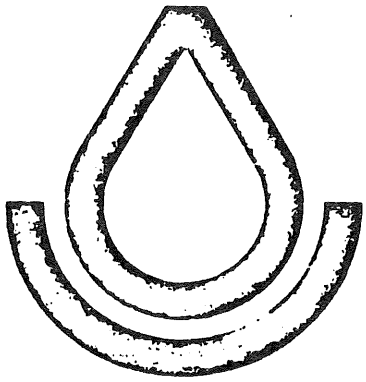
7904029 7904030

ATTACHMENT 9

"USDA SCS 1977"

INVENTORY AND EVALUATION

SOIL AND WATER RESOURCES



SOIL CONSERVATION SERVICE

U.S. DEPARTMENT OF AGRICULTURE

GPO · 1970 O - 403-764

TITLE: Inventory For Animal Waste Storage Pond

FOR: Minnesota Pollution Control Agency - Darwin Schoroeder
Farmington Township Section 25
SE¼ SE¼ SE¼ T108 R13

This is a general soils map of this area and is reliable for most uses. Because as much as 20% of other soils may occur within a particular soils area, further on-site investigations may be required for a specific use.

Technical assistance for planning the use of an area within it's capability is available from the Upper Zumbro Soil and Water Conservation District and the Soil Conservation Service Technicians.

BY: Jerome G. Hildebrandt, District Conservationist JGH

IN COOPERATION WITH: Upper Zumbro Soil and Water Conservation District

DATE: 1-12-77

Olmsted County Health Department

415 FOURTH STREET S.E.

Rochester, Minnesota 55901

(507) 285-8342

GEORGE R. PETTERSEN, M.D., M.P.H.
Director of Public Health

January 14, 1977

Mr. Jerome Hildebrandt
Soil Conservation Service
1220 Fourth Avenue S. W.
Rochester, Minnesota

Dear Mr. Hildebrandt:

I am glad to inform you that I have reviewed the information contained in the application for a hog feeding operation in Farmington Township for Mr. Darwin Schraeder. I concur with your evaluation of the sinkhole development potential underneath the proposed lagoon, and I am confident that this installation will not create any hazard to the ground water of the area.

I have had the opportunity to visit a similar installation in Onalaska, Wisconsin, and I am satisfied that the smell problem has been reduced in comparison with the usual type of hog feeding operation.

Sincerely yours,

William P. Poblete

William P. Poblete, P. E.
Public Health Engineer

WPP:lcg

"AN EQUAL EMPLOYMENT OPPORTUNITY/AFFIRMATIVE ACTION EMPLOYER"

SCS-CONS-5
REV. 11-73
FILE CODE CONS-14-5

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

INVENTORY & EVALUATION

* { INDIVIDUAL / GROUP / UNIT OF GOVERNMENT

REQUESTED BY Minn. Pollution Control Agency LOCATION Farmington Township

ASSISTED BY J. G. Hildebrandt, District Conservationist DATE 1-12-77

SITUATION:

RECOMMENDATION:

1. The following geologic profile was developed at Darwin Schroeders by using the U S G S topographic map, the well log for the well drilled by Ken Schmit in Section 25 Farmington Township, the hydrogeologic report of Olmsted Count developed in 1976 by R. K. Hogberg and Todd H. Gilmer and the soil borings taken by George Poch, Soil Scientist, with the Soil Conservation Service:

	Ground Surface	
Boring by	1130-1112 - -	Silt loam
George Poch,	1112-1110 - -	Loamy sand
Soil Scientist	1110-1115 - -	Clay loam glacial till

SUGGESTED SOLUTION (S):

See well	1115-1076 - -	Clay
drillers log	1076-1063 - -	Sandy clay
for Ken Schmitz	1063-1061 - -	Sand
well	1061-1036 - -	Sandstone and Clay
	1036-1027 - -	Limestone
	1027-1016 - -	Soft lime and sandstone

* Circle appropriate category.

INVENTORY & EVALUATION

* { INDIVIDUAL / GROUP / UNIT OF GOVERNMENT

REQUESTED BY Minn. Pollution Control Agency LOCATION Farmington Township

ASSISTED BY J. G. Hildebrandt, District Conservationist DATE 1-11-77

RECOMMENDATION CONTINUED:
EVALUATION:

1016-986 - - Limestone, brown to blue
986-971 - - Limestone w/ soft spots
971-941 - - Limestone, brown
941-926 - - Sandstone, brown
926-916 - - Limestone
916-866 - - Limestone w/sandstone seams
866-851 - - Limestone
851-791 - - Limestone w/sandstone seams
791-761 - - Limestone
761-702 - - Jordan w/limestone seams

SUGGESTED SOLUTION (S):

This correlates with the information shown on the St. Paul sheet of the geology map of Minnesota dated 1966 and plate 2 of the surficial geologic survey map dated 1976, developed by R. K. Hogberg, of the hydrogeologic report of Olmsted County.

* Circle appropriate category.

SCS-CONS-5
REV. 11-73
FILE CODE CONS-14-5

#5

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

INVENTORY & EVALUATION

* { INDIVIDUAL / GROUP / UNIT OF GOVERNMENT

REQUESTED BY Minn. Pollution Control Agency LOCATION Farmington Township

ASSISTED BY J. G. Hildebrandt, District Conservationist DATE 1-12-77

RECOMMENDATION:

SITUATION:

2. The clay material is very slowly permeable and the bottom of the holding ponds will be lined with a minimum of six mil plastic to insure that seepage will not occur.

The foundation material has a high strength and a high density. No foundation problems are expected with this material.

3. A high seasonal water table may occur at a depth of 8-10 feet during periods of unusually high precipitation. For this reason, plastic curtain or a positive drain for cutting off lateral movement of the water will be installed.

SUGGESTED SOLUTION(S):

4. According to geological information developed for Olmsted County by Mr. R. K. Hogberg, sinkholes may occur only in areas where there is a thin layer of material overlying the bedrock in combination with changes in hydrological features. Under the site there is at least 40 to 55 feet of clay till and clay material overlying the bedrock formation. The Shakopee limestone formation is approximately 100 feet deep and the area is completely absent from any Karst topography feature. All of these lead us to conclude that in this area there is no possibility of sinkholes occurring.

* Circle appropriate category.

SCS-CONS-5
REV. 11-73
FILE CODE CONS-14-S

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

INVENTORY & EVALUATION

* { INDIVIDUAL / GROUP / UNIT OF GOVERNMENT

REQUESTED BY Minn. Pollution Control Agency LOCATION Farmington Township

ASSISTED BY J. G. Hildebrandt, District Conservationist DATE 1-12-77

RECOMMENDATION:
SITUATION:

5. A dumping bay will be installed as mentioned on the plan. This will be lined with concrete on the bottom, so damage will not occur to the pond and plastic

SUGGESTED SOLUTION (S):

* Circle appropriate category.

WATER WELL RECORD

ROCHESTER, MINNESOTA 5590[illegible]
PHONE: 282-7362

P. O. BOX [illegible] CLARA CITY, MINN.
TELEPHONE: 847-3207

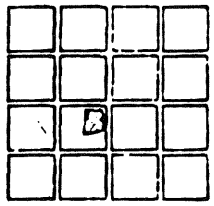
DRILLERS LOG OF WELL

Kind of rock, color, hard, or soft etc.	From (ft.)	To (ft.)
Clay	0	24
Sandy clay	24	37
Sand	37	39
Sandstone & clay	39	64
Limestone	64	73
Soft lime & sandstone	73	84
Limestone, brown to blue	84	113
Limestone w/soft spots	113	129
Limestone, brown	129	159
Sandscnte, brown	159	174
Limestone	174	184
Limestone w/sandstone seams	184	234
Limestone	234	249
Limestone w/sandstone seams	249	309
Limestone	309	339
Jordan w/limestone seams	339	398
AL DEPTH DRILLED	398 ft.	

Approx. Elev. 1100. USGS.

IMPORTANT DATA

Location of Well (Show location in Section Plat) County Olmsted



NE¼NE¼ SW ¼ Sec 2

T. 108N N. R 13W

Total depth 398 ft Elev.

Well Owner Kenneth Schmidt

Address Byron, Minnesota

Mileage and direction from nearest town or highway—

Driller Dennis A. Thein

Helper Cecil Rutledge

Date Drilled August 26 to August 30, 1

Method of Drilling Rotary
(Cable tool, rotary, reverse rotary)

Casing Schedule 37'10 of 8 casing
(Amount, Size, Setting - New, Used - Steel, Galv., - Gage or Weight)

375' of 6 casing

Cement Grout (if any) None
(Depth & Amount)

Screen Data (if any) N/A
(Length, Diameter, Slot Size, Set)

Measured depth to water on completed well (Static Level)

is ft. below
(Land Surface, Top of Casing Etc)

Tested Yield gallons per
(Min., Hour)

as determined by
(Bailing, Test Pumping, Etc.)

Drawdown ft. after

pumping at gal. per minute

Remarks 100-103 Crevice, lost return
109-204 Crevice
233 Crevice

Ronald C. Spong
1772 Ashland Ave.
St. Paul, MN 55104
20 June 1979

Ms. Mary Sullivan
Minnesota Environmental Quality Board
State Planning Agency
Capitol Square Bldg
St. Paul, MN 55101

Dear Ms. Sullivan,

I will be unable to attend the MEQB hearing in Rochester on 25 June 1979 concerning the swine confinement facilities proposed by Penz Farms Company, Darwin Schroeder and Hilltop Pork Producers. I have reviewed the Draft EIS prepared by the Minnesota Pollution Control Agency and am compelled to comment on several sections regarding geology, hydrology and public health. Please accept the following comments in lieu of my personal testimony at the hearing. Thank you.

1. Overview of Draft EIS. It is apparent in some sections of the document that generalizations have led to oversimplifications and understatements. Although space does not permit an enumeration here, suffice it to say that evaluations and comments concerning the confinement sites were not based on actual field investigations in many instances but rather on the review of dated and outdated information. Thus, an inherent bias is operating in some critical elements of this judgment and serves to lend credibility where it may not be justified. Since EIS preparation and agency review has become an assembly line practice, site evaluation is conducted in offices by persons who have little or no intimate knowledge of the actual site. If field investigations are conducted by staff EIS preparers or reviewers, who assesses the competency and thoroughness of the investigators to assure that their observations and conclusions adequately reflect all relevant environmental impacts? Understanding the limitations of the EIS process and the inadequacies of the Draft EIS, I believe that the sites must be reevaluated with regard to their geological, hydrological and public health impacts.

2. Geology and Hydrology.
   a. Figures 4.5-1 and 4.5-2. The bedrock geology overlays inaccurately depict formational boundaries. The 1966 St. Paul Sheet (MGS) only approximates formational boundaries utilizing a small scale. The large scale representations in the figures compromise the small scale map's accuracy. The figures do not accurately represent the bedrock geology.
   b. Soil Cover. Soil covers in the three areas of the confinement sites range from 15 to 30 feet according to the Draft EIS. In karstified areas soil covers 40 to 50 feet deep may afford some protection from subsidence due to covered karst features and from rapid percolation of surface waters through soil pipes to covered karst features. Given 15 to 30-foot deep soil covers, there may be little or no protection from such consequences. A detailed survey of surficial soils and rocks is necessary before the feasibility of the sites can be evaluated.

c. Karst Features. Understandably, the superficial treatment of karst features in the Draft EIS correlates with the limited knowledge of karst in southeastern Minnesota. Covered and buried karst features predominate over exposed features in this area. The absence of closed depressions (sinkholes) does not necessarily mean that the bedrock is not karsted. Close scrutiny of topographic maps, aerial photographs and other data by skilled interpreters may disclose hitherto unknown covered or buried karst features. The largest cave system in Minnesota (Mystery Caves with about 12 to 14 miles of passages) is present beneath an upland area devoid of sinkholes.

d. Penz Farms Company. The site is situated in an upland karst area known as the Haverhill Karst. Although there are few sinkholes, I have found sufficient evidence that covered karst features exist (cutters and covert dolines). The shallow groundwater in the Galena formation discharges as springs and seeps in the bordering valleys, as well as supplying some shallow wells on upland farmsteads.

e. Darwin Schroeder. The site is situated on a subjacent karst (St. Peter sandstone overlying the Willow River dolostone) that is part of the Plainview Prairie Karst. The St. Peter sandstone is highly jointed and lends itself to sandstone piping (similar to soil piping) whenever steep hydraulic gradients occur. This process develops cavities and caverns in the St. Peter and solutionally develops conduits and caves in the Willow River. The friable nature of the St. Peter precludes persistent surface karst features unless capped by the Platteville limestone. Dry Creek is named after this phenomenon; spring discharge from the Galena formation aquifer flows on the surface only to be absorbed in the streambed when bedrock is at or near the surface.

f. Hilltop Pork Producers. I am not very familiar with this area, but conditions are quite similar to the Haverhill Township site. The Galena formation is near the surface, and local relief underscores the probability of coeval karst development.

Additional fieldwork and analysis is necessary before I would advance any conclusions regarding these sites. A more thorough review of the Draft EIS may point up other inadequacies. Therefore, I recommend that the MEQB defer action on the proposals until such time that the inadequacies are resolved.

Yours sincerely,

Ronald C. Spong

Ronald C. Spong

cc: Bill Poblete, Matt Walton, Calvin Alexander, Mary Ellen Kersch, et al

1. Mr. Ronald Spong questioned how competency and thoroughness of the environmental review can be assessed.

AGENCY RESPONSE: The selection of the consultant to assist the Agency is conducted under the Administrative Procedures Act. The Agency, through a selection process, selects the best proposal submitted by consulting firms. The thoroughness is tested through Agency and public review.

2. Mr. Spong expressed a concern with map scale.

AGENCY RESPONSE: The St. Paul sheet was the best data made known to the Agency at the beginning of the process. During public review, the Agency was made aware of unpublished maps for the area. Maps drawn by Mr. Eric Mohring, contained in the final EIS, using well data may be a better indicator of local geology.

3. Mr. Spong indicated that a detailed survey of surficial soils and rocks is necessary before the feasibility of the sites can be evaluated.

AGENCY RESPONSE: This type of data collection is beyond the scope of the EIS; however, Mr. Spong's suggestion will be available for consideration during the permitting process.

4. Mr. Spong indicated that examination of aerial photos, topographic maps, and other data may reveal potential sinkholes.

AGENCY RESPONSE: Mr. Eric Mohring, in collaboration with Dr. Calvin Alexander, has submitted maps on which areas of potential sinkholes derived from the interpretion of aerial maps have been mapped. The MPCA appreciates this additional data which is a part of the final EIS.

5. Mr. Spong provided some information on the geologic character of the three sites.

AGENCY RESPONSE: The MPCA appreciates the additional geologic information provided by Mr. Spong. This information will be available for use in the permitting process.

UNIVERSITY OF MINNESOTA
TWIN CITIES

Minnesota Geological Survey
1633 Eustis Street
St. Paul, Minnesota 55108
(612) 373-3372

July 10, 1979

RECEIVED
JUL 12 1979
MINN. POLLUTION CONTROL AGENCY

Ms. Terry Hoffman
Commissioner, Minnesota Pollution Control Agency
1935 W. County Road B2
Roseville, MN 55113

Dear Terry:

The Draft Related Actions Environmental Impact Statement on the Penz Farms Company-Darwin Schroeder-Hilltop Pork Producer Confined Swine Facilities of May, 1979, has been reviewed by me and members of my staff. We wish to take exception to several aspects of this document, and I would like to go on record as expressing the opinion that it is inadequate. My opinion is based on the fact that the document evades or avoids or makes deceptive use of a number of facts, cites erroneous information which should have been checked and quotes or makes reference to certain passages to a letter I wrote August 1, 1977, to Sandra Gardebring in a way which implies that the concerns that I expressed in that letter have been adequately considered, when in fact the opposite is true.

To cite a couple of specific examples; on page 1-4 and 1-5 the report states, "Available geological information indicates that the sink hole potential at the Penz Farm Company and Darwin-Schroeder facility sites is low. Although the potential for sink hole development at the Hilltop Pork Producer's site is not well known, etc." The fact is that there is abundant evidence of sink holes and sink hole formation processes within the "study area," the "project regions," and the "project sites." It is evasive to refer only to evidence limited to the "facilities site." An objective evaluation of the available geological information would conclude that there is abundant evidence for sink hole development potential at the sites comparable to that commonly found throughout the area.

On page 4-47 the report makes reference to a "test well" drilled approximately 3,500 feet west of the Penz Farms Company facility site. The fact is that this was not a test well at all. It was a common farm water well, the log for which was obtained from a copy of an unfield-checked water well driller's record obtained from our raw data files. At the time your investigator consulted our files we advised him, as we always do, that until these records are field-checked, it is not safe to rely on the location given by the driller. In this case, the

well site was mis-located by six miles as the result of a mistaken township citation, and the geology cited in the log is not typical of the study area and irrelevant to the problem. On the other hand, our records show that there are waterwell drillers' records submitted in compliance with the Waterwell Drillers' Licensing Act for wells actually on the farms where the facilities are to be located, and these well logs, which are in our files, show entirely different subsurface geology from the cited well, indicating karsted limestone near the surface. One more example, tiling is a wide-spread practice in Minnesota. If any of the agriculutral areas affected by these projects have been tiled, then an entirely different factor has been introduced into the drainage and infiltration problem. Tiling could conduct leaching effluent directly into stream channels, and all stream channels of that area communicate with subsurface karst drainage systems. I do not find any mention in the report of the presence or absence of tiling within the project areas, but I have been informed that tiling is present. It should be dealt with.

There are other instances which could be cited, but I believe that this is sufficient to indicate that the investigation was not adequate and the use of information was evasive and deceptive. With respect to the use of my letter in a way which suggests it supports the investigation, I hereby request that if my letter is used or referred to at all, it shall be incorporated in its entirety in any document prepared by or for the Minnesota Pollution Control Agency, and I wish to go on record in the present case that the investigations carried out to date do not meet the standards and criteria which I discussed in that letter.

I also wish to go on record that I am not, I repeat, am not, categorically opposed to the construction of confined swine facilities in the so-called study area. However, I do not want this statement quoted out of context either, because I strongly insist at the same time that the area presents serious problems which must be properly addressed if the water resources of southeastern Minnesota are to be maintained in a generally useful condition for all citizens of the area. If facilities creating potential pollution hazards are to be built, they must be built right, based on thorough and honest investigation. I do not regard an environmental impact statement as a vehicle for painting over difficulties. The present document appears to me to be just such a vehicle.

I know that you are strongly committed to enhancing and protecting the professional competence and credibility of the Minnesota PCA and are in complete agreement with the sentiments which I have just expressed. Otherwise, I would not write such a blunt letter. I think we all want to start out by telling it like it is to the best of our ability. We can't be blamed for creating the geology, but we do have to deal with it.

Sincerely,

Matt Walton

MW:jp

1. Dr. Matt Walton of the Minnesota Geological Survey indicated that a letter he wrote was misinterpreted in the draft EIS.

AGENCY RESPONSE: See page 201. The entire letter is printed in the final EIS.

2. Dr. Walton indicated that he felt it was evasive to discuss sinkhole potential specifically at the facilities sites.

AGENCY RESPONSE: One of the issues which appears to be of greatest concern is leaking or rupture of storage tanks and basins. It was important to try to assess the conditions at the proposed construction sites as opposed to the other study areas, project sites and project region. The development of sinkholes on application parcels would result in essentially the same impacts whether the facilities are constructed or not, since these parcels are currently receiving fertilizer and/or manure. The development of sinkholes off the facilities sites or application parcels, such as the project regions or study area, is of minor importance when assessing potential impacts of the construction and operation of the three proposals. The draft EIS indicated that all sites are located in a karst area susceptible sinkhole development.

3. Dr. Walton brought up the mislocated well.

AGENCY RESPONSE: See Page 177, Response 4.

4. Dr. Walton inquired about effects tiling would have on surface and subsurface drainage.

AGENCY RESPONSE: See Page 123.

1. Ms. Doris Blinks, Olmsted County Planning Advisory Commission, expressed concern that the draft EIS did not provide criteria for future land use decisions for siting confined swine facilities (TR 181).

AGENCY RESPONSE: The scope of this EIS was to present existing data on the three individual proposals. There was no intent to provide criteria for siting confinement facilities. There does seem to be a need for such criteria; however, the EIS process is not designed to develop criteria. Information provided in an EIS may help to present information which may help to develop criteria.

2. Ms. Blinks expressed concern that much of the information in the draft EIS was of a general nature (TR 182).

AGENCY RESPONSE: The EIS process uses existing data much of which is at a regional scale. An EIS is usually of a general nature since most of the information is not usually developed at a site specific level. This is the case for these facilities. The Agency has included site specific information in the final EIS where it was available. The regulations which govern the preparation of EIS's also indicate that a related actions EIS may be even more general in nature than an EIS on one proposal. A Related Actions EIS shall meet the content requirement of MEQB 30D; however, the data may be more generalized and not as exhaustive as an individual action EIS. Additionally, the alternatives may be more in the nature of prototypes or alternate scenarios (MCAR 25 E3).

3. Ms. Blinks indicated that she feels the EIS did not evaluate proposed manure storage technology (TR 182).

AGENCY RESPONSE: The basin design is discussed in the draft EIS (DEIS 3-21, 3-22, 3-24, 3-25). The proposed storage basins were evaluated in terms of potential seepage or rupture (DEIS 5-20). Mitigative technological measures to lessen the potential rupture of basin liners is also discussed (DEIS 6-10, 5-22, 5-23). Alternative storage systems are discussed (DEIS 10-14, 10-19). Above ground storage over basin storage is discussed in relation to potential for leakage (DEIS 1-10).

4. Ms. Blinks indicated a necessity for discussion of responses to poor management practices (TR 183).

AGENCY RESPONSE: This issue is more appropriately addressed in a permit rather than an EIS where a contingency plan could be developed if necessary.

5. Ms. Blinks indicated that more current population figures (TR 183) would show that Haverhill Township is no longer a slow growth area.

AGENCY RESPONSE: The following information should supplement the population data on page 4-38. Haverhill Township shows an increase over 1976 data.

OLMSTED COUNTY		GOODHUE COUNTY		WABASHA COUNTY
Haverhill	1371*	Wanamingto	537*	Elgin 531***
Viola	641**	Leon	885*	
Eyota	566**	Holden	500*	
Marion	6349***	Warsaw	688***	
Farmington	725*			

* Spring, 1979 population estimates for selected MN Cities and Townships Office of State Demographer

** Preliminary estimate of population as of June 1979 for Olmsted County jurisdiction, Consolidated Planning of Olmsted County

***1977 Population Data, U.S. Bureau of Census

6. Ms. Blinks indicated that the draft EIS did not adequately discuss the potential for pollutant runoff from spray irrigation versus injection (TR 183).

AGENCY RESPONSE: Soil character and runoff character of the soils on application parcels are discussed in Technical Workpaper 7 (TWP 7-14, 7-22). The maximum allowable application rate on parcels used for spray irrigation(proposed at Penz Farm only) is a function of soil properties, such as minimum infiltration rate, available water capacity and slope. Calculated maximum spray irrigation rates are given in Table 6 (TWP 7, 7-22). For this purpose, the maximum allowable irrigation rate is defined as that rate above which surface runoff or ponding will occur, assuming that the duration of continuous spraying at any given location does not exceed one hour. The maximum allowable irrigation rate depends on the soil moisture condition at the time of application and will vary from approximately 0.1 to 2 inches per hour (DEIS 4-53). The methodology used to calculate irrigation rates is described in Technical Workpaper 7 Appendix . Under the conditions of application described, no runoff or ponding should occur from spray irrigation and would have to be the same effect as injection. If application occurs under adverse meteorological conditions (during rain or immediately prior to rain), the potential for runoff increases from spray irrigation. Consequently, a mitigative measure to reduce potential surface runoff under adverse conditions would be the alternative of injection of manure.

7. Ms. Blinks indicated that she felt site specific meteorological data should be evaluated on-site rather than use Rochester data (TR 184).

AGENCY RESPONSE: The Rochester meteorological data is the best available data. On-site meteorological data would have to be collected for years to have any validity at all for use in predicting effects. The EIS process does not provide for original data collection.

8. Ms. Blinks indicated that the cattle feedlot runoff is a separate issue and should be dealt with immediately (TR 184).

AGENCY RESPONSE: A farmer does not have to make changes in his operation until he applies for a modification or expansion of his facility. In applying for the modification of having swine, the proposer included control of cattle feedlot runoff. The most economical and environmentally sound way of controlling the cattle feedlot runoff is the way it is described in the proposal. The permit would be issued for the entire farm. If the permit is not issued for a combined cattle and swine waste handling facility, then the proposer will have to apply for a separate cattle feedlot permit.

1. Mr. John Regehr, Rockdale Township, Olmsted County, described the impacts he has felt due to the International Swine operation located near him, including odor (TR 195).

AGENCY RESPONSE: The Agency appreciates the additional information produced on odor impacts.

2. Mr. Regehr raised the issue of the importance of proper management (TR 195).

AGENCY RESPONSE: The MPCA agrees that good management is an integral part of any operation. The testimony of Dr. Loehr for the MPCA (TR 43) supports this.

3. Mr. Regehr raised the issue of public health relating especially to the handling of dead pigs in an unacceptable manner (TR 196).

AGENCY RESPONSE: This information, again, indicates the need for good management practices.

1. Mr. Ronald Faust requested that the Minnesota Pollution Control Agency consider methods of correction of potential environmental and health problems, should they occur (TR 186).

AGENCY RESPONSE: The EIS describes mitigative measures to prevent significant impacts. Correctional measures, should violations to permit requirements occur, would be recommended by the Division of Water Quality. If environmental problems do occur, other measures described in the mitigation section (DEIS 6-1, 6-6) may be implemented.

2. Mr. Faust (Sierra Club) indicated that he felt the draft EIS was over simplified and not based on actual field investigations (TR 186).

AGENCY RESPONSE: See Page 218, Response 2.

3. Mr. Faust expressed the Sierra Club's interest in the project (TR 187).

AGENCY RESPONSE: The MPCA recognizes the interest that the Sierra Club has in environmental issues. The Agency sent a letter to a Chapter of the Sierra Club in southeastern Minnesota early in the EIS process to solicit input from the Chapter and to identify a liaison person for contact during the process. Although no one responded to the Agency's request at that time, the MPCA appreciates the concern and comments expressed by the Sierra Club in response to the draft EIS.

1. Ms. Sharella Regehr, Rockdale Township, Olmsted County, described odor impacts, potential impacts form dead animals, and management at an existing facility near her (TR 228).

AGENCY RESPONSE: The MPCA appreciates the information provided by Regehr in these areas.

1. Dr. Robert Sloan, University of Minnesota, indicated that more detailed unpublished maps exist than were used in the draft EIS (TR 262).

AGENCY RESPONSE: These maps were not made known to the Agency at the beginning of the EIS process. The maps used in the draft EIS were the best available information provided by the MGS at that time. The Agency appreciates knowing that unpublished data is available from Dr. Sloan and will request that information in the future. Maps which include smaller scale geologic interpretations of the project sites by Dr. Calvin Alexander and Mr. Eric Mohring of the University of Minnesota have been included in the final EIS.

1. Mr. Donald Kunde indicated that the facility will comply with county zoning and indicated the draft EIS was not correct due to a misunderstanding of the original information requested.

AGENCY RESPONSE: The facility is proposed to be built on a 120 acre parcel.

minnesota department of health
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OFFICE OF HEARING
EXAMINERS

July 20, 1979

Myron Greenberg, Hearing Examiner
Office of Hearing Examiners
1745 University Avenue
St. Paul, Minnesota 55104

Dear Mr. Greenberg:

The Minnesota Department of Health has reviewed the Draft Related Actions Environmental Impact Statement (EIS) for Penz Farms Company, Darwin Schroeder, and Hilltop Pork Producers.

The Health Department doesn't find that the EIS directly contradicts the LCMR report "Problems Relating to Safe Water Supply in Southeastern Minnesota". The southeast ground water study was commissioned to investigate public health implications of ground water quality in the dominantly karst terrain of southeastern Minnesota. It is not a design manual for ground water use, protection, or planning. It reports trends of ground water quality, epidemiologically examines ground water related illness and investigates the unique geohydrological conditions found in the area. The report does address contaminant sources, such as lagoons, but does not specify design criteria.

Our comments on specific items are listed by the page number in the Draft EIS.

1-6 It is stated that the sinkhole potential is low at the three facilities.

A. The Health Department does not believe that the data is complete enough to make an assumption of low sinkhole potential. In fact, the data may suggest that a higher sinkhole potential exists, particularly at Hilltop Pork Producers. Soil borings to bedrock, and additional geological and/or geophysical data are needed to determine sinkhole potential.

B. Sinkholes can occur in locations with glacial drift thicknesses greater than 20 feet, specifically 20-70 feet. A recent sinkhole, 40 feet deep and 35 feet across occurred in April of 1979 in Hudson, Wisconsin. The limestone was overlain with 50 to 60 feet of glacial drift.

C. It is known that surface loading can trigger sinkhole collapse, both vibratory loading from construction or vehicular traffic, and fluid loading from impoundment. This may have been a factor in the 1976 collapse of the sewage lagoon at Altura, where the soil and bedrock investigation had determined that there "wasn't any more danger of sinkholes occurring here than might be the case anywhere between Red Wing, Minnesota and Dubuque, Iowa."

1-10 Aeration is discussed as an alternative to control odor. Another disadvantage of this method is that the bubbling action may increase the potential for airborne transmission of swine diseases.

3-9 A. Penz Farms Company is proposing to inject manure into the soil three times a year. Since weather conditions might not permit injection three times a year, the Health Department strongly urges that the lagoon be sized large enough for a six month storage period.

B. Table 3.1-1 lists parcels A and B as the areas that Penz Farms proposed to use for spray irrigation. When compared to injection, spray irrigation has greater potential for the transmission of swine diseases. Figures 4.6-1 (page 4-70) and 4.6-3 (page 4-72) show that there are a few residences located in or very near to these parcels. How close, in feet, are these residences to the land that is proposed for spray irrigation? The alternatives of using parcels A and B for injection or using different parcels for spray irrigation would be better.

3-28 Include a more detailed description of how the disease prevention procedures work; e.g. How long are new herd replacements isolated? How often are facilities cleaned and sanitized?

3-32 Penz Farms Company and Hilltop Pork Producers are proposing onsite incineration of dead animals. Who is the regulating agency, and what is the citation for the regulations?

4-24 What methods are used to prevent birds or rodents from entering the buildings? Include information on building design and maintenance procedures.

4-47 Soil borings taken to bedrock at the manure storage and generation site would help determine the site geology. The Health Department recommends that this be done as part of the permit process.

4-62 The high water table, two to ten feet at the Penz facility, six to ten feet at the Darwin Schroeder facility, and six to ten feet at the Hilltop Pork Producers will allow rapid infiltration of any contaminants into the ground water. This will minimize chemical and biological attenuation which is much greater above the water level.

4-64 While the middle aquifer (Platteville to Jordan) may be the most widely used aquifer in the area, a number of wells, principally older and therefore more likely contaminated wells, exist in the upper carbonate aquifer.

5-29 The Draft EIS states that small rodents may not be completely controlled. What swine diseases are they likely to transmit?

6-11 The Health Department feels the manure application rates should be based upon phosphorus and potassium to prevent salt buildup and possible leaching into the ground water.

8-1 The contamination of ground water is not short-term. It would take greater than 25 years to "clean" the aquifer.

The Draft EIS does not mention abandoned wells. The permit should include a condition that if any abandoned wells are located on the facilities sites or manure application parcels, the wells are to be abandoned according to Minnesota Department of Health Regulations.

We appreciate the opportunity to review this document.

Sincerely,

Laura A. Oatman

Laura A. Oatman
Public Health Engineer
Section of Health Risk Assessment

LAO:jm

1. The Minnesota Department of Health indicated more and deeper soil borings are needed to determine sinkhole potential.

AGENCY RESPONSE: Additional and deeper soil borings are recommended to further assess sinkhole potential (DEIS 6-10). These borings should be carefully evaluated to determine sinkhole potential.

2. The Minnesota Department of Health reported a sinkhole developing at Hudson, Wisconsin, with 50-60 feet of glacial drift covering limestone.

AGENCY RESPONSE: The MPCA appreciates the Minnesota Health Department supplying this additional information on sinkhole development.

3. The Minnesota Department of Health indicated that surface loading can trigger sinkhole collapse.

AGENCY RESPONSE: The Agency agrees that surface loading may trigger sinkhole collapse. The impoundments proposed by Penz and Schroeder would reduce surface loading at that point since soil would be excavated and replaced by liquid along with a plastic liner and one foot of sand cover. The overall loading at the impoundment site will be less after construction. The actual construction activity might, in itself, aggravate sinkhole development.

4. The Minnesota Department of Health indicated that manure aeration may result in increased potential for airborne transmission of swine disease.

AGENCY RESPONSE: The information on transmission of diseases including those which can be transferred by aerosol indicate that the potential is low. Aereation might tend to release more pathogens into the air; however, the survival of pathogens in stored manure is low so the effect of aeration would be insignificant in spreading pathogens to the community.

5. The Minnesota Department of Health suggested that at least six month storage should be required for the Penz Farm proposal.

AGENCY RESPONSE: The Penz Farm proposal has 305 days (approximately 10 months) of manure storage capacity (DEIS 3-23).

6. The Minnesota Department of Health asked how far the residences identified in spray irrigation parcel would be from the actual area being irrigated.

AGENCY RESPONSE: The proposer, Mr. Penz, did not respond with the information requested by the MPCA on how near to residences he intended to spray irrigate. No regulations dictate a specific distance.

7. The Minnesota Department of Health requested more information on disease prevention measures including herd replacement isolation time and cleaning procedures.

AGENCY RESPONSE: The Hilltop Pork Producers proposer indicated that they will have an all in, all out system in groups of farrowing crates and nursery pens. When a group of crates and pens are empty they would be washed down and disinfected if needed. This procedure would be done every week, 20 crates per week. The Hilltop proposal includes raising all their own replacement gelts. Only eight boars will be brought into the building each year. The boars will be placed in pens by themselves for approximately three weeks so there will be no chance for nose to nose contact. The pens will be located in the same building as the main herd. The Schroeder proposal includes periodic washing down with biodegradeable soap. No specific schedule was proposed. Herd replacements will be isolated for two months. No specific area for isolation was indicated. Mr. Penz did not supply the information requested by the MPCA.

8. The Minnesota Department of Health requested the citation of regulations governing incineration.

AGENCY RESPONSE: The MPCA permits incinerators under APC 7.

9. The Minnesota Department of Health requested building design and maintenance relating to rodent and bird control.

AGENCY RESPONSE: The Hilltop Pork Producer's proposal has buildings that are designed to be rodent and bird free by means of tight doors and wire mesh over the ventilation intakes. Poison would be used if rodents became a problem; however, the storage of feed in bulk bins and use of housekeeping methods such as keeping boards off the ground near the buildings would discourage rodents from becoming a problem. The Schroeder proposal would also use poison if rodents became a problem or possibly a device which is on the market which emits high frequency sound waves that rats cannot tolerate. In addition, the Schroeder proposal is located

near the family farmstead where their cats live, which would tend to discourage any rise in rodent population. The buildings themselves have conrete walls which would prevent rodents from entering the buildings.

10. The Minnesota Department of Health indicated that soil borings to bedrock would help determine site geology.

AGENCY RESPONSE: The Agency agrees that deeper soil borings would add to knowledge concerning geology in the area (DEIS 6-10, 6-19). The recommendation for deep soil borings to bedrock will be referred to the Division of Waters for consideration in its permitting procedure.

11. The Minnesota Department of Health indicates that the high water table varying from 12-10 feet at the sites will allow rapid infiltration of contaminants into the ground water and that attenuation is greater above the water table.

AGENCY RESPONSE: The rate of infiltration will depend on the actual depth of the water table at the time of a potential contaminating action, the ability of the soil to attenuate the particular contaminant, the soil type and the amount of the contaminant released by the potential action. The action may or may not lead to ground water contamination, depending on many factors including depth to ground water.

12. The Minnesota Department of Health indicated that although the middle aquifer may be the most widely used aquifer, many wells are in the upper, more easily contaminated aquifer.

AGENCY RESPONSE: The MPCA agrees with this statement.

13. The Minnesota Department of Health asked what swine diseases rodents might transmit.

AGENCY RESPONSE: Leptospirosis, toxoplasmosis and pseudorabies might be transmitted. Mice and rats have transferred swine dysentery to other swine under laboratory conditions. No documentation of this occurring naturally is available. (Dr. David Bane letter of August 31, 1979)

14. The Minnesota Department of Health recommends application of nutrients based on phosphorous and potassium rather than nitrogen to prevent salt buildup.

AGENCY RESPONSE: The loading rates will be determined by yearly soil and manure testing (DEIS 3-46). Application based on phosphorus and potassium loading rather than nitrogen has been identified as a mitigating measure to minimize potential impacts on ground water (DEIS 6-11, 6-20).

15. The Minnesota Department of Health indicates that the ground water contamination should not be considered short-term as stated on Page 8-1, since it would take greater than 25 years to "clean an aquifer."

AGENCY RESPONSE: This is confusing in the draft EIS. Ground water contamination is not a short-term effect. The three instances of potential ground water contamination for above ground storage cited--rupture of a storage tank, rupture of a flushing pipe and rupture of a manure transport tank (DEIS 8-1)--could contaminate ground water if the manure was not attenuated by soil before reaching the ground water. The potential for ground water contamination would vary, depending on a variety of factors including the amount of manure spilled, the soil depth to the water table, soil type, etc. If a small amount reached the ground water table, it would take less time for ground water to be restored to baseline conditions prior to the spill. The MPCA agrees that should major contamination occur, the time required to return the aquifer to baseline prior to the rupture would be much longer. The MPCA believes that the amount of manure which could reach ground water via the three cited examples would be relatively small in the instance of above ground storage because leaks would be observed as would leaks from flushing pipes and overturned transport carts. Leaks from underground manure storage basins pose a longer term impact to ground water (DEIS 8-2) since leaks may not be detected as readily. Studies indicate that manure from unlined basins in fine soils do not migrate great distances in soil, and drinking water standards were not exceeded beyond 10 feet (DEIS 5-2); however, if unchecked, long-term leaks could result in manure reaching the ground water and long-term impacts may result.

16. The Minnesota Department of Health indicated that abandoned wells should be searched for and properly abandoned according to Minnesota Department of Health rules on both the proposed construction sites and application parcels.

AGENCY RESPONSE: The MPCA agrees with the Minnesota Department of Health recommendation.

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EPRU

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JUN 28 1979
MINN. POLLUTION
CONTROL AGENCY

June 25, 1979

Janet Cain
Environmental Planning and Review Unit
Minnesota Pollution Control Agency
1935 West County Road B2
Roseville, MN 55113

Dear Ms. Cain:

We have reviewed the Draft Related Actions Environmental Impact Statement on Confined Swine Facilities and would like to offer the following comments.

1. Section 4.6.1 Existing Land Use, page 4-68. This section paints a picture that is not entirely accurate. The statement that the "study area is located in a region that is undergoing land use change from agriculture to the transitional zone" is incorrect. The definition of the transitional zone is the area where neither agriculture nor forest is the overwhelming land use. In fact, statewide nearly half of the land use in the transitional zone is in agriculture according to the reference (MSPA 1978) cited in the Draft EIS. It is true that most conflict between new urban development and agriculture will occur in the transitional zone, but the reference states that this will erode the viability of economically marginal farming operations rather than farming operations in general as indicated in the Draft EIS.

   Evidence cited in the Draft EIS that the growth trend is particularly evident in the study area due to a so-called relatively low rate of increase of harvested cropland is not meaningful for two reasons: a) harvested cropland is more related to weather, crop prices, and other factors instead of urban encroachment; b) 10-11 percent is a substantial increase. Perhaps a more useful, though not perfect, indicator of conflicting land use is the change in total land in farms over the five year period, 1969-1974. As can be seen in the enclosed map, the decreases in Olmsted and Goodhue counties are in line with or lower than most counties in the region.

2. Table 4.3-1 is based on a reference of "Leman 1979." In the references section, it turns out this reference is a personal communication and there is no indication of who Leman is or what his/her qualifications are. The reader must have access to source material to determine if the material is meaningful and has been properly interpreted.

3. In section 5.1.1 there is modeling to quantify the areal extent of odor impacts. Modeling was based on emissions from the confined swine facility and outdoor waste storage system. It would be useful to also model emissions from spray irrigation since the issue of whether or not to allow spray irrigation (as opposed to injection) is addressed in PCA permits for facilities of this size.

4. We disagree with part of the technological feasibility criteria on page 10-14 of the alternatives section; in particular "the equipment needed for a specific option should not be readily available in the commercial market. The proposed facilities should not be required to obtain or construct specialized equipment." The confined swine facilities as discussed in the Draft EIS are very large operations and relatively new to Minnesota. Given these two factors, it is not necessarily unreasonable to consider as an alternative equipment that is not readily available to the average feedlot operator. With their larger cash flows, specialized equipment may be a reasonable alternative for the large confined swine operation. In addition, since this document will probably be used in future permitting decisions, it would be helpful for the state to have information on a much wider range of alternatives than discussed in the Draft EIS. Alternatives, such as methane production by digestion and use of manure as a feed supplement, are often raised in informational meetings and public hearings. It would therefore seem appropriate that additional alternatives be discussed.

5. On page 10-18, it is stated that use of an oxidation ditch would add $0.89 to the cost of raising a hog for market. As it stands now the reader has no way of relating this figure to a number to determine how significant the $0.89 is. For example, if one assumes a market price of $40 per hundred weight and 240 pounds per hog, the $0.89 is less than one per cent of the $96 market price of an average hog.

If there are any questions concerning these comments, feel free to contact me.

Sincerely,

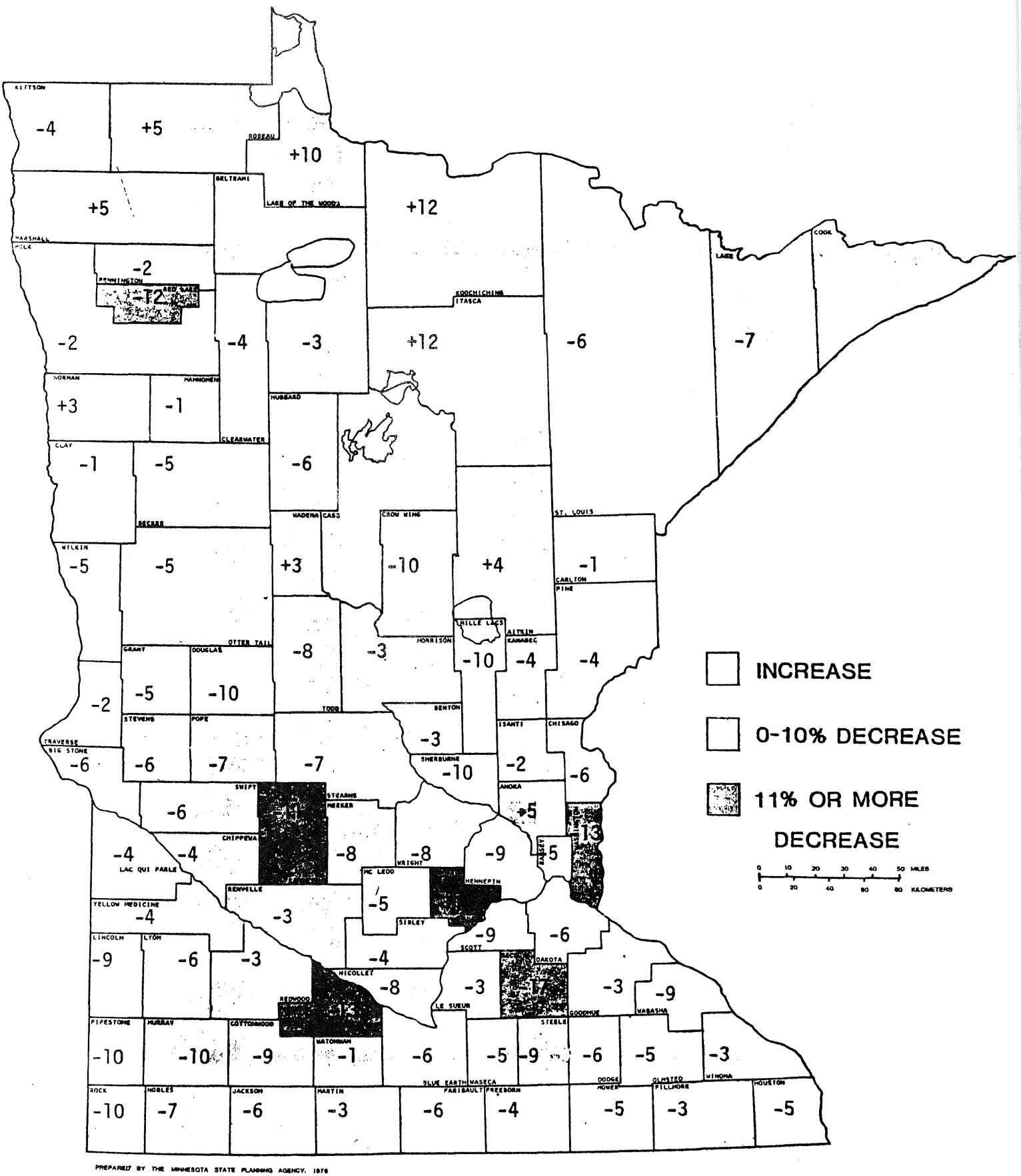
Peter Ashbrook

Peter Ashbrook
Environmental Analyst

PA/pb

Enclosure

CHANGE IN TOTAL LAND IN FARMS 1969-1974



PREPARED BY THE MINNESOTA STATE PLANNING AGENCY, 1976

SPA BASE MAP #1

DATA SOURCE: US CENSUS OF AGRICULTURE, 1969, 1974

1. The State Planning Agency indicated that the conflict between new urban development and agriculture will tend to erode the viability of economically marginal farming operations rather than farming operations in general.

AGENCY RESPONSE: Page 46, 1st paragraph, 4th sentence, should read: "...thereby eroding the viability of economically marginal farming operations."

2. The State Planning Agency supplied data indicating that a more useful indicator of conflicting land use is change in total land in farms.

AGENCY RESPONSE: Page 4-68, paragraph 2. Delete the first three sentences. Add: "Although conflicts in land use exist in the region, Olmsted and Goodhue Counties experienced about the same or lower changes in total land in farms for the years 1969-1974."

3. The State Planning Agency indicated that the reference "Leman 1979" is inadequate as a source.

AGENCY RESPONSE: The reference section page 4-102 should read: "Leman, Dr. A.D., Associate Professor, Department of Large Animal Clinical Sciences, College of Veterinary Medicine, University of Minnesota, personal communication in April, 1979."

4. The State Planning Agency indicated that it would be useful to model emissions from spray irrigation for odor impacts.

AGENCY RESPONSE: The application of manure by spray irrigation will occur only twice a year and will be immediately disced into the soil. The odor impacts should be of short duration when compared to potential odors resulting from storage of manure. Spray irrigation is recognized as a greater source of odor than injection. All mitigative measures, including injection, have been identified for controlling odors from spray irrigation. The emphasis placed on reduction of odors resulting from spray irrigation (DEIS 6-7, 6-8) indicate the advantages of injection over spray irrigation and provide sufficient information for permitting without modelling.

5. The State Planning Agency indicated that more specialized and sophisticated alternatives should be discussed since these facilities would most likely have the monitary means to purchase them.

AGENCY RESPONSE: The alternatives which were to be considered were determined more by the staff who would most likely be available to operate them rather than the capital investment required. Alternatives which are commercially available would be more likely to be able to be operated by typical farm workers, whereas operation and repair of specially designed equipment would likely have to be done by more technically skilled workers and, being untested, would probably be out of order more often. Obviously, no matter how potentially effective an esoteric alternative might be, if it is not working properly, the benefits may be far less than a proven commercially available method. Refeeding of swine manure is still in an experimental stage and was not considered a feasible and prudent alternative to evaluate in regard to the three proposals. Methane digestion was discussed at the public meeting (TR 73, 74) (See references for refeeding in Appendix I).

6. The State Planning Agency calculated the percent cost per hog for an oxidation ditch.

AGENCY RESPONSE: The State Planning Agency is correct in its assessment of cost for oxidation ditch control per hog at the prices they assume. As prices for hogs fluctuate, the percent cost would vary. Also, increases in costs for pollution control equipment, due to inflation or other factors, will affect cost on a "per hog" basis.

Minnesota
Department of Transportation
Transportation Building
St. Paul, Minnesota 55155

Phone 296-1636

June 26, 1979

Janet Cain
Environmental Planning & Review Unit
Minnesota Pollution Control Agency
1935 West County Road B2
Roseville, Minnesota 55113

Dear Ms. Cain:

The following comments are presented in reference to your memo of May 25, 1979, regarding the Calvin Penz/Darwin Schroeder/Hilltop Farms Draft Related Actions Environmental Impact Statement:

- The information contained in the DEIS is comprehensive, concise, and well presented.
- If the recommendations and commitments in the EIS are followed, few adverse impacts to air and water quality should occur.
- p. 5-24, lines 23-34
  Permeability of glacial till depends upon the ratio of coarse to fine grained sediments. It is questionable whether the permeability of glacial till beneath the Darwin Schroeder site is low enough to inhibit contamination of the underlying carbonate aquifer.
- p. 6-19
  Since the seasonal high water table may be higher than the bottom elevation in the proposed manure basins at the Penz Farms and Darwin Schroeder sites, and since the soil and groundwater information at the Hilltop site is inadequate, we suggest that a layer of clay (e.g. bentonite) be emplaced beneath all earthen basins to slow and adsorb migrating contaminants resulting from a potential rupture of the plastic liners in the basins.

It is also recommended that soil borings be obtained from the Hilltop site to determine composition of surficial sediments, height of water table, and depth to bedrock.

Sincerely,

Randy Halvorson

Randy Halvorson
Acting Director
Office of Environmental Affairs

An Equal Opportunity Employer

1. The Minnesota Department of Transportation (MnDOT) indicated that the till beneath the Darwin Schroeder site may not be sufficiently impermeable to inhibit contamination of the upper aquifer.

AGENCY RESPONSE: Soil borings made by the Soil Conservation Service indicated that in the first soil boring loess, a silty material, extended to a depth of about eight feet; below this was about two feet of sand, and the remaining part a clay loam glacial till. The report indicated that till "tended to restrict downward movement of moisture." In the second boring, loess was about five feet thick, about one foot of sand separated the loess from the glacial till that extended for many feet. The report continues, "In each of the borings, restrictions in the downward movement of water by glacial till was observed. Although the soil was dry at this time of year, the presence of mottlings indicated this restriction resulted mostly because of the imperviousness of the glacial till." (SCS Soil Boring Information for Animal Waste Storage Facility, November 19, 1976)

2. MnDOT suggested that a clay layer be emplaced below the plastic liner to reduce potential seepage in the event of a rupture of the plastic liner.

AGENCY RESPONSE: A clay liner would be an additional mitigating measure. MnDOT's suggestion will be made availabe to the Division of Waters for consideration during the permitting process.

3. MnDOT recommended soil borings be taken at the Hilltop site.

AGENCY RESPONSE: The draft EIS also indicates that borings be made to help to determine sinkhole potential (DEIS 5-48, 6-10, 6-19).

APPENDICES

I Newspaper Articles and Documents

II Related Letters

III Technology Assessment of the Hog-Pork Industry (portions only)

APPENDIX I

A variety of newspaper articles and documents were submitted by individuals and are available from the Minnesota Pollution Control Agency for review upon request.

1. "Whose Good Life Is It?" *St. Paul Dispatch* 7/13/79
   Conflicts between Lesmeister and neighbors over proposed hog facility (Morris, Minnesota).

2. "Small Farmer Must Be Saved" *Co-op County News* 6/18/79
   Discussion of pressures on small farmers which may result in their leaving the farm.

3. "Odor Regulations Nearing" *The Independent*
   Iowa regulations governing confinement facilities.

4. "Baby Pig Boost Will Fatten Pork Supplies" *St. Paul Pioneer Press* 6/22/79
   Hog farmers plan to raise output of baby pigs, resulting in 15% more pork in stores in the first half of 1980 which may help to stabilize retail food prices for the rest of the year.

5. "Bill Gets NFU Backing"
   Farmers Union at Senate Hearings on Small Business and Senate Agriculture Subcommittee on Environment Soil Conservation and Forestry said Congress should deal with preservation of farmland and protection of family farm.

6. "Raising Pigs Indoors Making More Scent Than Cents Today" *Wall Street Journal* 6/29/79
   Costs of confinement facilities are becoming higher and reducing ability to make a profit. Odor identified as a major problem with confienement operations. Difficulty of finding skilled hlep to run facilities. Potential for disease due to confinement.

7. "Experts Differ on 'Large Scale' Agriculture" *Rochester Post Bulletin* 7/28/79
   Disagreement between Senator and consumer advocate on large agribusiness firms. Berglund said, "Something would have to be done if studies show large superfarms" will destroy the family farm.

8. "More Profit, More Hogs, But Watch Out in 1979" *Farm Journal* 11/77
   High hog prices occurring in two year cycles ended. Purdue economists predict low prices till late 1979. Indicate how this may affect young producers. Also more hogs from high capital facilites may cause profit margin to narrow.

9. "Who Will Sit Up With The Corporate Sow" *Nebraska's New Land Review* Winter, 1979
Report of biennial study of changing pork industry in Nebraska. Describes "...how confinement farrowing and feeding of pigs is remaking the industry in the image of industrial America - huge capital costs, limited opportunities for beginning farmers, concentration in the control of production and governmental subsidies in the form of tax breaks for the big operators."

10. "Rural People To Decide Fate of Hog Industry" *Nebraska's New Land Review* Winter, 1979
Opinion - Problems of small and beginning farmers losing the avenue of hog farming as a way to farm with little capital investment, predicts "more than temporary" downswing in hog market.

11. "How Tax Rules Subsidize Confinement" *Nebraska's New Land Review* Winter, 1979
Tax breaks "...give favorable treatment to big farmer and to people in high income brackets."

12. "Profiles of the New Hog Farmer" *Nebraska's New Land Review* Winter, 1979
Influx of nonfarmer investors into hog confinement operations.

13. "The Corporate Sow" *Nebraska's New Land Review* Spring, 1979
University of Missouri study indicates an increase in the size of hog confinement facilities and increase in nonfarm investors.

14. "...as Nebraskans React"
Indicates reaction of individuals to the article "Who Will Sit Up With The Corporate Sow."

15. "Shopping List at Corporate Technology" *Nebraska's New Land Review* Spring, 1979
Technology discussed which could speed trend toward larger operations, including changes in breeding and weaning.

16. "Hearings Needed on Corporate Sow" *Nebraska's New Land Review* Spring, 1979 - Editorial
Documents trend toward large hog operations and calls for congressional hearings on large scale operations.

17. "How Big Outfits Moved in on Cattle Feeding" *Catholic Rural Life* November 1975
Describes influence of vertical integration of beef.

18. "Study Says Pig Production Moving Off" *Nebraska's New Land Review*
Suggests that feeder pig production in that state is quickly moving from farm units to large tax sheltered "pig factories."

19. "A Challenge To The Claim That Bigger is Better in U.S. Farming" *Minneapolis Tribune* - George Peterson, "A Farm on the Prairie"
Decline in number of family farms and the benefits of family farm life.

20. "Controlling Impoundments Which May Pollute Ground Water" *Water and Sewage Works* January, 1978
Agricultural waste lagoons may have adverse impact on ground water quality.

21. "Altura Will Fight PCA Ruling on Holding Pond" *Rochester Post Bulletin* 8/17/78
The city will fight the PCA decision to have the city abandon a holding pond at the Altura waste treatment system.

22. "Farmers Are Trying to Clear the Air Fouled by Feedlots, Hog Operations" *Minneapolis Tribune* 1/28/79
Discussion of odor problems and impacts associated with hog operations.

23. "Readers: Truth of Hog Factory Is, It Stinks" letter to the editor from Mr. & Mrs. Henry DeBoer. No name of newspaper.
Discussion of odor problems and impacts of swine confinement operation on neighbors.

24. "Use of Sulfa Drugs in Swine Operation Leads to Government Probe" *Rochester Post Bulletin* 6/14/79
Use of too much drugs for hogs leaving residue in meat. Problems associated with withdrawing drugs before slaughter of animals. Cost and problems associated with trying to restrict drug use.

25. "With Pseudorabies Threat, Keep Hogs, Cattle Separate" *Farmer* 6/18/77
Methods to use to prevent pseudorabies transfer from hogs to cattle.

26. "Study of Contaminated Water Sources Yields Variety of Results" *Rochester Post Bulletin* 3/21/79
Reported some findings of Report on the Status of Drinking Water of Southeastern Minnesota, indicating contamination of wells and recommendations for special treatment of southeastern Minnesota ground water.

Appendix I

27. "EQB Listens to Arguments on Proposed Penz Feedlot" *St. Charles Press* 6/21/79
Reports public meeting held in Eyota on a proposed confinement facility.

28. "Virus Study in Utah" *Water Research in Action* 5/77
Reports difficulty of removing virus from water during treatment by sand filtration and waste water lagoons. Progress is being made in developing more effective ways of identifying and removing virus.

29. "Land Use - A Policy Statement of the National Catholic Rural Life Conference" March 1975 (pamphlet)
Discusses importance of the stewardship of the land.

30. "Where Shall the People Live" National Catholic Rural Life Conference
Discusses rural needs, questions efficiency and economic growth as an end in farming. Discusses technology, uncontrolled competition, and cooperatives. Urges farmers to unite and cooperate with each other.

31. "Report of West Plains, Mo. Lagoon Incident" U.S. E.P.A., Region 7, 1735 Baltimore, Kansas City, Missouri 64108 June 1978
Documents collapse of waste water treatment plant lagoon in West Plains, Missouri.

32. "Problems Relating to Safe Water Supply in Southeastern Minnesota" report to the Legislative Commission on Minnesota Resources from the Minnesota Department of Health, Sigma Association, Incorporated, Minnesota Geological Survey, College of Veterinary Medicine, University of Minnesota, U.S. Geological Service, January 1979
Documents status of drinking water in southeastern Minnesota and makes recommendations for improving the ground water quality.

33. "Seminar Proceedings, American Pork Congress, 1979" Indianapolis, Indiana March 7, 8, 9, 1979
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34. "Large and Medium Volume Hog Producers, A National Survey" University of Missouri, Columbia Agriculture Extension Service, SR 223, 1978
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35. "Risk of Communicable Disease Infection Associated with Waste Water Irrigation" Katzenelson, E. Buium, I, Shuval, H.I. *Science* 194; 944-946, 1976

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36. Portion of 208 Planning document,"Feedlots Package 1" Minnesota Pollution Control Agency
Indicates susceptibility of karst area to ground water contamination. Indicates all feedlots are a threat to water quality unless appropriate management practices have been installed or detailed investigation of the feedlot site shows no hazard exists.

37. A plat map of Haverhill Township, indicating farm density.

38. Recommendations for Application of Municipal Sludges on Land, Minnesota Pollution Control Agency, August 1978. Guidelines for land application of municipal (human) waste water sludges.

38. "Recycle Modified Swine Wastes As A Source of Protein, Vitamins and Minerals for Swine"
Florida Agricultural Experiment Station, Gainesville, Fla.

39. "Converting Swine Waste Into a Nutrient Source for Swine"
University of Illinois at Urbana-Champaign

40. "Harvesting Nutrients from Swine Wastes"
University of Illinois, Department of Animal Science

41. "Swine Waste as a Nutrient Source for Finishing Pigs"
Michigan State University, Department of Animal Husbandry

42. "Recycling Dried Waste to Finishing Pigs"
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Several letters were submitted by individuals and are available for review upon request.

1. From Harry L. Buck, Director, Quarry Hill Nature Center, to the Environmental Quality Council

   Expresses concern with the proposed Penz Farm facility polluting Silver Creek, rendering it less desirable for eductional purposes. Urges denial of any permit.

2. To Mr. & Mrs. Earl Reckard from Sandra Gardebring, Executive Director of the Minnesota Pollution Control Agency.

   Response to odor complaint sent to the Governor.

3. To Susan Rohl from Janet Cain of the Minnesota Pollution Control Agency.

   Response to question regarding complaints against Donald Kunde's Rice County operation.

4. To Laverne Henning, Adrian, Minnesota, from Edward Langowski, Galesville, Wisconsin

   Reports adverse odor impacts of hog confinement system on his dairy farm, employee turnover at the facility, and dissatisfaction with tax structure.

5. To People of Adrian, Minnesota, from Mr. & Mrs. Albert Jacobs, Rushmore, Minnesota

   Reports adverse odor impacts from a 900 hog confinement facility with a slurrystore system. Expresses concern over potential well contamination. Reports odor from a second facility located eight miles away.

6. To Mary Ellen Kersch from Dennis Scholtz, Comfrey, Minnesota

   Citicism of management of an unnamed facility.

7. To Mr. Gerald Evenson, Controller for International Swine, Viola, Minnesota, from Steven P. Lindenberg, Minnesota Pollution Control Agency, Division of Water Quality Enforcement

   Notice of Noncompliance for International Swine NPDES Permit No. MN0047473, 5/21/79.

8. To Wayne Anderson, Minnesota Pollution Control Agency, from Larry Landherr, Minnesota Pollution Control Agency Regional Office in Rochester

   Report of odor complaint against Penz Farm Swine Operation 6/24/79

9. To Louis Breimhurst, Acting Director of Solid Waste Division of Minnesota Pollution Control Agency, from Larry Landherr, Regional Director of the Minnesota Pollution Control Agency office in Rochester

   Report of contamination of a well which may have caused a person to be hospitalized. Operation of a swine facility with no permit, construction of a confinement manure pit with no permit--Calvin Penz Swine Feedlot, Eyota, Minnesota.

10. To Calvin Penz from David Morrill, Twin City Testing

    Report of soil borings taken at the Penz Farm site.

11. To Honorable Charles Ross, U.S. Congress, from Don Ralston, Morty Strange, Center for Rural Affairs

    Reports on trend toward large scale hog operations and impacts which may result from them. Urges the Livestock and Grains Subcommittee to address issues relating to impacts of family farms, tax structure, long-term market prices.

12. To Mary Ellen Kersch from Chuck Hossebrook, Center for Rural Affairs

    Recommendations on how to prepare testimony. Indicates stressing cumulative effects of many possible hog operations of this type, use of subtheraputic drugs, and tax structure (Limited Partnerships).

13. To Mary Ellen Kersch from Richard Nolan, U.S. Congress, 6th District, Minnesota

    Expresses his concern for large scale operations. "Clearly the industrialization of the hog industry through large scale confinement units, presents a serious threat to the family farm system."

MRI REPORT

TECHNOLOGY ASSESSMENT OF INTEGRATION OF THE HOG-PORK INDUSTRY

FINAL REPORT

Contract No. NSF-C 850
MRI Project No. 3880-L

July 8, 1977

For

National Science Foundation
Contract Branch, Room 630
1800 G Street, N.W.
Washington, D.C. 20550

Attn: Dr. Patrick Johnson
Project Officer

MIDWEST RESEARCH INSTITUTE 425 VOLKER BOULEVARD, KANSAS CITY, MISSOURI 64110 • 816 753-7600

DISCLAIMER

This report was prepared with the support of National Science Foundation Contract No. NSF-C 850. However, any opinions, findings, conclusions or recommendations expressed herein are those of the author and do not necessarily reflect the views of the Foundation.

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PREFACE

This technology assessment of integrated hog production was conducted by Midwest Research Institute for the National Science Foundation. Principal investigators for the study were Dr. Ivan C. Smith, Dr. A. D. Allen, Mr. Howard Gadberry, Mr. James Maloney, and Mr. Kelly Martin. Other MRI staff members who made considerable contributions to this study included Mr. Larry Jennings, Mr. Dan Punzak, Dr. Edward W. Lawless, Dr. Harold Orel, Dr. H. M. Hubbard, Dr. F. V. Morriss, Mr. Carl Cunningham, Mr. Rob KcKim, Mr. Eric Thompson, Dr. James LePage, and Mr. Charles Romine. Our sincere thanks are given to the many other MRI staff members who participated in the many discussions, surveys, and work sessions conducted throughout this program.

Consultants who made major contributions to this study included: Dr. Martin V. Jones, Director, Impact Assessment Institute; Dr. John Schnittker, Schnittker Associates; Mr. W. (Bill) N. Corson, Kansas City Livestock Company; and Mr. Paul Smart, Lawrence, Kansas.

Members of the Advisory Committee who met with the project team and provided input to this study included: Mr. Harry Bernholdt, Swift and Company; Dr. Raymond Doll, Federal Reserve Bank of Kansas City; Dr. Elmer Kiehl, Dean of College of Agriculture, University of Missouri; Dr. James A. McCain, President, Kansas State University; Mr. Lee R. Schuster, Schuster Farms; and Dr. Irvin L. (Jack) White, University of Oklahoma.

We also express our sincere appreciation to the individuals in both the public and private sectors who gave freely of their time and experience to participate in both the survey of the hog-pork industry and in the many personal discussions with members of the project team. At last count over 200 individuals had been contacted and had made personal contributions to this study. Contributors include: USDA staff, Senate and House Agricultural Committee Staff, Land Grant College staff members, agricultural extension specialists, state and national farm organizations, state hog producer associations, the National Pork Council, state environmental agencies, Federal Reserve Bank, Fair Trade Commission, small and large hog producers, farm cooperatives, feed firms, packers, members of the farm news media, farm marketing organizations, and consumer and environmental groups.

The study was funded by the National Science Foundation with Mr. Joseph Coates and Dr. G. Patrick Johnson as project officers.

Very truly yours,

MIDWEST RESEARCH INSTITUTE

Ivan C. Smith

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L. J. Shannon, Director
Environmental and Materials
Sciences Division

July 8, 1977

FOREWORD

When the founders of this country made small tracts of land available at low cost to all who wanted them, the effect was to create an egalitarian, agrarian society. That society, in turn, provided personal independence and political stability. Although today we may no longer be called an agrarian society, national agricultural policy seeks to preserve and sustain the family farm system, i.e., dispersed open-market agriculture.

Can such a system provide the management and capital resources needed for efficient agriculture? Or is the answer to be found in some form of industrialization through integration, or of coordination with agribusiness?

The controversy rages not only in the farmlands but in Congress. It is obvious that an agrarian society cherishes its independence, but not quite as clear that the now politically-dominant urban sector--which confronts, every day, massive problems of interdependence and logistics--will pay sufficient attention to the needs of rural communities.

This study takes an objective look at what happens when one sector of agriculture--pork production--becomes industrialized. What are the impacts? To be comprehensive, the study must look at effects on the socio-economic structure, not just effects on pork production and marketing. Above all, the study must be based on the facts as we understand them.

In terms of research strategy, this study has broken with tradition on at least two counts. First, to a greater degree than in most technology assessment studies, information for analysis was developed from face-to-face encounters with major interest groups. Although we have researched the literature thoroughly, we have relied mainly upon personal interface with hog industry representatives and societal groups that would be importantly affected by the way this industry evolves in the future. By insuring that this interface included groups with diverse interests and value judgments, we have sought to develop an information base that would maximize our chances of providing an objective, even-handed assessment of the complex issues at stake.

There are several advantages to this approach: (a) because integrated hog farming has not yet been adopted to any significant extent in this country, documented historical evidence on many facets of the issue is largely lacking; (b) the prospects and consequences of integration of this industry are being discussed increasingly often both in professional and lay circles, and we have believed that the best way to obtain a current consensus of this thinking is to interface directly with those

involved in such discussions; and (c) technology assessment, as a policy science, is intended in principle to aid the decision-making processes of those making management decisions in the technological field being assessed. On this basis alone, we felt that if our study was to be responsive to the concerns of those planning the future of this important industry, it was incumbent on the project team to develop its analysis and findings in concert with representatives of the groups that would be in a position to influence the trend of events in this field.

A second point of departure from many previous technology assessment studies is that, in an effort to make our findings as readily useful to as large an audience as possible, we have made the full technical report covering this project as brief as possible. For those with a need or an interest in more detailed information, we will be happy to make available the extensive but heterogeneous files that we have accumulated on this subject during the 2-year period over which the study was conducted.

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I. INTRODUCTION

This technology assessment of the hog-pork industry* is primarily a policy study designed to answer the question: Is industrialization of this sector of American agriculture through vertical integration or increased coordination in the public interest? By identifying the consequences associated with various changes in industry structure, this document attempts to answer that question and discuss the policies and action alternatives for channeling future industry changes.

Major changes due to integration or coordination have already affected the production and marketing of many commodities. A good example is the vertical integration or coordination of the broiler industry which began in earnest after World War II (see Appendix A). Coordination began as simple credit arrangements between feed firms and farmers. Through this mechanism farmers were assured a line of credit and feed firms stabilized feed sales. These arrangements then evolved through a broad range of contractural forms, until a significant fraction of broilers are now produced under total vertical integration.** These changes have been accomplished by: a geographical shifting of broiler production; a failure of many integrators; a significant increase in the size of remaining integrators; a stabilization of supply; and a significant increase in production efficiency.

Although extensive integration or coordination has not yet occurred in the hog-pork industry, this study is timely since recent advances in technology and the tendency toward specialization suggest that this industry may be entering the early stages of such a change. The concerns regarding increased coordination or integration of this industry lie mostly with the parties directly and immediately affected, e.g.:

* Farmer-hog producers (of which there are 650,000) could lose this important production option, which grosses them $7 billion annually and accounts for 9% of all farm sales.

* Rural and urban communities have developed an extensive infrastructure to provide goods and services, marketing systems, processing, and a distribution system to serve hog producers.

---

* The "hog" industry includes all production and marketing phases for the live animals; pork production includes all slaughtering/processing phases required to prepare meat for the consumer.

** Vertical integration means that one firm controls more than one step in the production and marketing process.

* Consumers are concerned about changes in the supply, quality, and price of pork.

* Environmentalists are concerned not only about the lack of pollution control for small widely-dispersed livestock operations, but also for large scale operations.

* A large number of other individuals or firms (feed firms, independent slaughterhouses, veterinarians, truckers, researchers, breeding stock producers) rely on a dispersed hog industry for a large fraction of their business and therefore are concerned.

U.S. agriculture, which has long been dominated by commercial family farms,* leads the world in food and fiber output per unit labor input. The system has been so successful in stimulating farm production that surpluses have plagued farm producers for much of the last 30 years, resulting in low returns on farm investments and a per-capita farmer income significantly lower than that of his urban counterpart.** However, population growth and recent increasing world competition for U.S. food and fiber have significantly reduced surpluses. If world food experts are correct, American agriculture could become much more economically attractive to both individual and corporate investors in the future.

During the past several years there has been a substantial influx of nonfarm capital into certain types of agriculture, increased ownership of farm production resources by firms and individuals other than traditional farmers, and increased coordination or integration of farm production with other stages of the food and fiber system. However, the degree of consolidation through vertical integration or coordination differs greatly in both production and marketing of different commodities. For example, less than 1% of feed grains, 2% of oil seed crops, 3% of food grains, and 2% of the hogs were produced under production contracts or vertical integration in 1970. At the same time, 100% of sugarcane and sugar beets, 98% of milk, 97% of broilers, 70% of potatoes, 54% of turkeys, and 40% of eggs were produced under contracts or integration.[1/] Forward contracting and vertical integration in agriculture as estimated by the United States Department of Agriculture (USDA) increased from 19% in 1960 to 22% in 1970. (Forward contracting refers to a contract sale before the time the product is delivered.)

---

* Commercial family farms are officially defined by USDA as farms where the total annual labor requirement is less than 3 man-years.

** 1973 and 1974 statistics show per capita farm income approaching that of the nonfarm sector, largely because of inflated feed grain prices during that period.

Although vertical integration or coordination has not yet occurred to any great degree in the hog-pork industry, there has been considerable consolidation in the production phase; moreover, the technical and management skills have now evolved to the point that large scale production is a reality--a prerequisite to vertical integration. Additional technical breakthroughs in production would greatly increase interest in corporate or nonfarm investment in this industry.

This study presents an overview of trends in U.S. agriculture and pork production, and identifies both beneficial and disbeneficial consequences to the consumer, farmers, rural communities, and other involved parties that could result from such changes in the structure of the hog-pork industry. It identifies the consequences that could result from a number of internal and external forces that presently threaten to change the industry structure.

Reference to Section I

1. Mighell, R. L., and W. S. Hoffnagle, "Contract Production and Vertical Integration in Farming, 1960 and 1970," ERS 479, U.S. Department of Agriculture, Washington, D.C., April 1972.

TABLE IV-1

PROBABILITY OF STRUCTURAL CHANGE IN THE HOG INDUSTRY

Structural Change	Time Period (years)	Probability[a/]
100% of commercial slaughter hogs will be produced in large total vertically integrated units	25	< 0.01
40% of commercial slaughter hogs will be produced in vertically integrated units	25	< 0.05
80% of slaughter hogs will be marketed under some form of vertical coordination involving contracting	20	0.25
70% of slaughter hog production will involve some form of horizontal coordination through cooperatives	25	0.30
95% of commercial slaughter hogs will be produced by 100,000 production units	25	0.80
20% of all farrowing will occur in corporate or cooperative farrowing units	20	0.60
15% of slaughter hogs will be finished in custom lots	15	0.40

a/ Maximum probability is 1.00. (Note that probabilities were estimated independently for each growth pattern, and add to > 1.00 since they are not mutually exclusive in all cases.)

A. Alternative Industry Structures

For purposes of this study, five different industry structures have been considered. Each involves a considerable departure from its current structure, but is similar to structures that dominate other agricultural commodities. Each production arrangement is developed according to assumptions we think might characterize that type of hog-industry organization. The probability of the industry structural changes occurring are not all equal. Our estimates of their probability are shown in Table IV-1.

1. Total vertical integration (TVI): TVI means that large, factory-type, highly integrated production facilities will become the dominant mode of production. Each facility will be capable of producing 100,000 to 1 million head of slaughter hogs annually. By the end of a 25-year period, approximately 100 to 200 production units would supply all the pork produced in the United States.

Under central management, these large integrated units will combine the following production stages: feed manufacturing; farrowing (and maintenance of breeding stock); hog finishing; slaughtering and processing; and wholesale distribution. A few operations will produce all, or a major portion of, the feed grains they require for the finishing stage. Some operations might acquire existing farrowing units from feeder pig corporations and cooperatives rather than construct a centralized farrowing complex.

In most cases, the production facilities will be centrally located in small rural communities within the traditional Hog Belt. They will utilize total confinement, environmentally controlled facilities, and advanced waste treatment technology.

2. Partial vertical integration (PVI): Over a 20- to 25-year period, 40 to 400 large vertically integrated production units will operate in much the same manner as under TVI. However, they will account for only 40% of pork production, whereas the independent farm producer will continue to dominate the rest of the industry.

Located in small rural communities near major population centers, the large integrated units will buy and process their own feed, buy feeder pigs and acquire existing feeder-pig corporations, and operate their own packing plants.

The independent farm producer, on the other hand, whose production units will be larger than the current size, will use the existing slaughtering and processing industry.

3. Vertical coordination (VC): VC means that the hog industry will imitate the broiler industry in that farmers will continue to produce hogs, but under production contracts with feed firms, packers, or a combination of such parties. Over a 15- to 20-year development period, producers (hog farmers) will convert almost entirely to modern, mechanized total-confinement production facilities. These production units will concentrate in the vicinity of the packing plants, and will be largely in the 1,000 to 5,000 head category. The units will be subject to existing environmental restrictions.

4. Horizontal coordination through farm cooperatives or associations: The independent farmer will continue to dominate hog production, but over time fewer and larger production units will evolve. To help increase marketing power and reduce costs, farm cooperatives will coordinate production and marketing, as is already done in the dairy industry. The associations could establish production quotas and quality standards; farmers will purchase production inputs through them, and farm cooperatives will also engage in slaughtering and packing.

5. Consolidation of the industry: The independent farmer will continue to dominate the hog industry, but there will be half as many commercial hog producers in 1985 as there are currently. By the year 2000, the number will be reduced by 85%. The industry direction will be toward more specialized hog production units in the size category of 10,000 to 25,000 head. Producers will turn increasingly to on-site feed processing, and enter into forward contracting for production inputs. They will engage in direct sale of slaughter hogs to packers, and by 1985 these direct sales will approach 25% of total volume.

6. Specialized production: In addition to the major structural changes described above, several changes in ownership characteristics in the production phase of the industry will take place over the next 25 years. These changes will include the development of systems of cooperative farrowing and custom finishing. Because farrowing is an extremely labor-intensive phase of hog production, farmers will increasingly turn to corporate and cooperative farrowing units. Operated as Subchapter "S" corporations, these units will be principally farmer-owned, although nonfarmer investors will also participate. The production outputs will be returned to farm owners for finishing. By 1985, 20% of all pigs will be farrowed in these units.

Nonfarmer investors will dominate the development of custom finishing operations, patterned after large custom cattle feedlots. These custom lots will finish hogs on a cost-plus-fee basis, and will market directly to packers. They will develop outside the Corn Belt in temperate regions close to population centers, and by 1985, 10% of the total hog production will be finished in this manner.

TABLE IV-2

IMPACTS ON INDEPENDENT HOG PRODUCERS

	Total Vertical Integration (TVI)	Partial Vertical Integration (PVI)	Vertical Coordination	Coordination Through Farm Cooperatives	Consolidation of the Industry	Feeder Pig Cooperatives	Custom Finishing
Impacts on:							
Producer Income	---	--	-	+	+	-	-
Capital Investment in Hog Facilities	---	-	-	-	-	o	o
Future Capital Requirements	-	-	-	-	-	--	+
Farmer Options	--	-	o	o	o	o	+
Farmer Independence	--	-	--	o	o	o	o
Labor Utilization	--	-	o	o	+	+	o
Recreation/Leisure Time	++	+	-	-	-	+	o
Family Structure	-	o	o	o	o	o	o
People/Land Ratio	--	-	-	o	-	o	o

+ indicates positive or beneficial impact.
o indicates no impact.
- indicates negative or disbeneficial impact.

TABLE IV-3

IMPACTS ON RURAL COMMUNITIES

	Total Vertical Integration (TVI)	Partial Vertical Integration (PVI)	Vertical Coordination	Coordination Through Farm Cooperatives	Consolidation of the Industry	Feeder Pig Cooperatives	Custom Finishing
Impacts on:							
Private Businesses	---	--	--	--	-	-	o
Tax Base	---	--	-	-	-	-	o
Demand for Health, Education, Welfare Services	---	--	o	o	o	o	o
Quality of HEW Services	---	--	-	-	-	+	o
Local Government	--	-	-	o	o	o	o
Legal and Financial Services	---	--	--	-	o	o	o
Quality of Public Services	---	--	--	-	+	+	o
Leisure and Recreation Opportunities	+	o	o	o	o	o	o
Physical Environment	+	+	o	o	o	o	o
Social Structure	-	-	-	o	o	o	o
Community Independence	-	-	-	-	o	o	o
Land Values	o	o	-	o	o	o	o

TABLE IV-5

IMPACTS ON CONSUMERS

	Total Vertical Integration (TVI)	Partial Vertical Integration (PVI)	Vertical Coordination	Coordination Through Farm Cooperatives	Consolidation of the Industry	Feeder Pig Cooperatives	Custom Finishing
Impacts on:							
Retail Pork Prices (Short-Term)	+	+	+	-	o	-	+
Retail Pork Prices (Long-Term)	-	o	-	-	o	-	+
Supply	+	+	+	+	+	+	o
Quality	+++	+	++	++	+	+	o
Selection/Variety	+	+	+	+	o	o	o

TABLE IV-6

IMPACTS ON ENVIRONMENT

	Total Vertical Integration (TVI)	Partial Vertical Integration (PVI)	Vertical Coordination	Coordination Through Farm Cooperatives	Consolidation of the Industry	Feeder Pig Cooperatives	Custom Finishing
Impacts on:							
Air Quality	++	+	+	o	+	o	o
Water Quality	++	+	+	o	+	o	o
Land Quality	--	-	-	o	o	o	o
Rural Aesthetics	-	o	o	o	o	-	-

TABLE IV-7

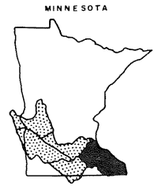
IMPACTS ON MISCELLANEOUS CATEGORIES

	Total Vertical Integration (TVI)	Partial Vertical Integration (PVI)	Vertical Coordination	Coordination Through Farm Cooperatives	Consolidation of the Industry	Feeder Pig Cooperatives	Custom Finishing
Impacts on:							
Feed Firms - Involved	+++	++	++	+			
Feed Firms - Not Involved	--	-	-	-	-	+	+
Packers - Involved	+++	+++	++	+			
Packers - Not Involved	---	--	--	-	+	+	o
Grain Farmers	-	-	-	o	-	o	o
Fed Beef Industry	--	-	-	-	o	o	o
Feeder Pig Producers	---	--	--	+	+	--	++
Breeding Stock Industry	---	--	--	-	o	-	o
Livestock Markets	---	--	--	--	-	-	-
Cash Grain Markets	++	+	+	o	+	o	+
Agricultural Universities	++	+	+	o	+	+	o
USDA Services	-	-	+	+	+	+	o
State Agricultural Departments	-	-	-	+	+	+	o
Meat Substitute Industry	--	-	-	-	-	o	o
Restaurants	++	+	+	+	+	o	o
Convenience Foods Industry	++	+	+	+	+	o	o
Rural Transportation Industry	-	-	-	-	o	o	+
Animal Health and Feed Additives Industries	+	+	+	+	+	+	+
Farm Organizations	--	-	-	+	+	+	o
Labor Unions	++	+	+	-	-	o	o

U. S. DEPARTMENT OF AGRICULTURE

BASE LEGEND

BASIN BOUNDARY
STATE BOUNDARY
COUNTY BOUNDARY
DRAINAGE
LAKE
DAM AND RESERVOIR
STATE CAPITAL
COUNTY SEAT
TOWN OVER 10,000
TOWN 1,000-10,000



LEGEND

HIGH POTENTIAL - SHALLOW OVERBURDEN (LOESS OR TILL) OVER BEDROCK

MODERATE POTENTIAL - DEEP LOESS OVER BEDROCK

LOW POTENTIAL - DEEP OVERBURDEN (ALLUVIUM, LOESS OR TILL) OVER BEDROCK AND NON-DEVELOPED BEDROCK

SCALE 1/500,000
SCALE 5 0 5 10 15 20 MILES

POTENTIAL SINKHOLE AREAS

SOUTHEAST MINNESOTA TRIBUTARIES BASIN

portion of the

SOUTHERN MINNESOTA RIVERS BASIN STUDY

MINNESOTA, SOUTH DAKOTA, AND IOWA

277

9-23-77
5,S-36,552

SOURCE:
FAMILY OF MAPS SCS DRWG. NO. 5,S-34,086.3 (4-74)
AND INFORMATION FROM FIELD TECHNICIANS
TRANSVERSE MERCATOR PROJECTION

USDA-SCS-LINCOLN, NEBR. 1978

STATE OF MINNESOTA

MINNESOTA POLLUTION CONTROL AGENCY

Public Meeting on the Penz Farms Company/Darwin Schroeder/ Hilltop Pork Producers Confined Swine Facilities Draft Environmental Impact Statement.

VOLUME I

The above-entitled Hearing came duly on before Myron Greenberg, Hearing Examiner, State Office of Hearing Examiners, on the 25th day of June, 1979, at the Religious Activities Center at the Rochester State Hospital, 2110 East Center Street, Rochester, Minnesota, commencing at approximately 7:00 o'clock P.M.

* * *

MPCA Staff Members Present:

Robert Moilanen, SSAG
Rick Defieux
Janet Cain
Dale McMichael
Raymond Loehr
David Bane
Wayne Anderson
Edward Pryzina
Clifford Anderson
Dale Thompson

ALSO PRESENT:

Laura Oatman
Nancy Salustro, Environmental Quality Board
Shirley Rutherford, Department of Agriculture

* * *

WHEREUPON, the following proceedings were duly had: --

* * *

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* * *

MR. GREENBERG: Ladies and gentlemen, I would like to begin the Hearing. This Hearing is called to order.

This is a public meeting to receive comments and questions on Penz Farms Company, Darwin Schroeder, Hilltop Pork Producers Swine Facilities Draft Environmental Impact Statement.

A SPECTATOR: Could you talk into the microphone, please?

MR. GREENBERG: O.K.

A SPECTATOR: Thank you.

MR. GREENBERG: I will project a little bit more, O.K.?

A SPECTATOR: O.K.

MR. GREENBERG: This is the draft Environmental Impact Statement. My name is Myron Greenberg, b-e-r-g, I am a Hearing Examiner with the State of Minnesota Office of Hearing Examiners. My address is 1745 University Avenue, St. Paul, Minnesota 55104. The Office of Hearing Examiners is an independent State Agency independent of any other agency of the State involved in either the conduct of Hearings or the decision-making process wherein decisions are made having to do with an administrative process such as we are involved in in this Hearing this evening. This evening's Hearing is concerned with an Environmental Impact Statement. A part of the Statutory

scheme, part of the law, requires that a public meeting be held to consider the material raised in the draft Environmental Impact Statement and that's what we are doing this evening. I understand that there have been public meetings regarding the project under consideration. Members of the Pollution Control Agency will give a brief summary of what has gone on to this point. I understand that many of you are familiar with procedures that have preceded this meeting.

The purpose of this meeting is to take comment, raise questions, if there are any, regarding the draft Environmental Impact Statement regarding the project. I will have the Pollution Control Agency staff explain the project in more detail in just a moment.

Let me explain my function this evening. The Office of Hearing Examiners normally conducts contested case Hearings or rulemaking Hearings. Contested case Hearings are like trials. If somebody has a problem involving a State Agency, a license, perhaps, or an application to do something which is regulated by the State, then there may be a case involving that application and we may hear that, one of my colleagues or myself. We also conduct rule-making Hearings where the State promulgates rules such as the rules governing the Environmental Impact Statement which we are talking about this evening, in which case

the public has an opportunity to come and participate.

This evening's Hearing is a public meeting, it is not a formal Hearing. I want everyone to be aware of that. My function this evening will be similar to a traffic cop. I am going to try to maintain an order in the meeting, make sure that everyone has an opportunity to speak, to speak and to have his questions either raised and if possible addressed, but at least raised.

A record is being made of this proceeding. The proceeding is being recorded by a court reporter. Mr. Kennedy is unable to take the transcription of four or five people or even two people talking at once so I will require that only one person speak at once and that you come to the microphone, identify yourself clearly, if necessary spell your name, identify any interest that you may represent and then give your statement, raise your question, or do whatever else you may want to do at the microphone.

This is an informal meeting. The only reason that there will be some degree of formality is so that everyone has an opportunity to be heard and to have their comments recorded.

Are there any questions about procedures this evening?

(No response.)

MR. GREENBERG: Then let me outline what I anticipate

happening. I am going to ask the attorney for the Pollution Control Agency to introduce into the record some jurisdictional documents just so that the record will be clear that all the requirements of State Statutes have been met. I am then going to ask that a brief summary be given of proceedings to date. If the attorney for the Pollution Control Agency or a staff member for that Agency wishes to elaborate on the proceedings they may do so. Then I will take testimony from anyone who wishes to give it, pro, con, in support of the project, against the project, considerations of Environmental Impact only should be addressed.

O.K. Are there any questions?

(No response.)

MR. GREENBERG: May I see a show of hands, please, of those people who wish to address the Hearing this evening?

O.K. Now let me caution only one thing, this room I understand is available until 10:00 o'clock. That means that if your point has been made I would request that you limit making the point again. I am not going to be a stickler about it, but if the same point is made three or four times I am simply going to ask that you sit down. Please believe that once a point has been made on the record it will be considered, it doesn't have to be

made over and over again.

Any questions?

(No response.)

MR. GREENBERG: Mr. Moilanen, if you like to, you may address the Hearing.

MR. MOILANEN: Thank you, Mr. Hearing Examiner. My name is Robert Moilanen and I am a Special Assistant Attorney General --

MR. GREENBERG: Just a moment. Can everybody hear Mr. Moilanen?

A SPECTATOR: No.

MR. MOILANEN: Let me try standing. My name is Robert Moilanen and I am a Special Assistant Attorney General to the State of Minnesota. I am here this evening to assist the Minnesota Pollution Control Agency in this meeting. First of all, I think it's very important to emphasize why we are not here. We are not here tonight to decide on whether or not permits should be issued for the facilities, that will be decided at a later date. You are also not here tonight to make a determination of the adequacy or inadequacy of the Environmental Impact Statement, that is within the jurisdiction of the Environmental Quality Board. They make that determination.

However, we are here tonight to receive comments on the adequacy or inadequacy and for that purpose we are

anxious to listen to your questions, attempt to respond to them, take your comments in hand.

Before introducing a few procedural Exhibits let me just introduce the panel that you have in front of you. To my immediate right is Dale McMichael, he is the Deputy Director of the Office of Environmental Planning and Review of the Minnesota Pollution Control Agency. He worked on coordinating this Environmental Impace Statement. On his right is Rick Defieux and he is with Environmental Research and Technology, they are the consulting firm who worked on this draft EIS. Mr. Defieux is a hydrologist and his title was Project Manager. On Mr. Defieux's right is Janet Cain and she is with the Minnesota Pollution Control Agency and she is assigned to coordinate the Divisions of Air Quality and the Divisions of Solid Waste at the Agency and she worked as the Agency's Project Manager on this draft Impact Statement.

There are other members of State Agencies here tonight and there are other members of the consulting firm or consultant to the consulting firm who have expertise or participated in the drafting and the review of this document and I am going to wait until your questions come in and as they respond they can introduce themselves.

Now just as a preliminary matter, before Mr. McMichael and Ms. Cain, present a brief overview of the EIS process

and specifically a summary of what this document contains, I would just like to make note of two facts: One, we have this room longer than 10:00 o'clock. We made arrangements after I talked with the Hearing Examiner to keep it open. We have no intention of cutting off any type of discussion here, although let me repeat what the Hearing Examiner and that is that comments that are redundant really won't assist the record on the matter. So we hope to the extent that one person makes a statement that it is not repeated over and over again. Secondly, let me note that the record will be open for 20 days on this matter. After this evening's session you will have an opportunity to submit written comments into the Hearing record by writing to Mr. Greenberg.

Before Ms. Cain and Ms. McMichael or Ms. Cain and Mr. McMichael present you with their summaries I would like to introduce a few documents, ten documents, into the record. These constitute procedural Exhibits so that this Hearing has some legal validity.

The first document is the draft Environmental Impact Statement itself.

I have marked all these MPCA Exhibit 1, 2, et cetera.

The second document is the Notice of the public Hearing, which I hope many of you received.

The third document is called an Affidavit of Mailing

and this contains a mailing list of the people who received a copy of the Notice for the Public Hearing.

The fourth document is an Affidavit of Mailing and this contains a list of people who received a copy of that draft Environmental Impact Statement.

The fifth document is the Environmental Quality Board Monitor and we publish the fact that we hold these public meetings in this document and that's why I'm introducing it into the record. It merely shows that the State went to efforts to provide you with notice of this Hearing.

The sixth document is called an Affidavit of Publication and this particular document is an Affidavit of the fact that this meeting was published in the Cannon Falls Beacon.

The seventh document is also an Affidavit of Publication and it attests to the fact that the notice for the public Hearing was published in the Rochester Post Bulletin.

The eighth document is a distribution list for the draft Environmental Impact Statement and it includes staff members, it includes people who are no doubt in this room, and it includes other people in State Government.

The ninth document is the rules that govern the Environmental Quality Council's EIS process.

The final document is a copy of a letter that was sent with the draft Environmental Impact Statement from Terry Hoffman to all interested parties dated May 25th, 1979.

I move those into the record at this time.

MR. GREENBERG: Those documents are part of the record now.

MR. MOILANEN: I would just make one more note and that is that we have also published this Hearing in the Red Wing Eagle and we will be introducing -- we have not got the Affidavit, we will be introducing that subsequently into the record. We were not able to get it from the printers on time.

With that I am going to turn this matter over to Mr. McMichael and he will provide you with a brief overview of, again, what we are doing here tonight and the EIS process.

MR. MICHAEL: My name is Mr. Dale McMichael and I have just a couple of very brief comments.

First of all, regarding the purpose of the Environmental Impact Statement process, and the purpose of the Environmental Impact Statement process is to present all available information concerning proposed actions, in this case some large swine confinement facilities.

The second comment is that there has been apparently

some confusion and generally there is in these kinds of cases over what the Environmental Impact Statement may say or may not say. And what I am going to try to do is summarize in one sentence what I think the Environmental Impact Statement says and that is the draft Environmental Impact Statement. That is that the success or failure of these proposals is largely dependent on the alternatives and mitigating measures implemented as well as the management of these facilities.

A final comment on my part is that the purpose of this Hearing is to consider the draft Environmental Impact Statement. Mr. Moilanen had mentioned that. It is not to approve or deny these facilities and indeed I think that will become clear as Ms. Cain goes through the process that we have gone through to date and the process that we have before us.

With that we will go to Ms. Cain.

MS. CAIN: My name is Janet Cain and I am with the Minnesota Pollution Control Agency. I am the Air Quality and Solid Waste Coordinator for the Agency.

MR. GREENBERG: Can you use the microphone, please?

MS. CAIN: Many of you are familiar --

MR. GREENBERG: I don't think it's picking up yet.

MS. CAIN: Many of you are familiar with the process that we have gone through during the Environmental Impact

Statement preparation, but for those of you that aren't I would just like to review where we are today as opposed to where we come from and what is left in this process.

These Environmental Impact Statements were the results of citizens' petitions. The Environmental Quality Board determined that two of these proposals had potential for significant environmental affects and ordered an EIS prepared. Mr. Kunde, in response to the citizens' petition, volunteered to have an Environmental Impact Statement prepared on his proposal also.

The Environmental Quality Board designated the Minnesota Pollution Control Agency as a responsible Agency for preparing this document. The Agency proceeded to select a consultant to assist in the preparation of the Environmental Impact Statement and selected environmental research and technology to aid in their preparation.

The Environmental Impact Statement preparation notice was published on January 22nd in the EQB Monitor and began the procedure for preparing an Environmental Impact Statement. A public meeting was held in January to acquaint the public with the scope of the project, of the process that the MPCA would use in the preparation of an Environmental Impact Statement, to identify public concerns and to solicit information from the public and interested persons on what issues should be identified

and addressed in the Environmental Impact Statement. A mailback letter was provided so anyone at that meeting who would prefer to respond in writing rather than give information in a verbal manner at that meeting.

A letter was sent to State and Federal Agencies, Environmental groups in the area, Farmers organizations, and others, asking them to identify the areas that they were interested in addressing in this Environmental Impact Statement and to identify a liaison person who we could contact for information.

The EIS was prepared in 120 days, which is the required time limit for Environmental Impact Statement preparation. That's the draft Environmental Impact Statement. It was finished in May. Tonight's public meeting was occurring about three quarters of the way through the EIS process and this meeting again is to gather additional information from the public that will enable us to adequately address the issues that these proposals bring forth.

The record will remain open for 20 days following this meeting again to allow public input and after the record closes the Agency has 30 days to prepare the Final Environmental Impact Statement, have it approved by the Minnesota Pollution Control Agency Board, and submit it to the Environmental Quality Board for review. The

Environmental Quality Board will determine the adequacy of this document.

Once the Environmental Impact Statement is found to be adequate the permitting process can then begin.

I guess the next person that will be speaking will be Rick Defieux. No, he won't.

If there are any questions regarding the process I would be happy to answer them.

MR. GREENBERG: Does anybody have any questions about the process, about any of the presentations so far?

(No response.)

MR. GREENBERG: O.K. I am advised that the Agency is willing to accept and must at this meeting, accept questions and comments on the draft EIS. Ms. Kersch indicated that she wanted to address the PCA, so Mary Ellen Kersch, you may do so. Would you spell your last name, please?

MS. KERSCH: I would like a clarification before I begin my testimony. I recognize that you don't desire to have redundant statements made tonight but I would like to know if several things are occurring in different parts of the State or in different parts of the country and people would choose to speak on that if that would be considered redundant.

MR. GREENBERG: What do you mean?

MS. KERSCH: As each experienced individual and relevance. We have people here tonight from various parts of the State who will attest to certain things, many of them are of a nature, some of them are of a different nature that they are experiencing as a result of some operations similar to these. We felt that it was pertinent particularly with regard to some of the things in the EIS. And I would like them all to be encouraged to give their own personal experiences because I feel that they are not redundant and that they are different in material.

MR. GREENBERG: I think that some examples are certainly relevant this evening. If there are 10 or 15 people who wish to make comment about examples of some specific activity in their community I think that would be more properly done by the mail at the conclusion of the Hearing. Now if -- let's see how it goes.

MS. KERSCH: O.K. All right. I think they are individual and people have driven a long distance to present testimony tonight and I would like to encourage them to do so and I am afraid that some of the people might be reticent to do it after the opening statement.

MR. GREENBERG: Just so you understand --

MS. KERSCH: I don't want eggs thrown at them.

MR. GREENBERG: Just so you understand that I don't

want the same comment to come in to the exclusion of others.

MS. KERSCH: Right, absolutely.

MR. GREENBERG: Go ahead.

MS. KERSCH: My name is Mary Ellen Kersch, I am Chairman of an organization called Save the American Family Farm, which is a coalition of individuals and groups who are concerned about the potential for environmental and socio-economic hazards of large swine confinement facilities in Minnesota and Wisconsin. Additionally, I reside four miles east of the proposed Penz pig factory.

This is our first experience with an EIS and I will have to tell you we feel about it the way some people feel about their first child, we are very happy to have it but some aspects of it do make us a bit nervous.

Fortunately tonight we have an opportunity to deal with out concerns and our hope is that we are going to send out a more perfect version in a complete EIS.

We disagree with those people who have read the EIS and interpret it as being an endorsement presupposes. We think that many legitimate concerns, which we have spoken out on for over two years, are also expressed in the draft. While the draft is an important beginning, it is only a beginning, and I think that's important to understand especially when the issues deal with such unmapped

territory as tonight's subject, input from the real world is at least equal in importance to the projections and extrapolations from the paper world search of the literature and this is what the draft is confined to.

Perhaps it was because the draft was confined to a literature search that it is deficient. Tonight we will build on the draft and present testimony and documents to illustrate the reality of the problems presented by these facilities. The draft EIS spells very clearly how things can be if everything goes well. We think the final EIS should include, just as clearly, what can happen if they don't.

There are five categories under which I would like to present our concerns: Odor, health, management, socio-economics and design.

I will begin with odor, not because it is our most pressing concern, but because it is the problem which is probably the most difficult to deal with and the most readily detected. Unfortunately, for many who will testi- by tonight, it is absolutely impossible to ignore.

For a long time, PCA did not acknowledge any jurisdiction over odors caused by these facilities. Fortunately, about a year ago, the Attorney General's office, under Mr. Moilanen's signature, handed down an opinion that odors caused by storage of animal wastes which result

in a public nuisance come under Minnesota Pollution Control Agency jurisdiction. We thank you for that opinion, Mr. Moilanen. That ruling -- I didn't mean to embarrass you but we are very appreciative of it. That ruling was a result of the agony experienced by people who live in Lewisville and who farm in Lewisville and their concerted effort, I might add, to put a stop to the putrid smells which drastically altered their quality of life. They are here tonight to tell you about it.

The draft admits that, and this is a quote, "The proposed action would result in adverse odor effects in the community surrounding each facility site." However, it is deficient in its calculation of odors, and for a very good reason. It took one odorant of the 15 that are known to be associated with swine manure and decided that that one, hydrogen sulfide, would be called "Representative. From that weak premise, it went on to make a mathematical model to postulate the impact of odors from swine manure. Well, we don't buy the premise and we don't buy the whole bit. Several people will give testimony tonight regarding the extent and affects of those odors. What they know from their own experience is that mathematical models don't always reflect the real world.

This is the first attempt to model swine odors. It's easy to understand that a model which was dependent upon

a literature search is not accurate. That model cannot represent the worst case odors accurately. Only the people living with them can do that and they are here tonight.

Doctor Roy Cucchiara, an anesthesiologist at St. Mary's Hospital, has some important information and questions regarding the odor modeling. I would anticipate that MPCA would include those in the final EIS. Additionally, I would also like to ask a few questions of my own.

Has PCA checked with their Regional Director for serious odors from other large swine operations in this area?

MR. MOILANEN: Let me make sure I understand your question. You want to know if PCA has checked with its own regional office?

MS. KERSCH: That's right.

MR. MOILANEN: About odor problems?

MS. KERSCH: That's right. I think that would be relevant to an EIS on odors in this area. I mean, that would seem --

MR. MOILANEN: You mean in drafting the EIS did we --

MS. KERSCH: In the final -- at any point does the PCA know whether there are problems with odors in this area currently? It would seem to me that that would be

relevant.

MR. MCMICHAEL: I think it's important to note that I have had several discussions with both regional directors who have -- we have had in this region, that the PCA, over the period that this EIS was prepared, and Mr. Lander is here, our regional director, as well I think there is a fairly close coordination between our permitting and ag waste units and the regional people. I don't know what else --

MS. KERSCH: Well, what I would like to know is if there have been complaints of odor, if any of these complaints came from facilities that were owned by any of the proposers.

MR. MCMICHAEL: I think that perhaps Mr. Lander is the appropriate person to address that particular question.

MS. KERSCH: I think that's true.

MR. MCMICHAEL: I think if Mr. Lander would stand up and introduce himself.

MS. KERSCH: I think he probably ought to stay up front, I have quite a few questions for him. O.K. Mr. Lander, have you had odor complaints from large swine facilities in this area and if so have any of them been owned by or operated by or permitted to any of these proposers?

MR. LANDER: In response to your -- is this coming through? In response to your question we have had complaints about odors from primarily spreading of manure from several of the large facilities that are located within this twenty County region that I am the director of. I believe that one or two of the facilities included facilities that are owned by one of the proposers.

MS. KERSCH: O.K. Wouldn't the existence of serious odors from these facilities represent impairment or destruction of the air with the State and the State Environmental Policy Act?

MR. MOILANEN: I think that's a legal question.

MS. KERSCH: Yes, Mr. Moilanen.

MR. MOILANEN: The Environmental Policy Act references the definition of Pollution Impairment or destruction with the Environmental Rights Act and that -- and the Environmental Rights Act specifically includes the introduction of odors into the air -- odorous air pollution.

MS. KERSCH: With regard to the mitigative measures proposed by the draft EIS relating to odors, what has been the verified real world effectiveness in this region of the country for each measure described? And I think it's important if measures are going to be called mitigative that they should be effective in the area for which they

are designed or planned or proposed or intended. What is the mitigative success record?

MR. MOILANEN: Is that pointed at any specific individual?

MS. KERSCH: Whoever wants to take the ball and run with it. It's on page 61 of the draft EIS, the mitigative measures.

MR. LANDER: I would assume that by mitigative measures you mean such things as covers, aerators, things of this nature?

MS. KERSCH: That's right, in this region of the country.

MR. LANDER: Once again, I can only speak from personal experience here dealing with some of the problems that I have encountered. One of the facilities which utilized a cover of a plastic sheet design was not effective in resolving their problems. I have personally viewed a system where a floating aerator was utilized and the aerator in use on that system was not totally effective in controlling odor production within this manure storage facility.

MS. KERSCH: We have some people here tonight who have supposedly had their odors mitigated and the report hasn't been all that exciting.

Our next question, the draft EIS states that

management --

MR. MOILANEN: Excuse me. Could we go into a little bit more detail --

MS. KERSCH: Sure.

MR. MOILANEN: -- in responding to your question?

MS. KERSCH: Sure.

MR. DEFIEUX: First of all, I think you know this, there is no record of whether all these aerators were in Minnesota. We don't have an excellent data base to work with. I think it is a mistake to restrict yourself to the State and I think it's useful to look elsewhere, particularly maybe similar climates and see if these things do work. There is a record of some successes and some failures. I think it may be useful at this point to introduce Dr. Ray Loehr, who is an agricultural engineer and has as much experience as anyone in this matter and has seen not just aerators but the general whole gamit of engineering devices and so forth in this area and may have a --

MS. KERSCH: All right.

MR. LOEHR: My name is Raymond Loehr L-o-e-h-r, professor of agricultural engineering at Cornell University where I have been involved in agricultural waste management, particularly animal waste management for over a decade.

Relative to the point in question, we have had considerable success in New York State dealing with aeration systems for very concentrated animal waste systems. There our problem has primarily been poultry wastes and, as you suggest, many animal wastes and have significant odors and in New York State they had, in the early days, considerable odor problems.

There are a number of mitigating measures that have been used in New York State to reduce those odors to the point that there are very few existing in the State of New York currently. Some of these are described in Section 6, including aeration, including proper land treatment and injection where appropriate.

I might comment with regard to the aeration concept. I believe you will be getting to that point, from your earlier comments, but it does deal with proper design and proper management because it is not adequate to simply put in an aerator. That aerator, if it is to be used for mitigating purposes, must be properly designed for the waste load that will be there.

MS. KERSCH: Excuse me, could I just interrupt a minute? I want to be sure that Mr. Anderson has heard because recently he stated that if it was designed to be anaerobic it could become aerobic by simply putting an aerator in it and I just wanted to be sure that

Mr. Anderson has heard that.

Is it necessary to coordinate the design? It's not -- to put an aerator in a pit would it be necessary to correlate the design so that the two would work together?

MR. LOEHR: Yes.

MS. KERSCH: Thank you very much.

MR. LOEHR: I would have to assume that anyone who would say that one was going to put an aerator into a pit would have to have unsaid the assumption that that must be designed well or one can assume it will not work.

MS. KERSCH: O.K. Thank you. That's what we assumed too.

O.K. How dependent are these things on --

MR. GREENBERG: Just a moment. Just a moment.

MR. DEFIEUX: I'm not sure if you want to -- we haven't addressed a lot of the things you brought up.

MS. KERSCH: O.K. I may be getting to them in my questions.

MR. DEFIEUX: I know one of the things that you mentioned was the modeling exercise.

MS. KERSCH: Yes.

MR. DEFIEUX: We will be coming back to that.

MS. KERSCH: Yes, someone else will be coming back to that.

MR. DEFIEUX: So I just thought I would mention on

page 53, first of all, I want to say that we weren't trying to sneak by modeling exercises using one odorant and foist it on the public. You mentioned that there are 15 odorants.

MS. KERSCH: Right.

MR. DEFIEUX: On page 53 it lists these and it tells where they weren't included. And now it's either because the data isn't there or because when they have been monitored they are within a confinement facility itself --

MS. KERSCH: Right.

MR. DEFIEUX: At sub threshold levels.

MS. KERSCH: Right.

MR. DEFIEUX: So the ammonia is not -- the hydrogen sulfide is a much more important component.

MS. KERSCH: Right.

MR. DEFIEUX: And with respect to the general question of modeling, the alternative is a panels response type of situation and I think that you have a much less rigorous analysis of the situation with a panel than you do with a model.

MS. KERSCH: Doctor Cucchiara will be happy to go into that in some depth, I would assume.

I am going a lot slower than I intended but I'm getting information that I was interested in.

The draft states that the management is a primary

mitigating measure for odor impact. Doctor Loehr, I'm sorry, I can't recall, did I ask you if management was important in mitigation that you have experienced in New York State?

MR. LOEHR: Yes, management is always important.

MS. KERSCH: O.K. Based on -- and this will be for Mr. Lander I guess. Based on PCA's experience with past violations on one of the proposers at least, would PCA anticipate that such management practices would be followed? Would PCA care to speculate or is that a legal question too?

MR. MOILANEN: I think you are asking a question that is going to bring us into the permitting process and I'm not sure we are prepared to speculate.

MS. KERSCH: O.K. The draft states that the proposers will employ hired help to run these facilities. Has there been any kind of management track record of hired help with regard to odors at other such facilities? For instance, in cases where you had odor complaints would you say that there tended to be more odor complaints where there are hired people running them or is it even or can you make a speculation?

MR. GREENBERG: Are you addressing that to Mr. Lander?

MS. KERSCH: Mr. Lander. Well, whoever has information. Does anyone have any information on that? Doctor

Loehr, you might.

MR. LOEHR: The type of systems that we are discussing, if we talk about an aeration system has one mitigating effect, soil injection --

MS. KERSCH: Right.

MR. LOEHR: -- in properly closed containers is another mitigating effect. Both of those have been shown to be able to be handled by a, permit me to say, a normal or conventional animal producer and his help. It does help, however, if he has some experience and if he has some knowhow in order to do this, but that knowhow and experience does not take an extensive period of time to be able to do that.

MS. KERSCH: All right. Well, it might be pertinent then, I would assume that the hired hand kind of is the image of his employer. What has been the track record of hired help at other facilities owned by any of the proposers? Have there been PCA violations, Mr. Lander? That's not a legal question, it's a matter of record.

MR. MOILANEN: Well, I --

MR. GREENBERG: Let me answer for Mr. Moilanen.

MS. KERSCH: This is getting touch.

MR. GREENBERG: It's not that it's getting touch, I think -- just so we understand the purpose of the meeting. I want to make sure everyone understands that we are here

to discuss the specifics of this draft Environmental Impact Statement.

MS. KERSCH: That's right.

MR. GREENBERG: I think that the point that Mr. Moilanen made a little bit earlier when he said you are getting into the permitting process, I don't want to be part of a system that says, no, you don't raise that question here, you raise it here. It's difficult to separate the various parts of the Environmental Impact Statement process. At this point the purpose of the meeting is to consider those matters which have been raised in the draft EIS.

MS. KERSCH: And management has been raised.

MR. GREENBERG: I agree.

MS. KERSCH: All right.

MR. GREENBERG: I understand that. The specifics of the track record of the management in each of the various areas -- well, I think it is relevant also, but I don't think that we are going to be able to get into the depth and details that you may want to get into this evening until we come to the specifics of the various permits.

MS. KERSCH: I have to disagree with you because the draft EIS -- a draft EIS on these proposals says management is important for the Environmental Impact, therefore, the management of these three people are very important

and I think that that has got to be included in the final EIS because you are not talking about the management impact of XYZ, you are talking about Pens, Schroeder and Kunde, so that is relevant, that is going to impact.

MR. GREENBERG: Is the Agency in a position to make a response?

MS. KERSCH: I assure you, that if management records were not in issue we would not even be discussing an EIS on these facilities. That's the point I'm making. It is terribly relevant.

MR. MOILANEN: Ms. Kersch, I have trouble because I see so clearly the relevance of those questions to the permitting process. I think those questions are going to have to be raised if the Agency receives permit applications.

MS. KERSCH: I think they are relevant to the type of permit that should even be looked at. Our experience is that PCA does not deny permits, what they do is recommend and ask for alterations. We don't want to see PCA get to the point where they are looking to approve or deny the permit as it now is. What we are looking is to get them to use the EIS which, after all was why we went through this entire process, was to speculate on what these proposals are run by these proposers in this area would do to our environment. Now that is pertinent.

MR. GREENBERG: Well, I'm going to have to make a ruling on this.

MS. KERSCH: Go ahead.

MR. GREENBERG: I am going to have to make a ruling on this. I understand the point that you are making about the management, but in my experience in conducting Hearings on Environmental Impact Statements, that issue is more appropriate for the actual permits. The subject matter of the Hearing is the Environmental Impact.

MS. KERSCH: The Environmental Impact is on the Penz, Schroeder and Kunde -- Pens, Schroeder and Kunde, not three unknown. And I'm going to argue this with you because management -- Doctor Loehr has said management is important. The Environmental Impact is related to that management, it is relevant tonight. We are taking more time arguing.

MR. MOILANEN: Before you rule, Mr. Hearing Examiner, let our consultant just mention how we address this issue within the Environmental Impact Statement. I really hesitate at this time to get into a discussion of allegations or alleged violations.

MS. KERSCH: These are not allegations, they are a matter of record.

MR. MOILANEN: But I think the questions she asked about how we address the question of management maybe we

can respond to that. Mr. Defieux.

MR. DEFIEUX: Yeah, I can speak on the basis of the general process of preparing an EIS and where that type of information stands and it is not germane in most cases and I will tell you why, but I think you will be satisfied with my answer then.

It's sort of like impuning someone in court for a past crime. It's not -- you do not -- what you are analyzing is the specifics of this case, to put it into legal terms, but it is the obligation of the EIS, if it's considered possible, that proper management will not be followed. It's the responsibility of the EIS to point out as a worst case assessment what the impacts will be if they weren't followed and I think that the impact statement does that and it will be talking about that --

MS. KERSCH: No. Where did you get the information for your worst case?

MR. DEFIEUX: Worst case is simply if management practices are not observed these are standard management practices and what is the case, what occurs.

MS. KERSCH: Where do you say that?

MR. DEFIEUX: That is in every Section.

MS. KERSCH: Have you said that Silver Creek could be polluted and you could create all kinds of disease problems, is that what you said?

MR. DEFIEUX: What is your mechanism for --

MS. KERSCH: Well, how about if the lagoon overflows because it's not pumping like it's supposed to be? How about if the bottom falls out and you have a sink hole and the groundwater is contaminated, how many wells are going to be polluted?

MR. DEFIEUX: That question is answered in the Environmental Impact Statement.

MS. KERSCH: Does it say how many wells?

MR. DEFIEUX: It doesn't say how many wells. That is an impossible technical question to answer. It does take into account that possibility --

MS. KERSCH: Does it say that wells will be polluted?

MR. GREENBERG: Excuse me. I do want to be sure that only one person speaks at one time.

MS. KERSCH: O.K. Mr. Defieux.

MR. DEFIEUX: It does take into account what would happen if a sink hole occurred below the --

MS. KERSCH: Well, I think you are dodging the issue. I will go on and instead of asking questions I will just make statements.

In your final EIS I would expect you to address odor impact in the absence of good management and I would expect it to be a little cryptic than it is now. I would like to ask if PCA will follow the recommendations of the

Township and County officials in this matter?

MR. MCMICHAEL: I think the answer to that question is what we have to do is go to the permitting process itself and how the County and local opinions and decisions are factored into our permitting process. And the person representing our permitting process this evening is Mr. Wayne Anderson and I would ask Wayne to address that.

MR. ANDERSON: Wayne Anderson, head of the Agricultural Unit Permit Section, Pollution Control Agency.

The particular regulation which we have which applies to that question is SW53-6 which states that "Plans and specifications shall be approved and a permit issued when the Director of the Agency determines they are in accordance with the requirements as set forth in these regulations and other applicable Statutes. Regulations, rules, or criteria of the Agency relating to the disposal of sewage, industrial or other wastes, although a permit shall be granted the same shall become effective only if the location of the site or facility shall conform to all applicable Federal, State and local laws, ordinances and regulations."

That is the particular regulation. If a County or Township has particular ordinances which would be violated by these operations we would not issue a permit until those matters were resolved.

MS. KERSCH: Is that a yes or a no?

MR. ANDERSON: It depends on if their recommendation is based on an ordinance or some other general recommendation.

MS. KERSCH: O.K. In past public Hearings on feedlot proposals, the issue of health hazards of confinement feedlots has been clouded by an instance, according to some people, to compare confinement facilities with open range production, use of anhydrous ammonia, and even the geese at Silver Lake. The use of those examples is a circumvention of the EIS process and they are not proper considerations for tonight's Hearing. The subject of this Hearing is the draft EIS on these three proposed facilities with these three managers with the alternative proposed by Mr. Kunde and the potential hazards of those proposals.

I would like the PCA or the Hearing Examiner or PCA to tell me, if they will, in the final EIS will they consider any arguments or discussions relating directly to the subject of this draft? In other words, are the geese at Silver Lake relevant?

MR. MCMICHAEL: In preparing the Environmental Impact Statement we have, I think, two places that we want to focus our attention; the first is the proposed actions what impacts will occur as a result of those proposed

actions and as a result of what we know about them. Secondly, and what we have talked about earlier this evening is, I think we have to factor in our experience with other facilities and I think that's germane. In the course of the public meeting many of the citizens that testified asked us to look at the National picture and indeed that's one of the reasons why we brought in Doctor Loehr, so that we could factor that in. I don't know if that addresses your question.

MS. KERSCH: No. I am wondering if anhydrous ammonia, Silver Lake and open range production of cattle has been relevant to -- there have been comparative measures and they couldn't be any worse than that and they have often gotten off the track. A couple of weeks ago we did that.

MR. MCMICHAEL: I think that all we are going to try to consider are either the facilities themselves or facilities that are very similar to these facilities.

MS. KERSCH: Thank you. O.K. The health hazards from these operations are, according to the draft, not projected to occur, but it goes on to warrant, "Some increased potential for their occurrence is unavoidable." The actual affects of each operation will depend on each operator's management practices. That's why we are uncomfortable and I think that's why we have a right to

introduce management into tonight's testimony.

The draft states that the incentive for good management will be a desire to protect the herd. That herd, however, is confined, the public is not. While dead and/or diseased hogs will be removed from the facility to protect the herd, there is no incentive to dispose of them properly to protect the health and herds of surrounding neighbors. Theoretically, a person could just pile them in a heap some place until they got around to disposing of them. I would ask PCA if they have ever had complaints about that. What I would like to know are what are the health hazards for that practice? What kind of diseases are you taking a chance on transmitting?

MR. DEFIEUX: I would just like to point out that at some point or another that is mentioned in here, the types of diseases and the attraction of scavengers. I would also like to take this opportunity to introduce another -- Doctor David Bane of the University of Minnesota, a veterinarian -- a resident at the University of Minnesota Hospital and we may very well -- you may want to address that point.

MR. MOILANEN: Maybe you could repeat the question.

MS. KERSCH: What are the health hazards for throwing dead hogs in a heap some place until you get around to disposing of them?

MR. BANE: My name is David Bane, I am a veterinarian from the University of Minnesota and I specialize in swine herd health.

In addressing your question I would probably have to say it depends a lot on what diseases are present in that herd at the time that they die.

MS. KERSCH: Let's say pseudorabies.

MR. BANE: O.K. Pseudorabies, the way that that disease is transmitted is from animal to animal by body excretions.

MS. KERSCH: Or aerosols.

MR. BANE: Right. The virus does not live very long outside of a living animal. So in the case of dead animals being tossed in a pile I would say that chances of pseudorabies being transmitted from farm to farm is probably small.

MS. KERSCH: I am not an expert in this field. I have someone here who will discuss this in more depth later, Dr. John Tinker. What are the -- maybe you can answer this. If the operator sold an infected herd off quickly before they died, which I am told is done occasionally, what would be the real world health hazard for that action?

MR. BANE: I would have to ask you what you are talking about.

MS. KERSCH: Well, pick one. Give me the worst case.

MR. BANE: You talked about pseudorabies, that's kind of a big hodgepodge as far as southern Minnesota is concerned. Any hogs that are sold that are infected with pseudorabies are -- they have to have a permit to go directly to slaughter and that's the only way those animals can be moved. They can't be moved to another breeding herd because there is (unintelligible) when hogs are found to be infected with pseudorabies.

MR. GREENBERG: Ms. Kersch, one at a time. Let him answer.

MR. BANE: Go ahead.

MS. KERSCH: What about transmitting them, is there any problem in the transmission -- in hauling?

MR. BANE: In hauling the animals?

MS. KERSCH: Right.

MR. BANE: From place of infection to slaughter. I am not really familiar with what the regulations are as far as sanitation of hauling vehicles, but I am sure that repeatable people that move into slaughter are maintaining some sanitation of their vehicles.

MS. KERSCH: You say repeatable people.

MR. BANE: Yes.

MS. KERSCH: O.K. This is, I think, a problem with a draft. It indicates that handlers will have to shower

before entering and after leaving the facility. What if poor management resulted in the omission of the final shower, what are the health hazards?

MR. BANE: That would take -- well, that's probably the best health considerations that are taken in swine herds. We call them a shower-in shower-out type of facility. Again, I would have to say that there is a possibility that viruses, particularly probably viruses more than bacteria, can be transmitted on clothing and on boots. These viruses being protected from ultraviolet radiation in manure and dirt on clothing can be transmitted, but you have to go probably directly from one farm to another and then that contaminated material would have to come directly in contact with the pigs, either by oral injection or inhalation --

MS. KERSCH: O.K.

MR. BANE: Become infected so it's possible, but it's not probable.

MS. KERSCH: O.K. The draft states that there are no different studies on existing or hypothetical swine facilities and community microbial-aerosol concentrations, or from land spraying operations that use swine manure as a fertilizer on the front of page 516. There are, however, numerous studies on municipal wastes. I think the final EIS should consider if there cannot be scientific

comparisons between the two and evaluate the impact on that basis. There is a very important document -- a study in a document called "Process Design Manual for Land Treatment of Municipal Wastewater." And there is an indication that there is an increase in disease in communities where spray irrigation is utilized. You say they can't handle spray irrigation on odor but they can on health. Who is going to handle that? Dr. Loehr.

MR. LOEHR: With reference to the process design manual for land treatment I was one of the reviewers of that particular document and worked with the Corps of Engineers and EPA developing that particular document. So I am somewhat familiar with many of the parts of it.

That issue has been raised continuously as to the transfer of pathogens by the land treatment of municipal wastewater, particularly by the aerosol route. It's tremendously difficult to show that there really is an impact upon the community surrounding the area where the land treatment has taken place.

The one case where this has been documented or inferred, let me put it that way, has been in Israel wherein a variety of kabutzam (phonetic) they have inferred that because of land treatment of wastewater there has been an increase in infections and health problems in the kabutz. That particular situation is

tremendously different from the conditions that occur in the United States. In terms of the timing of the type of irrigation that goes on there they are really interested in water conservation and they would spray under conditions where high humidity, no sunlight, nighttime and so forth.

The latest information that's coming out of Israel is indicated that there can be other routes that were not considered in that particular study, including the fact that the workers from the fields went directly into the kabutz without necessarily all the safety precautions one might use, into the kitchens or, excuse me, into the lunchrooms and so forth and there was the possibility of direct contact. I would have to say that one should be very cautious about extrapolating that one situation from Israel to the United States under the conditions that we have here.

MS. KERSCH: Would you say that management then would be a very important consideration under the health hazards of spray irrigation?

MR. LOEHR: Certainly management is a key factor under all types of situations, but I would have to guess, and it's a professional and personal guess, that under the type of conditions that one has identified in the EIS for land application of the manure that the health hazards

should be quite minimal if those are followed.

MS. KERSCH: I'm sorry, what conditions are you referring to now?

MR. LOEHR: The conditions of applying it at the time identified in the EIS, at the rates identified in the EIS.

MS. KERSCH: Again, that's management -- you would have to rely on management to do that. I still contend that management is an issue. May I have the chairman consider that?

MR. GREENBERG: It's obvious that you consider management an issue and it's obvious they don't. No, I don't say that it's not an issue. The points that you are making all deal with management and they are proper points as you are making them for consideration in the EIS and comments on the draft. It's clear that your concern is about management and implementation of the various mitigative measures which are noted in the draft EIS and others that you have already enunciated yourself. Those are proper things to be brought to the attention of the responsible Agency as you are doing. It is not, however, the responsibility of that Agency to respond at this time. The draft EIS is just that, it's a draft. It says these are things which we should be aware of in the preparation and consideration of any permits having to do with this

type of a project.

MS. KERSCH: No. The EIS says this is what we should be aware of with regard to these three projects, they are site specific -- proposer specific projects.

MR. GREENBERG: I won't argue with you and I won't argue with your terminology, Ms. Kersch. I'm just saying those are proper things to bring up. I think the PCA is proper in its position that it is not commenting on at this time that specific question that you are raising. You may continue.

MS. KERSCH: O.K. What about the health hazards to neighboring herds and humans as a result of the spray irrigation, for instance, if poor management resulted in the spraying of slurry into the Silver Creek, or spewing aerosol borne pathogens, such as PVR, onto beef cattle in a nearby pasture, is the threat of disease spread increased with spray irrigation over injection of the manure? In the instance of a poor management record, wouldn't it be prudent to require injection of manure?

MR. BANE: Our experience with pseudorabies virus has been that the majority of traceable cases occur with animal to animal contact and not with aerosol. The virus does not --

MS. KERSCH: O.K. Well, I guess I should qualify great distances. I guess from one farm to another, less

than a mile.

MR. BANE: It's still a great distance when you are talking about transmission of disease. When you are talking about within a swine facility, I am talking about nose to nose contact transmission of these viruses, really close quarters and aerosol transmission will probably be minimal with many of these diseases.

MS. KERSCH: Is it a standard practice when a herd is infected to require the neighboring herds to be vaccinated agains PVR?

MR. BANE: Depending on what state you reside in, there is differing opinions on that from state to state, different regulations such as in Illinois before you vaccinate for pseudorabies you have to show that there is an outbreak of the disease in your herd and have clinical diagnosis before you can vaccinate. In Minnesota that's not the case, it's left to the discretion of the veterinarian that's in control of that herd and the producer himself.

MS. KERSCH: In fact, that's happening. I will read a letter about that later. I won't ask you if in the instance of poor management you should require an injection. Doctor John Tinker will talk further about the health issues a little later on.

I would like to now address good management and

proper maintenance.

Throughout the draft EIS, the phrases good management and proper maintenance precede any section describing means for avoiding a variety of problems. The draft states that these operations are larger than most in the area. We do believe that past experience with these types of technology on the part of the proposer is important. I think you have to consider will their neighbor be impacted by their inexperience? Or, if there is a background of experience, what does the real world record show? I think the real world track record of one of the proposers will show that on two occasions he has constructed a facility, in one case a lagoon construction on a pit without a permit. He alternates facility and put the pit using concrete blocks into bedrock. There have been no penalties. The illegal pit was constructed two years ago. The bedrock pit was constructed -- was constructed approximately two years ago, I understand. I know on February 9th it was reported to PCA. PCA has not invoked any penalty. I know of dumping of waste into a running stream that was on the same proposer's property. I know that he has allowed dead cattle to decompose in a stream used by cattle for drinking and children for play. I know there was no penalty. He had to be told several times to remove it. I know that he has allowed a swine

manure slurry to run into the Zumbro River in violation of an NPDES permit. There was no penalty for this either.

Under these circumstances I think that the PCA has to consider whether or not they are the kind of managers who will mitigate against some of the problems. I would like to tell you, you have said in the draft EIS that this can happen and that can happen. I would like to read you a letter that's a little more graphic. It's written June 21st.

MR. GREENBERG: Ms. Kersch. Ms. Kersch. May I request in view of the time and in view of the number of people that you submit that into the record?

MS. KERSCH: Right, I will do that.

O.K. Would PCA consider -- would they consider in their EIS that if management should prove to be a problem when we get to the permitting section that perhaps the permit should require specific penalties written into the permit to increase the incentive for good management, would that not be a better incentive than relying on PCA to continue to slap their wrists as they have done in the past?

MR. MOILANEN: I really don't want to get into a discussion of the permitting process as such. I will note for the record though that I don't know of the liquidated vehemences clause being put into a permit at

the Agency and I'm not sure that can be done. I would have to look at it.

MS. KERSCH: Would you look at it and write a statement to that effect in the final EIS, whether or not it can be done?

MR. MOILANEN: I don't know that I will write it for the final EIS. I would certainly discuss it with you at great length at a later date, if you would like. Again, I have questions as to whether some of the issues you are raising aren't more relevant to the permitting process and at that time it seemed to me that issue might be appropriately raised.

MS. KERSCH: The draft talks about incentive for good management being the desire to keep the herd healthy. Some of these do not relate. The draft says good management will impact the Environmental effects. I think you are skirting the issue.

Bill Walker, former Agricultural Commissioner of our State, has spent most of his life promoting good farm management, the concept of the stewardship of the land, and the preservation of the family farm. Because of a State Statute prohibiting a former State employee from testifying before a Commission on which he served for one year after leaving that position, he cannot testify tonight. But farmers who share his affinity for the land

are here. I hope PCA will respond to their statements and questions regarding the incentives necessary to protect the environment from destruction and the forces, many of them fostered by Government, which threatened destruction of the farmers themselves.

Now the socio-economic section of the draft EIS is inadequate. First, it states that the decrease in the average size farm and increase in number of farms indicate a strong family farm image for our area. I would like to know if you can't take those same statistics and say what those figures really represent is there is an increase in hobby farms, people who derive their income in other sources but recognize the quality of life that comes from living in the country, raising animals and kids together, and working some land in their spare time? Is that possible from those same figures?

MR. DEFIEUX: I am not sure qhat the question was.

MS. KERSCH: You have to listen. First, it states that the decrease in the average size farm and increase in number of farms indicate a strong family farm image for our area. Is it not possible that what those figures represent in the real world is merely an increase in hobby farms?

MR. DEFIEUX: It could reflect that, yes.

MS. KERSCH: All right. I don't -- all right. The

fact is that our area has been just as susceptible to the gobble-up philosophy of many big farmers as any other area in the country. Real farming, in this area as Nationally, is becoming more concentrated in the hands of fewer individuals who farm larger parcels of land and have hired hands working their hog operations.

The draft EIS states that there is a National trend to large-scale confinement facilities. It makes an unsubstantiated judgment that the trend is only one factor affecting the future of the family farm in this area. That's sort of like saying that the flood we had last July was of minor importance because it was just one kind of weather Rochester experienced in 1978.

The three proposed facilities represent, according to the draft, a hog production equal to 10 percent of hog production in the three County area. Are you aware that there are only two Counties involved, Olmstead and Goodhue? There is no three County area.

MR. DEFIEUX: Including watershed County because part of the land spreading areas are in watershed County.

MS. KERSCH: That's not a production area, just those two Counties. What is the percentage?

MR. DEFIEUX: I'm sure you would get it out of the table.

MS. KERSCH: O.K.

MR. DEFIEUX: I think what's more relevant is -- well, there is other data there. It doesn't really matter what percentage of the two Counties it is because the two Counties don't operate as a discrete economic unit. It is a very small percentage of the region's supply. 2.7 percent of the southeast District's supply and, of course, a much much smaller percentage of the regions around the country is what really determines economics.

MS. KERSCH: We are talking about just three proposals and we are talking about a trend that is an important thing to differentiate and I think it's important that any traditional farmer in this room must know, from his own real world experience, especially if he used to raise broilers, that if these large facilities become prominent in this area his hog operation is going to be in jeopardy. And certainly not because he is not as good a manager as any of the proposers, but he just can't get the same tax advantages that these large, multi ownership factories can.

The draft states "It is increasingly evident that a corporate structure has distinct legal, estate, and tax advantages for all types of farms." This is not correct. Benefits from tax laws and accounting breaks accrue to the high income investors. Most farmers do not fit into

this category. Investment credit and accelerated depreciation benefit purchasers of large amounts of expensive, large-scale equipment not affordable by average farmers, and encourage non farm investors looking for a good tax shelter. Favorable small business corporation tax rules, which also apply to limited partnerships, are not available to the average farmer. I object to the EIS referring to him as marginal.

Additionally, investment credit is not available to non confinement structures, even if they are non confinement barns used only for farrowing. Those investment credits are available to confinement units.

The result of these inequities is that the rich get richer, especially those who promote the package confinement facilities and those who invest in them. These investors are, increasingly, non farmers who need a good tax shelter. I will submit documents to substantiate these claims.

In Nebraska and Missouri the hog production is leaving the family farm as a result of these inequities. One very major flaw of the draft is that it assume that these proposed factories are to be owned by family farm corporations, which are legal in this State. Actually, the family farm corporations would only be among the participating investors in the venture.

Until 1978, feedlots were not even included in the Minnesota Corporate Farm Act. Our group combined with others to get the State Legislature to correct that omission. However, the loophole is that limited partnerships engaged in farming are exempt. This is a situation which the Legislature must correct soon to avoid big operations and non farm investors getting around the intent of the law designed to protect family farming.

While a limited partnership incurs only slightly greater risks than a Corporation, they still benefit from the same tax breaks, giving them quite an advantage over the unincorporated, or even an incorporated family farm venture. A study on the trend of hog raising in Nebraska indicated that, unless something is done to stop this Government subsidization of corporate feedlots, hogs, like poultry, will soon disappear from family farms.

We recognize that PCA, in its permit process, cannot consider socio-economic concerns. Yet, that is a valid category of consideration in an EIS and we feel, especially because this EIS is a first, that it must treat this issue with some integrity. Therefore, we ask that the final EIS examine the material we are submitting and objectively consider the following question: If the trend to large-scale confinement hog production continues in Minnesota, as it has in Nebraska, what will be the

impact on the family farmer in our State.

Bob Rumpza, of Minnesota Farmers Union, is also here tonight to present real world information which PCA should consider in upgrading this section of the EIS to make it adequate.

Now, you will be happy to know I'm getting to an area with which we agree.

MR. GREENBERG: We will take that testimony after a brief recess of seven minutes.

(At this time a recess was had and the Hearing reconvened at 8:45 o'clock P.M.)

MR. GREENBERG: May I see a show of hands of those people who do not live in the Rochester area who would like to address this Hearing? Following Ms. Kersch, only those people who do not live in the Rochester area are going to be allowed to address the Hearing. We will recess at 11:00 o'clock and no later than 11:00 o'clock and we will reschedule this meeting for a later time, at which time anyone else, including people outside of the Rochester area, may come and address the Hearing. I do not wish to inconvenience those people who have traveled distances to be here this evening. I am sorry for the inconvenience for those who are from the area who wish to address the Hearing and will have to come back again, but

that's the procedure that I have decided to follow. Ms. Kersch, you may continue.

MS. KERSCH: O.K. As I said earlier, we agreed with --

MR. GREENBERG: May I have it quiet, please?

A SPECTATOR: Excuse me. I don't represent the Minnesota Department of Health, but they do have jurisdiction over the Clean Indoor Air Act and I did receive a request that there be no smoking in this room and I would hope that the people would honor that or the signs in this room and smoke in the back corridor.

MS. KERSCH: O.K. As I said, this is an area which we agree totally with the draft. It states that the above ground tank, proposed by Mr. Kunde, has distinct advantages over the lagoon proposed by Penz and Schroeder and it states further that "This advantage may be particularly significant in Karst regions." I would like to ask if Doctor Calvin Alexander is here.

MR. ALEXANDER: Yes, ma'm.

MS. KERSCH: Are you going to testify?

MR. ALEXANDER: Yes, ma'm.

MS. KERSCH: Then I can omit a certain amount of my testimony. Are you going to address the standards proposed by Mr. Walton for swine operations?

MR. ALEXANDER: I have a copy of his letter.

MS. KERSCH: Did I give that to you?

MR. ALEXANDER: Yes, ma'm.

MS. KERSCH: I would ask you to take into consideration Mr. Walton's recommendations and the Midwest Plan Service regarding the topography in this area and what steps should be taken for the siting of feedlots and I would like to ask if it would not be appropriate to require borings to be at least 40 feet deep and in the case of a ten foot lagoon to require a thickness of impervious -- pervious soils to be at least 30 feet, following Walton's preference, which is ours, 50 feet. Would that be appropriate?

MR. DEFIEUX: What I can tell you is that with other remarks you see in the mitigating measures sections are directly taken from that letter and were bounced off Matt Walton and he said that that was the spirit of his letter and he approved the wording.

MS. KERSCH: Well, Matt Walton specifically said that there should be a number of borings -- more than one boring and I guess I will leave that to Doctor Walton.

MR. GREENBERG: Are you Doctor Alexander?

MR. ALEXANDER: Yes. I talked to Matt Walton on the phone yesterday.

MR. GREENBERG: Can't hear you. Just make your comment, go ahead.

MR. ALEXANDER: I'm going to introduce the letter

into the record and read part of it. My contention is that you are misquoting the letter. I talked to Doctor Walton. He is not suggesting those as rules, he is suggesting that the MPCA derive some rules and give some examples of the types of rules that he would like to see derived. I think this will become clearer when I simply read the letter.

MR. DEFIEUX: If I could say one thing. I agree with you completely and the wording is intended to reflect that point. In other words, I believe that the document goes out of its way to say that there are no guidelines and that these are not intended to be guidelines, yet in the absence of any other, and since everyone has seen that letter, it was necessary to include it in the report and I can't say that the wording, as it went into the report, Matt Walton was aware of.

MR. GREENBERG: Why don't you hold your comments until you address the Hearing. Go ahead.

MS. KERSCH: O.K. Then let me ask just something in terms of the groundwater. If lagoons were to leak how would a leak be detected with a lagoon? How would you have to detect a leak?

MR. DEFIEUX: If this was as designed --

MS. KERSCH: As designed.

MR. DEFIEUX: There would be no detection system as

designed. As one of the mitigating measures, as mentioned, this would be tested.

MS. KERSCH: If someone's well became contaminated that might detect it?

MR. DEFIEUX: Right.

MS. KERSCH: All right. Monitoring would detect it after it had occurred?

MR. DEFIEUX: Right.

MS. KERSCH: O.K. Who would inspect the monitors?

MR. DEFIEUX: What is put in the report is mitigating measures in general terms. There was no attempt to completely describe a monitoring program and frequency and testing procedures and so forth. That would really be up to the permitting stage.

MS. KERSCH: I thought it would. All right. Let's say you had -- all right. I won't get to that. How rapidly could contamination occur?

MR. DEFIEUX: I think it's important at this point to look -- in the case of odors we did not have any empirical data upon which to make our judgments. In the case of contamination from swine basins we do have some data and I think that your premise in all of your comments is that if you had an on-line basin or if you had a rip in the liner or if you had the waste material on the ground it would instantly contaminate groundwater and that is

not the case. If you had a rip in the line what you would have is a similar situation to an unlined basin. And unlined basins have generally been shown when they are located on fine grain materials as these would be, that they do not contaminate groundwater beyond -- at a very limited range.

MS. KERSCH: O.K. Were you testing in a Karst region?

MR. DEFIEUX: This is an -- before you the carbonate rocks it is not a Karst region. This is a very important distinction to make. If nothing ever reaches that carbonated rocks you are not getting into a Karst area. We are talking about glacial drift, which is common to many areas, and that is where the basin would be located.

MS. KERSCH: I am going to let Doctor Alexander take that up with you. I think you are wrong. In addition, I don't think that any of the borings that were done indicate -- I don't think you know what you are in.

MR. DEFIEUX: Well, I think that the borings do indicate the till and I think -- I also know that the report recognizes that there is a certain amount of uncertainty with respect to sink holes and recognizes the extreme importance of the thickness of geologic materials overlying carbonated formations, therefore, it has, in the mitigation measures section, suggested those borings.

MS. KERSCH: Do you have any familiarity with Altura?

MR. DEFIEUX: Yes.

MS. KERSCH: Would you describe the borings that were done there prior to --

MR. DEFIEUX: I will describe the fact that there are some very important geological differences between Altura and any of the sites. There is not till layer at Altura and, as another indicator, that that area is more prone to this kind of thing than any of these sites is, that the watertable is greater than 30 feet below the surface and that is an indication that this rapid groundwater movement is taking place. And now that does not necessarily say that there no possibility for sink holes at the site and this report isn't saying that, but if you bring up Altura you have to be aware of the geology in the region.

MS. KERSCH: I think Doctor Alexander might want to talk about that too. I think I'm just going to skip that question and let Doctor Alexander take it, I think he will do a far better job than I.

Would you say that slurries are safer than lagoons -- an above-ground slurry -- above-ground slurry.

MR. DEFIEUX: They are -- you can trap me on that question. I think that chances are over the life of a project that in my opinion they would be exactly the

same, that is, because chances are a sink hole would not develop, but in the event that a sink hole did occur you would be better off with a tank than a basin.

MS. KERSCH: I recall the draft EIS making reference to the fact that a hole could develop in the lagoon as a result of pumping.

MR. DEFIEUX: Right.

MS. KERSCH: And that, therefore, certain corrective measures would have to be taken. Why are you concerned about a hole developing if there is no problem?

MR. DEFIEUX: Because it is intended to be a safety precaution so that you would want to keep it up.

MS. KERSCH: Well, why would you need a safety precaution if there is no need for the safety?

MR. DEFIEUX: Well, because there are some -- there is some effluent involved here.

MS. KERSCH: Yes.

MR. DEFIEUX: And in the case -- well, I think the most important thing is that there is -- you can never be certain so this is a degree of safety.

MS. KERSCH: O.K.

MR. DEFIEUX: But it is important to note that the evidence that there is suggests that it does not travel past a very limited distance.

MS. KERSCH: The fact is if you have a leak in the

lagoon and if you have a leak in the slurry you are going to be able to see it with the slurry you are going to be able to correct it faster, there is going to be, therefore, less potential for damage, less dependability on management, you're just far safer with the lagoon.

MR. DEFIEUX: Well, I think that --

MS. KERSCH: I'm sorry, a slurry. Thank you. I'm sorry, I'm getting very tired.

MR. DEFIEUX: Well, I think we could go on with that for a long time. I think it is possible to insure that a liner -- could be quite sure that a liner is not going to break.

MS. KERSCH: But you can't be positive.

MR. DEFIEUX: Right.

MS. KERSCH: Right. However, you can be positive that if a slurry develops a crack you are going to see it.

MR. DEFIEUX: I hold to my original statement that if the probability is that over the life of the project they would be exactly the same, but in the event of some unforseen incident you would rather have a tank than a lagoon.

MS. KERSCH: Is that why you make the statement that in Karst regions they may be particularly appropriate?

MR. DEFIEUX: Right, as an additional safety factor.

MS. KERSCH: And that's something that we are all

interested in.

MR. DEFIEUX: Right. And the fact that the ground-water supply is very important in this area.

MS. KERSCH: Yes, for sure.

MR. DEFIEUX: Right. That's recognized in this report.

MS. KERSCH: All right. Considering that the major manufacturer of slurries in Minnesota presently has orders of 93 such structures in this State, and that Mr. Kunde has proposed to use one, would PCA consider that they are feasible and prudent alternatives to the lagoons proposed by Penz and Schroeder? PCA.

MR. MCMICHAEL: I guess to the extent that we looked at alternatives. We looked at alternatives that we felt were feasible and reasonable to potentially require and indeed one of those was the above-ground tanks. And so to a certain extent PCA, in preparing this Environmental Impact Statement, has already recognized that those are at least an alternative -- a reasonable alternative that may be implemanted. I think it is correct that Mr. Kunde has proposed the above-ground tanks that may be some indication of the economic -- the ability of him to sustain that added economic burden. Indeed that was an economic criteria and I think the economic burden was one of the criteria we looked at in evaluating whether alternatives

were reasonable.

MS. KERSCH: O.K. If you were to set aside economics which, according to the State Environmental Act you cannot consider as the sole consideration, so set aside those economics, which would you choose if you lived where I do?

MR. MCMICHAEL: I think that our choice is reflected in the issuance of the permit and how we issue a permit with what conditions and that's part of the --

MS. KERSCH: That's not tonight?

MR. MCMICHAEL: That's part of what we are trying to get to but not tonight.

MS. KERSCH: O.K. You just wiped out a few of my questions.

MR. MCMICHAEL: I'm sorry.

MS. KERSCH: So am I. The draft EIS states that the proposed actions present increased risks of odor, health and water problems. If these operations are approved and similar ones subsequently followed, do the risks also increase?

MR. MCMICHAEL: That's a question that goes to the cumulative effect of a number of facilities above and beyond what is being proposed in the immediate area.

MR. DEFIEUX: I think that the answer to the question is yes, but I think what we have to be very careful in what we are doing -- in remembering what we are doing

here is assessing the affects of these three projects.

MS. KERSCH: That's right.

MR. DEFIEUX: And to the extent that they may contribute by example, or whatever, to cumulative -- to a proliferation of these projects and that is an impact from these projects. However, recognize that there are many other factors.

MS. KERSCH: Right. The fact is that this will establish a precedent, we all know that. This is the first EIS of its kind probably in the country, it's been something that we worked very hard for and waited a while for and it's something that we hope PCA will look at in screening its permit.

O.K. I can't ask that one, that's management.

The draft states that the potential for nuisance odors to surrounding neighbors presents a potential for their homes to be devalued. Iowa, as you may know, recently instituted a feedlot odor nuisance act as a result of intense public furor, most of it from farmers, over the stench of many large confined feedlots. As a result of that we anticipate that the Minnesota Pollution Control Agency will probably be grinding out more permits than it did last year for these types of facilities because as of now we don't seem to have a handle on that problem, we are hoping we will. Additionally, lawsuits

based on feedlot odor are now occurring in Minnesota as in other parts of the country. In our County, farming is of relatively high density. Now, speaking to cumulative effects and seeking to diminish the dependence on management, would it not make sense to take all feasible and prudent measures to reduce the odor of these operations in their design?

MR. DEFIEUX: Are you talking about just these facilities or the cumulative affects of a number of --

MS. KERSCH: Both. Both.

I didn't think it was that hard.

MR. MCMICHAEL: Again, that is something that obviously will be considered in the permit as to how good and what specific kind of a facility should be permitted and what kind of protective measures are absolutely necessary for and should be utilized by these specific proposals. And what we are trying to do in the course of this evening is find out -- you know -- or at least get a basis for that kind of a decision and, obviously, we cannot make the decision and then entertain the information. And I think there is -- you know -- other people that have to testify that would have to complete the Environmental Review process before making that kind of a decision.

MS. KERSCH: Yeah.

MR. MCMICHAEL: One thing I would like to say too is

a few minutes ago you mentioned that you had a management question, that you were going to skip that. I would hope that you would not feel that as a result of some of our comments you should pull out entire blocks of questions or erase something because of our comments. If you have a concern we want to hear it because that's a part of this record and to that extent if you have got a specific question that you just went over on management that you think is pertinent let's go back to it.

MS. KERSCH: O.K. I'm going to talk about PCA's 208 planning document, feedlot package one, and it states "The Minnesota geological survey has found that almost any surface -- in quotes almost any surface activity which produces effluent is likely to contaminate the underlying Karst aquifer." Now this would disagree somewhat with something that we have heard already tonight, Mr. Defieux. This means that all feedlots in the Karst terrain of southeastern Minnesota must be considered as threats to the water quality unless appropriate management practices have been installed or detailed investigation of the feedlot site shows that no hazard exists.

I don't think you know that from these feedlot sites. I'm not finished yet. I want to ask you if it wouldn't be wise then to look to the future, again, cumulative affects. We know that we are establishing a precedent

here and let's not pretend that we aren't. Wouldn't it be wise to require that only either one of two, you can have your pick, well documented, good managers build and operate them or allow only those facilities whose design is such that the role of management plays a less hazardous part?

MR. DEFIEUX: I would like to respond to just a small part of that. The rest of it and the general nature Dale might want to handle it.

You mentioned that the 208 study says that any surface activities producing an effluent is likely to contaminate the groundwater in the area. I just don't believe that statement is true and I don't believe that Matt Walton thinks that that statement is true.

MS. KERSCH: I think it's true.

MR. DEFIEUX: Well, I don't think that Matt Walton would have come up with recommendations for how to find the correct site if he believed there wasn't such a thing in all of southeastern Minnesota.

MS. KERSCH: Wait a minute. He said either or -- either or. I got a letter from Matt Walton, I don't have a copy of it, unfortunately, but he said "We do not maintain that land and water should not be used in the area. We believe, however, that it should be done correctly." You can do ir correctly through management or through

design. I'm saying to you in that case shall we not go either way with proven good managers or proven design?

MR. DEFIEUX: That was the broad question.

MS. KERSCH: That was the broad question. Now the microphone gets passed.

MR. MCMICHAEL: I would hope that we wouldn't have to rule either out.

MS. KERSCH: No, but -- rule out anything else. Hopefully we will have both, but if we can't have one can we at least have the other?

MR. MCMICHAEL: I think the goal in permitting these facilities is to achieve the best facility and one which will not cause significant pollution, impairment and destruction to the environment and to that extent we are talking about design and management. I think those are two very important features of any proposal and that's why I said in my opening remarks, and I meant to say those and I meant to emphasize those by doing that.

MS. KERSCH: I can't remember, did you say that you felt the lagoon was better than a slurry, or a slurry was better than a lagoon? Did you ever make a choice on that?

MR. MCMICHAEL: I don't know that I have ever made a choice publicly as to which way I would go and I would hope that obviously in -- our comments tonight would be along the lines of the draft EIS, obviously we cannot

make a decision tonight. Indeed there may be reasons that would -- and information that would lead us to go with this above-ground tank.

MS. KERSCH: O.K.

MR. MOILANEN: Mrs. Kersch.

MRS. KERSCH: Yes.

MR. MOILANEN: Can I just ask, at the beginning of your talk, approximately an hour and a half ago, you said that you were going to speak to odor, health, management, socio-economics and design. Which one are we on?

MS. KERSCH: We are on design.

MR. MOILANEN: -- so the people in the room can know.

MS. KERSCH: We are on design.

MR. MOILANEN: Thank you.

MS. KERSCH: At home it was only 35 minutes, but you people are very long-winded.

(Laughter.)

MR. MCMICHAEL: I take that as our being responsive to your concerns.

MS. KERSCH: That's right, you are giving me very complete answers. O.K.

Unlike cattle manure, anaerobically stored swine manure does not crust, thus there is no natural seal at the top of the slurry. Is Dr. Goodrich here? I understand that Dr. Goodrich has made a statement with regard

to the only known way that is economically competitive to control swine odors. Would that be irrelevant to ask or is this also part of the permit process? It's not listed as a mitigative measure.

MR. MCMICHAEL: Could you identify who he is?

MS. KERSCH: Doctor Goodrich is an agricultural engineer and he was a PCA feedlot advisory committee member.

O.K. I believe Mr. Lander should know the answer to that question. I understand he was around when the statement was made. Mr. Lander, do you know what I am referring to? Is that not appropriate?

MR. LANDER: In response to your question pertaining to Doctor Goodrich's statement about anaerobically stored swine manure, his current research involves a project with methane digestion of swine manure and one of his statements in regard to his current research project was that a side benefit from the digestion process was the fact that the stabilized waste that came out of the digesture were less odorous -- less odiferous than just the storage of raw wastes.

MS. KERSCH: O.K. I think that PCA should look at that as a mitigative measure in their final EIS.

MR. MCMICHAEL: Could we respond to that?

MS. KERSCH: Sure.

MR. DEFIEUX: First of all, I would like to say that that -- we establish certain criteria for which alternatives we would consider, one of those criterion was that something had to -- a specific alternative had to be able to be managed by what we consider to be a typical operator of the farm and that did not make it. I think there are some other problems with that, if Doctor Loehr wants to address that for a minute perhaps, the state of the art of digesters.

MR. LOEHR: I am not really sure that the question is to digestion per se as much as it is to Bill's comment related to proper ways of managing a particular system. Certainly in this country today methane digestion for the average and, if you will, I'm using average for these three farms which may not be proper, but for this size of an operation they are still not at the technical level that it goes to the place that somebody can put one in place, have it operated by the person who operates a facility, and his hired hands, and make it work continually. That proof is still ahead of use. It's an excellent concept.

I would comment, however, that his comment is very appropriate for the type of lagoons that we are talking about because of what we have in anaerobic digestion is simply the enclosed type of microbiological actions that

are taking place in this uncovered anaerobic lagoon or storage lagoon. And if we look at the day's retention in these anaerobic lagoons, which are somewhat on the order of theoretically about 300 plus days, one could expect to get a very good approximation of the type of stabilization that one gets in a closed anaerobic digesture.

MS. KERSCH: Why do they smell so bad?

MR. LOEHR: The smelling comes from the incomplete activity that does exist under the anaerobic microbiological process.

MS. KERSCH: You are saying that a slurry with a digesture will smell as bad as a lagoon.

MR. LOEHR: I am saying --

MS. KERSCH: Or as good, whichever way you look at it. There is no such thing.

MR. LOEHR: I'm saying that the microbiological processes that takes place on the bottom of a long-term lagoon of the type that one has here, where we have the input of a considerable number of methane bacteria from the gut of the animal through the excreta so that the lagoon is seeded the same way as it would be if it were going into a digesture. The microbiological processes are essentially the same.

MS. KERSCH: But why does it smell?

MR. LOEHR: The smell comes from the incomplete

digestion that takes place of some of the types of the anaerobic bacteria.

MS. KERSCH: So is it a product of the larger surface area that creates a greater smell from a lagoon than from a slurry?

MR. LOEHR: I think we are contrasting about three different things here that need to be sorted out.

MS. KERSCH: O.K. Well --

MR. LOEHR: One is the slurry, one is the lagoon, one is the digesture.

MS. KERSCH: O.K.

MR. LOEHR: It's more fair to compare a slurry versus a lagoon than it is to compare either the two of them to the digesture.

MS. KERSCH: O.K. Compare the slurry to the lagoon.

MR. LOEHR: O.K. I would guess that approximately the same type of a situation would occur from the microbiological digestion in either one or the other.

MS. KERSCH: And the same amount of odors released?

MR. LOEHR: That I couldn't say in terms of amount of odors released until we have some understanding of what we are talking about in terms of the mechanism of release. Surface area, manner of mixing in order to move out, how that's going to be moved out in a closed tank or whatever the case may be.

MS. KERSCH: O.K. Let's say everything else is equal, which would you rather live next to, a slurry or a lagoon, everything else being equal?

MR. LOEHR: That's a question that I don't believe is pertinent to the issue before us this evening -- my answer to that question. We are talking --

MS. KERSCH: You wouldn't live next to either one of them?

MR. LOEHR: We are talking about really the technical issues identified in the EIS not whether I personally would wish to live near one or the other.

MS. KERSCH: I'm merely asking you as an expert which one you would have -- in your professional opinion which one would you feel more comfortable --

MR. LOEHR: I prefer not to answer that as a non-relevant question to the issue before us.

MS. KERSCH: O.K. All right. I am going to conclude now. I am going to tell you what we want in the permit.

The draft has told us that these operations can be of minimal nuisance to our environment if everything goes well. And I don't think the final EIS has really applied Murphy's Law and told us what to expect if everything goes wrong. I think you should pretend that the lagoon is going to crack, I think Doctor Alexander will give you some more information about that; assume that spray

irrigation is going to go on the neighbors' crops and maybe into the creek. Put it all together, the worst case, everything, tell us what's going to happen.

Over two years ago, a group of us met with the then MPCA Director, Sandra Gardebring, and some people -- some staff people in Roseville. They admitted to us then that the regulations were formulated before the factory farms were a reality. In those two years I think a great deal of evidence has emerged which strongly supports a more conscientious standard for feedlot permits in our area. Still I think PCA continues to grind them out very frequently without the benefit of proper borings or any site inspections.

I think it's time for PCA to come to terms with the State of the Art in the areas of odor, design, health and management impact of these factories. We will accept the fact that the State Legislature must accept the responsibility for socio-economic impacts that we think that this area has got to be covered more conscientiously in the final EIS for it to be considered adequate.

I am going to tell you what we want, even though you say it isn't part of the process, I want it in the record. For PCA to live up to its responsibilities we think it has to require the following of these proposals in this Karst region and of these proposers:

Borings and site inspections as per Walton's recommendations, and that's prior to the issuance of the permit.

If the sites prove adequate we would like to see above-ground slurries, we would like digestures, but if management is required to take care of them we will accept some other odor control measure.

We would like injection of the manure into the soil at proper rates.

We would like the permit to be issued in the names of the proposers and all investors. Management is a function of economics.

We would like an immediate quarantine of the facilities in the event of infection or disease.

We would like prescribed and required and in quotes clean-up procedures in a time frame for their completion to be written into the permit.

We would like specific penalties for failure to live up to the terms of the permit -- written into the permit and we would like those penalties invoked.

We would request that a bond be posted in an amount equal to worst case correction costs to avoid tax forfeiture or bankruptcy filing, which has happened in the past.

We think that these measures would go a long way in making these operations the kind of things that would not

present unacceptable risks to our environment. And we feel that they are feasible and prudent and totally within the terms of the State Environmental Policy Act.

We think anything short of these measures would represent a failure, once again, of PCA to come to terms with its responsibility to us.

Thank you.

MR. MCMICHAEL: Thank you, Mrs. Kersch.

MS. KERSCH: I have some documents for you which I hope you will read.

MR. MOILANEN: Can we introduce them?

MR. GREENBERG: Is that letter that you were going to read included?

MS. KERSCH: There is a copy.

MR. MOILANEN: Ms. Mary Sullivan of the Minnesota Environmental Quality Board received a letter from a Ronald Spaun of St. Paul relating to the draft EIS and I would like that included in the record too.

MR. GREENBERG: The record is going to be available in my office for public inspection during the whole time between now and the time that I transmit the record to the Agency. It will be 20 days after the last session of these public meetings.

Someone from out of the area. Doctor.

MR. ALEXANDER. My name is Doctor Calvin Alexander.

MR. GREENBERG: Doctor, before you begin let me just clarify something regarding a subsequent meeting or meetings. If we don't finish taking the material in the form of comments and questions relevant to the EIS draft at one subsequent meeting we will have another one. So don't feel compelled to stick around until 11:00 o'clock if the next meeting might be a little bit more convenient for you. Go ahead, Doctor.

MR. ALEXANDER: I am associate professor of geology and geophysics at the University of Minnesota. I have been interested in Karst regions for over a decade now. I have been conducting or co-conductor of a study through the Minnesota Geological Survey of the Karst areas in the southeastern part of Minnesota for two years now and have just been funded by the State Legislature for another two year study.

I do not know Mrs. Kersch, I have never seen her before in my life.

I was called by the PCA late -- well, about a week ago and asked to review this EIS. I received a copy of it late Thursday of last week. I have had a chance to skim a small portion of the geology and the hydrology portions. My comments tonight have to be very preliminary because of this.

First of all, I would like to ask a largely rhetorical

question. Have you guys seen this area?

MR. DEFIEUX: Yes.

MR. ALEXANDER: Well, I saw one of them this afternoon for the first time and spent about an hour driving around it in my car. The resemblance between what I saw on the ground and what is written in this Environmental Impact Statement was somewhat tenuous at points.

O.K. I believe we are supposed to address inadequacy in this draft Environmental Impact Statement tonight. Let me just start with a couple of trivial ones that caught my eye but that somehow set the tone of the whole Environmental Impact Statement.

For the first one, figure 3.31-2 which is a detailed scale drawing of the Penz organization. According to those topography lines this whole site is going to be buried 40 feet in the ground. It sits on the 1280 not the 1240 contour. Now that's trivial, it's a mistake, obviously, but it's one which I would have thought that might have been caught by this time.

Along the same category, the geologic maps which are shown at Figures 4.5-1, Figures 4.5-2 are blowups of Sloan and Austin in 1966, one and a quarter million map of the southeastern part of the State. The registration is wrong by significant amounts. You have the wrong formations shown in the wrong places. The major problem

there is simply one of scale. You are trying to blow up a very large scale map to a very small scale area and it simply can't register very well.

The bedrock geology, I hope to show, is important and it simply can't be done at this scale. And now a lot of your constraints are you have to work with the record, and I realize think but I think it's very important that you do the geology correctly at the scale you are working at.

MR. DEFIEUX: O.K. You paused. I think it would be useful -- most useful if you were to recommend, as you went through, and in an instance like that recommend what you would do -- what you would rather have done given this study and its constraints. In other words, is there a better map.

MR. ALEXANDER: In this particular case there is, although you probably would not know about it and wouldn't -- shouldn't know about it and that is the original maps from which Sloan made his maps are at one to 62,000 scale and are available from the Minnesota Geological Survey are and are accessible and beat many of the scale problems that we are talking about here.

O.K. Do you have to have a suggestion on the topo?

MR. DEFIEUX: No.

MR. ALEXANDER: All right. A second point is, as

I am skimming through it, at several points I read statements that something is unknown and in particular on page 464 and 465. In the case of each of these there is a statement "The number of wells completed in each aquifer system is unknown," with a reference to Poblete 1979. That I assume is a true statement. It is not an unknowable thing. The way you find out where those wells are or how deep they are is simply ask each of the individuals. You already have a map with a dot on it and a number of people it involved and the number is not large and although I don't know Ms. Kersch I suspect she could volunteer to get that information for you.

MR. DEFIEUX: Is it your experience that everyone knows how deep their well is?

MR. ALEXANDER: Experience is that most people know how deep their wells are. Most farmers paid good hard cash for those wells and they know how deep they are. And you don't need all of them, you simply need most of them.

Along the same category of known versus unknown, on page 667 at the top of the page, the paragraph under Karst hydrology, that I do know something about, leads off with a statement that "No sink holes or other surficial Karst features are known to exist on the three proposed facility sites." And you reference what I think

are USGS, SDA Soil Conservation Sheets.

MR. DEFIEUX: No, they are resource inventories for the sites.

MR. ALEXANDER: O.K. I picked up an air photograph at 11:00 o'clock this morning of that area. I looked at that air photo. I saw several Karst features. I went out this afternoon to the Calvin Prinz sites and I wasn't picking on him, that simply happened to be the one -- the most direct line and was able to see several Karst features.

MR. DEFIEUX: Doctor Alexander, I want to remind you of what the statement says, and you did mention that you skimmed through it. There is a certain terminology to the geographic areas and when it says "Facility sites" we are talking about approximately one acre area of facility sites where the structures would be not the general region.

MR. ALEXANDER: O.K. I am talking about the areas you saw as a disposal field. I didn't --

MR. DEFIEUX: That is not what we are referring to as the facility site.

MR. ALEXANDER: O.K. Given the limits on the maps I am not certain I know exactly where the facility sites are but, anyway, it's -- you make the statement that none are known. That does not mean that none exist. I think

that means that someone should look for them and it's not obvious to me that anyone has looked for them from this anyway.

I hesitate to bring up the next one. This has to do with Doctor Walton's letter and you are attributing things to him and if you are going to make this as part of the record I think you owe it to the people to put the letter in and let them read it because when I read this letter I get a much different impression than what you get. There are several references to Walton's 1977 letter, on the page -- on the bottom of page 467 which says that "The Director of the Minnesota Geological Survey suggested that a suitable location for potentially contaminating land uses should contain a minimum of 20 feet of poorly permeable surficial materials if the site is underlain by carbonate bedrock." The letter from Doctor Walton is two pages. Should I read it or should I simply enter it? It's presumably already part of the record.

MR. GREENBERG: I don't know if it is part of the record.

MS. KERSCH: I just submitted it.

MR. GREENBERG: It is part of the record.

MR. ALEXANDER: Then let me simply comment on it. He was simply trying to alert the PCA that there was a problem and that -- well, I think people should read that

letter and see if they get the same conclusions that you get out of it. I don't.

MR. DEFIEUX: Well, I do want to remind you that I did -- that Matt Walton agreed with my interpretation of his letter, but in this instance I think that he agreed with the wording of that sentence and I think that in Chapter 6 the methods of minimizing the significant impact there is a more elaborate discussion of his recommendations and he is also aware of the exact wording of that. And those together are what my interpretation of that letter is.

MR. GREENBERG: This is not a Court of Law and I'm not going to indicate one way or another that there should be a ruling on your comments, Mr. Defieux, but if Doctor Walton's comments are as you say they are perhaps it would be advisable to get some type of written testimonial to that effect because otherwise the letter simply speaks for itself no matter what you say.

MR. DEFIEUX: That's fine.

MR. ALEXANDER: All right. Let me conclude on talking about what I view to be the two major geologic problems which I have a biased view, and I am a geologist and I am interested in geology and, therefore, geology is the most important, and those little things about odors and things like this aren't that important. Besides that I

don't live here.

(Laughter.)

MR. ALEXANDER: I think you have to address two potential problems in here which, although you mentioned them, I don't believe you addressed them and that is when the possibility of catastrophic failure due to the sudden development of a sink hole under one or more structures; and the second one is the non-catastrophic pollution of the groundwater by the spreading of the manure, O.K.?

And under catastrophic failure let me simply first try to convince you that is not as improbable an event as you tried to make it out to be. First of all, this spring one mile east of the town of Greenleaf, Minnesota a sink hole suddenly developed near the house of Wallace of Luce (phonetic). It measured ten feet in diameter and 45 feet deep. This was written up in the Preston, Minnesota newspaper. I don't have a good account but it is available in the Preston Republican paper.

In April of this year, not in Minnesota by a mile and a half, across the river in Wisconsin in exactly the same sorts of rock that we are dealing with here, on the farm of Art Ferguson, a sink hole catastrophically opened under the corner of his equipment shed. It ate a combine.

(Laughter.)

MR. ALEXANDER: His wife, who was in the house,

thought that he had been sucked in by it and came out and discovered that he was standing over in the other corner of the shed saying "What happened?" They quickly filled it up. I have newspaper photographs of that that I can show you.

I have photographs taken by the SCS of sink holes that have suddenly developed in peoples' driveway in the town of Rochester. You said that the situation is quite different at the Altura site, it was a catastrophic failure.

Last year in West Plains, Missouri, a sewage lagoon sitting on Karst terrain failed, 750 people were made ill in two States, since it happened to be near a State line, and I leave that to the lawyers to argue about.

I don't think it is that impossible an event. I totally agree it is an improbable event, but it is a possible event in Minnesota.

MR. DEFIEUX: To the best of your knowledge did any of these incidents that you are referring to take place on similar sites geologically? In other words, consider that the borings, as suggested in here, were put down to 50 feet and they determined that they were in 50 feet of till and that there was some limestone underneath that that may or may not, at this point you wouldn't know for sure, have extensive caverns. Do you know of an area in

similar geology to that where a sink hole has occurred, catastrophic, one of sufficient magnitude to threaten a basin or a tank?

MR. ALEXANDER: Yes.

MR. DEFIEUX: Where was it?

MR. ALEXANDER: In Missouri, the case in Altura -- I'm sorry, the case in Hudson this spring, the case in Greenleaf this spring. Both occurred in situations where you had 50 or 60 feet of cover on top of the bedrock.

MR. DEFIEUX: What kind of cover?

MR. ALEXANDER: O.K. First of all, you assert that the cover on these farms is till. I did not see any till that I could see from that. I very quickly skimmed the soil borings that are in the EIS and I am not convinced but what I see there that those are till. I walked -- I drove around a little bit of the Calvin Prinz farm and I didn't see any evidence of till there. So you are calling it till and it's not at all obvious to me that it is till.

MR. DEFIEUX: Well, that was based on soil conservation service borings plus overlying till. The till may not have been apparent to you but they were based on borings done by the Soil and Conservation Service.

MR. ALEXANDER: On the sites?

MR. DEFIEUX: Yes.

MR. ALEXANDER: Identified by geologists who know what till is?

MR. DEFIEUX: By soil scientists, yes.

MR. ALEXANDER: All right.

MR. MOILANEN: Excuse me. Did you ever say whether it was till at those other sites?

MR. ALEXANDER: I was coming back to that.

I do not know for certain. It looked to me to be till in both of the other sites. The point I'm trying to make is I think it was till in the two sites in this area which failed this spring. I don't think it is till at at least the Calvin Prinz situation, which is the only one that I have looked at, although it may be. O.K. The point I'm trying to get to is that in Missouri they don't have enough records or situations where they are starting to get some reasonable statistics. They have records in Missouri and I can give you the reference which I just came up with of something in excess of 97 catastrophic sink hole collapses.

A number of very interesting things show up. First of all, almost half of these were man induced. The most obvious characteristic is they do not occur in areas where there are many other surface sinkholes. They tend to occur away from other sink holes. They tend to occur in areas which are covered with 40 or 50 feet of over

burden.

MR. GREENBERG: What do you mean by "Man induced?"

MR. ALEXANDER: Can I break it down for you? These are ones that they attribute the formation of the sink hole directly to man's activities and they break it down. Twenty four of the 46 they believe were formed by altered drainage patterns. Ten of the 46 they believe were formed by the formation of sewage lagoons or lakes. Seven of the 46 they believe were produced in response to the dewatering -- pumping water out of the ground. Three were produced in response to highway construction. Two were produced in response to blasting. That should add to a total of 46, I hope.

I simply note that the two that have occurred in this area, the one near Greenleaf and the one near Hudson both occurred very near structures; one under the corner of a barn, and this missed a house trailer by about 15 feet; and the other one about 50 feet from the farmer's house. I don't know if that's a statistically valid correlation but it's an interesting one though.

O.K. Something like half of them are directly attributable to man's surface activities. They are located not near existing sink hole fields but in areas of 40 or 50 feet of cover, drift or other types of clay.

He lists -- this is a good article. He lists

several other categories. I don't know enough about the sites to know how well these sites fit. I suspect he lists a whole series of conditions which lead to them and conditions which don't lead to them and I suspect you would like to see the reference.

MR. MCMICHAEL: Yes.

MR. ALEXANDER: O.K. The other thing is the non-catastrophic failure. I agree, I don't think it is probable that a sink hole will develop under the structures. I don't think it's impossible either.

O.K. In terms of non-catastrophic failure, again, based on only one hour's look, and I emphasize that, as we were driving around this area part of the potential spray site for one of the farms rests directly on bedrock, there is bedrock showing. Now this is not the structure itself. I didn't visit the site where the structure will be. I don't know what it is, but parts -- portions of the area that you have identified on your maps as potential sites spreading rests on bedrock showing.

MR. MCMICHAEL: Is that the area known as the gravel pit on the map associated with the Penz facility?

MR. ALEXANDER: No.

MR. MOILANEN: Would you be willing to bring the maps up?

MR. ALEXANDER: This creek --

MR. GREENBERG: The record will show that the witness is pointing out places on the map that he visited and that showed "Bedrock showing."

This is off the record.

(At this time a discussion was had off the record.)

MR. GREENBERG: Just a moment. Can I have some order, please? Let's let everybody hear what the witness has to say.

MR. MCMICHAEL: Would you like to introduce those maps into the record or any other written documents that you have?

MR. ALEXANDER: These are my copies of your maps.

(Laughter.)

MR. ALEXANDER: I'm perfectly willing to go with the maps which are in the Environmental In-Site Statement. Again, in one very short inspection, driving down the road in my automobile, I was able to see that the section identified as "D" on the Prinz farm company site has a stream running across it and that stream is running on bedrock. There is no soil cover at all on that stream. O.K. That is an alternative site, as I understand your technique.

MR. DEFIEUX: Correct.

MR. ALEXANDER: The site labeled "F" from my very

quick look at the air photos you could see that the little stream which drains to the northeast off of that on the 1958 and 1940 air photos, that shows as a sinking stream disappearing just off of the edge of the area where you are. When I drove by that today I discovered that someone has built a pond on top of it. That pond apparently leaked for the first two years it was built and eventually doesn't leak as much any more. It's not difficult at all to convince yourself that there are Karst features in the area where the waste material is going to be disposed of.

O.K. This is not a catastrophic problem. This is a long term chronic problem.

I don't think you addressed those problems adequately in the EIS.

MR. DEFIEUX: I would like to point out, I think your testimony has been very interesting and perhaps we didn't know a lot of things that we know now in as much detail. I would also like to point out that you do not disagree with the wording of the report. It's -- we have said that the probability of a sink hole development is low and we have recommended further borings and so forth to help clear up the uncertainty surrounding sink hole development. As you have said, we have said that it is possible and unlikely the sink holes will occur on those sites. And we have said that there are no Karst features

apparent at the facility site.

MR. ALEXANDER: I don't know whether I agree with that statement because I haven't had a chance to look.

MR. DEFIEUX: O.K. But we also don't know for sure that you have seen Karst features at the facility site.

I'm just curious to ask you the following question: You mentioned before -- you alluded to the fact that you thought that you could not put a facility anywhere in southeastern Minnesota. You sort of said you -- when you raised your hand before that you implied that you shouldn't site a potential contaminating source, or whatever, anywhere in what might be a Karst area underlain by carbonated rocks that might have Karst features.

MR. ALEXANDER: I'm sorry. May I have your name again?

MR. DEFIEUX: Rick Defieux.

MR. ALEXANDER: Mr. Defieux, I did not say that. The question that was addressed to me, which I answered by waving, was did I think that feedlots had the potential of contaminating the groundwater anywhere in southeastern Minnesota and that I answered affirmatively.

MR. DEFIEUX: I see. I misunderstood you. Then you do mean to see that it is possible within this region with proper siting to have a good site.

MR. ALEXANDER: I think that is a possible event,

yes. I do not, however, think that you should categorically close down the southeastern part of Minnesota, that is utter nonsense.

MR. DEFIEUX: So you also disagree with the statement that Ms. Kersch made earlier on the 208 study, that any land use -- any surface use that produces an effluent is likely to contaminate groundwater -- is likely to contaminate groundwater throughout the whole area.

MS. KERSCH: That's not what I said, you are misquoting.

MR. GREENBERG: Just a moment.

MR. ALEXANDER: I will attempt --

MR. DEFIEUX: If I didn't get it right don't answer me.

MR. ALEXANDER: I will attempt to state what I think what I would like to state about this. Anything that you do on the surface of the ground in the Karst area of southeastern Minnesota is going to be communicated to the groundwater with varying degrees of fidelity on a time scale that can be as short as minutes. It can be longer, it can be very low fidelity, in other words, it can be sheltered or it can be modified before it gets in. I do not live here. I do not drink this water. I am not trying to make a value judgment. I am simply saying that anything that you do on the surface of the ground in this

Karst region you will be drinking if you drink well water.

MR. DEFIEUX: Do you then -- are you familiar with studies of swine waste lagoons and monitoring and detecting various contaminants in the groundwater just to see just how far these contaminants do reach in existing facilities?

MR. ALEXANDER: No. I said I just saw this Environmental Impact Statement two days ago.

MR. DEFIEUX: Then you don't think it's possible that glacial materials, till -- specifically till can attenuate contaminants?

MR. ALEXANDER: I said varying degrees of fidelity. Yes, it can attenuate it. The question is how much does it attenuate it and that question has to be answered on a case by case site by site basis. If you read my report and you reference it, the first recommendation is that there are no general rules that you can't generalize in the area.

MR. DEFIEUX: Well, what if there were data that suggested that glacial till underlying unlined basins -- let's just take a hypothetical case. If this data -- if there were data that convinced you that contaminants from unlined basins do not go beyond ten -- 20 feet below a site would it matter whether the carbonated bedrock 50 feet below was susceptible to contamination? I don't

want to trick you.

MR. ALEXANDER: Earlier you made a statement that it's not a Karst terrain until it gets into the bedrock, that's wrong.

MR. DEFIEUX: What I'm saying is if you have 50 feet of glacial material -- of till that has been shown to be sufficient to attenuate contaminants from a lagoon then the -- then it is unlikely that these things will ever reach the carbonated bedrock to contaminate wells.

MR. ALEXANDER: But you have to show that, you can't just assume that.

MR. DEFIEUX: I agree and that's the purpose of the borings.

MR. ALEXANDER: O.K. This, I believe, is a site specific Environmental Impact Statement. Are you asserting that there is 50 feet of till over all of these sites?

MR. DEFIEUX: No, I'm asserting that it would be useful to find that out.

MR. ALEXANDER: That statement I can agree with.

MR. DEFIEUX: If you had this till and a sink hole developed what would happen to that till, does a sink hole -- I think that everyone is left with the impression of a sink hole developing -- again, let's go back to assuming that there is 50 feet of till, assuming that borings have been conducted and we found 50 feet of till.

I think everyone is left with the impression that a sink hole is occurring and suddenly there being no buffer between the surface and carbonated rock.

MR. ALEXANDER: In the catastrophic failure that is precisely what happens, the bottom drops out.

MR. DEFIEUX: You are saying that has to happen if a sink hole is to occur, all of the overlying sediments have to fall into it.

MR. ALEXANDER: I tried to make a very sharp distinction between the two kinds; the catastrophic failure and the more normal sort of sink hole that you will see by driving around southern Olmsted County and Fillmore County. O.K. In the catastrophic failures they describe in this report in Missouri to discovering one just before it failed. They were digging with a backhoe to set up a building and the the backhoe suddenly hit a hole and what they discovered was about two meters of soil over the top and a 75 foot deep hole 10 feet in diameter beneath that. And if somebody had stomped hard when they walked across that they would have been at the bottom of that hole.

Now in the case of Altura, which you say, is a different situation, it disappeared. It wouldn't drop. In the case of West Plains, which I don't know how good it was, you could look out and see an enormous whirlpool in the middle of the lagoon. It simply drops away. They

make the point in here -- in the literature that exists on the formation of these sink holes, that you do not have any trouble at all carrying away apparently the plastic material that is there.

MR. DEFIEUX: O.K. I just think it's important to make the distinction between catastrophic sink hole and the sink hole that we may all identify with. How often --

MR. ALEXANDER: O.K. Then I will answer the second question. I have personally poured dyes into the more normal sink holes and recovered them from springs up to three miles away on time scales of hours. I have not personally done, part of the crew that I worked with has personally poured dyes into the more normal cesspools in the town of Fountain and the lady who lived inside the house flushed her john to run water through the cesspool. The cesspool empties directly into a normal sink hole and that dye came out a spring a mile and a half away eight hours later. There is not a buffering capacity beneath normal sink holes and there does not exist a buffering capacity below catastrophic sink holes.

MR. DEFIEUX: How thick were the surficial deposits in those areas when you are talking about this very rapid movement? Do we know how thick the surficial overlying the carbonated aquifer in question was?

MR. ALEXANDER: I'm sorry, I don't understand the

question.

MR. DEFIEUX: On consolidated -- first of all, was there fill overlying the aquifer in question? What was the -- can you give me a general description of the geologic section of the area where you put dye in and you came up very rapidly and so forth?

MR. GREENBERG: I don't think that's necessary to this discussion at this time. The details of this material, I'm sure, can be brought to the attention of the PCA in the course of reviewing material raised by the Doctor. If his comments raised the issues that are necessary for the EIS it's up to the PCA to investigate those issues.

MR. DEFIEUX: I'm interested just to the extent that that site is comparable to the one in question.

MR. GREENBERG: That should be compared in the final EIS unquestionably.

MR. DEFIEUX: I have no further questions.

MR. MOILANEN: Can I again repeat my question as to whether or not you want to introduce your maps or any written materials you have? As a desperate stab for credibility I will note your maps are considerably clearer and you have markings on them, I believe, showing the areas or maybe we could have you mark them showing the areas showing certain deposits and it would -- it might assist the record.

MR. ALEXANDER: I do plan to respond in writing. I believe you said it would be open for another 20 days. As I said, I just got thr Environmental Impact Statement last Thursday and I would prefer -- one of my colleagues, who is sitting over there, was madly scribbling with a felt tip pen this morning on these maps.

MR. MOILANEN: O.K. That's fine. Did you have a written document referring to some of the case histories that you presented that we could maybe review and comment upon and do you plan to introduce that for the record?

MR. ALEXANDER: Yes. I will give you those references.

MR. MOILANEN: O.K. We would appreciate those. The record will remain open 20 days after the Hearing is closed and if you send them directly to the Hearing Examiner we won't have a real chance to comment and we may want to.

MR. GREENBERG: The PCA has an opportunity to review the material at the Office of the Hearing Examiners also.

MR. MOILANEN: If it arrives there on the 19th day at 4:30, that's generally the way the PCA submits its information --

MR. GREENBER: We will recess until 10:00 o'clock.

(At this time a recess was had and the hearing reconvened at

approximately 10:00 o'clock P.M.)

MR. GREENBERG: Ladies and gentlemen, now at the conclusion of today's Hearing we are going to reconvene on July 5th, that's Thursday, the day after Independence Day, at 10:30 in the morning. Just hold on a minute. We are going to convene at 10:30 in the morning. Now let me see the hands of those here who have comment who would be able to be at that meeting at 10:30 or sometime during the day?

A SPECTATOR: Sir, most of us are farmers.

MR. GREENBERG: I understand that, that's why I am asking the question. Let me see those people who can be here today. I haven't gotten to the night session yet.

(No response.)

MR. GREENBERG: No one. Well, we are not going to convene at 10:30.

A SPECTATOR: Would it be held here?

MR. GREENBERG: Pardon me?

A SPECTATOR: Would it be held here?

MR. GREENBERG: It would be held somewhere in this complex, yes. All right. We will go off the record for just a moment.

(At this time a discussion was had off the record.)

MR. GREENBERG: This Hearing, at its conclusion this

evening, will recess to July 5th somewhere in the same complex. It will be the responsibility of the Pollution Control Agency to see that a notice is posted on the board in this building to make sure that everyone knows exactly the location if it is not in this building or even if it is in this building. I am also going to require that the Pollution Control Agency publish notice again stating the time and place of the reconvened Hearing and that that be published in both Goodhue and Olmsted Counties. The Hearing will reconvene at 1:00 o'clock P.M. at the site or in the room designated in that Notice of Hearing and indicated upstairs. It will continued no later than 5:00 o'clock that afternoon, at which time it will recess to continue in the evening at 7:00 P.M. and recess again no later than 11:00 P.M. that evening. Is that clear to everyone?

(No response.)

MR. GREENBERG: If testimony cannot be taken by that time we will continue again at another time. Mr. Bob Rumpza.

MR. RUMPZA: For the record, my name is Bob Rumpza, I am assistant to the president of Minnesota Farmers Union. In the interests of brevity and so that the most people possible can speak, I will read a statement, which I normally wouldn't do.

The Minnesota Farmers Union is an organization of 24,000 families who produce dozens of farm commodities -- including hogs.

I am here today to comment on the draft Environmental Impact Statement as it relates to socio-economic conditions. In other words, the Farmers Union is concerned about how these projects under consideration and others like them will -- in the short and long terms -- affect other hog producers.

The EIS dismisses the effects of these huge confinement facilities on other farmers, saying that the Penz, Schroeder and Hilltop facilities won't have an appreciable impact on other farmers. This analysis simply isn't realistic. Hog production is extremely sensitive to supply and demand signals. The EIS drafters ignored the fact that an extra 25,000 hogs in a local marketing area can't help but depress local prices. Because of the huge capital investment being put into these confinement facilities, those operations will most likely be pumping out 25,000 hogs a year, no matter what the market conditions are. It won't matter whether the market is up or down -- the production will remain the same. Money and risk reduction replaces the law of supply and demand. All this means that the competitors of these huge facilities -- smaller family-sized farmers -- are left to take the brunt

of market swings. Maybe it's time to look at exactly who we're talking about -- who are these competitive family farmers, and what might happen to them?

There is no easy way to categorize the competing farmer -- his operation may be very large or very small. Our definition of a family farmer is one who uses the labor, capital and management within his own immediate family to run his operation, with some seasonal help, if necessary. Obviously, farms with two or three full-time employees don't fall under this definition.

The competitive farmer we're most concerned about are those most susceptible to the market price swings that will be exaggerated by the existence of these huge hog factories. Most often, the people who pay the price will not be the well-established, successful farmer in southern Minnesota -- it will be the struggling, beginning family farmer. The only way they can get into farming is to substitute labor for capital -- they are willing to work to make up for their lack of financial resources. Hog production has traditionally been an opportunity for young people. They can fix up existing buildings to accommodate hog production, and the personal care needed for hog production is provided by the family. It's not an easy way to get started in farming, but it is a way, when buying or renting large amounts of land and machinery

is out of the question. But when the hog market swings downward, and stays there for a period of time, we all know who is the most vulnerable -- that young family.

We're going about things completely backwards when we allow capital to replace people in agriculture. I'm not talking about mechanization -- I'm talking about capitalization, where only those with wealth can survive. The EIS seems to dismiss such concerns as romantic. We're talking cold, hard, economic facts. Romanticism stops when the law of supply and demand takes over. And a constant flow of supply from highly capitalized hog factories will simply push other suppliers out of the market. If these hog factories proliferate, the result will be market concentration with its accompanying advantages to a few investors. This is in contrast to a widely dispersed production capacity, with the ultimate beneficiaries being farmers, the townspeople who depend on farmers, and consumers of farm products.

The EIS says that economies of scale and size are pervading agriculture, and this seems to be some sort of natural course of events. It's happening -- but it's sure not natural. Our system has set up a series of tax advantages, including investment credit, rapid depreciation and cash accounting, that repays those with capital and punishes those without it. We have created the

articifial economies of scale that give hog factories a greater margin of profit.

The farmers who are members of the Farmers Union see no reason why the State of Minnesota should contribute to some of the mistakes made in our federal policies by granting a permit for operation of these large-scale hog confinement facilities.

Thank you.

(Applause.)

MR. GREENBERG: Does the PCA wish to make a response or ask questions?

MR. MOILANEN: Would you like to submit your written comments into the record even though it was read?

MR. RUMPZA: Sure.

MR. DEFIEUX: I would just like to respond to that briefly. I think that that was an analogous statement, more of an indictment of the system than these three particular farms.

MR. RUMPZA: Not necessarily, sir.

MR. DEFIEUX: What I think -- what I clearly disagree with though is that there will be a direct noticable affect of 25,000 hogs per year when we have the State output of about nine million and neighboring states as much as twice as much. I think what we are talking about here is a relatively small amount. The problem is a much

broader scale and I just want to redirect our position as to what the facilities themselves will do.

MR. RUMPZA: May I respond?

MR. GREENBERG: Yes, you may.

MR. RUMPZA: When you are talking about a cumulative effect of 25,000 hogs and beyond, and I think you would have to talk about the total long-term effects, you can't have a cumulative effect until you start with something and these three facilities are the beginning of the cumulative effect in this region. 25,000 hogs do have an impact. I think if you ask any of the farmers in this room who are smaller scale hog producers if an extra 25,000 hogs going to Hormel or other packing plants to which they send their animals, if that's going to have an impact on their hog market. I am pretty sure they will tell you yes.

MR. MCMICHAEL: I would just like to make a comment. During the preparation of the Environmental Impact Statement, and certainly Rick and the others can attest to this, that we have had a very difficult time in getting a handle on that. I mean, it makes sense to me that there may be the establishment of a precedent here. The problem that we have got is -- and, of course, preparing an Environmental Impact Statement like this is getting our hands on some numbers -- some figures that we can put in

the Environmental Impact Statement. Obviously your testimony helps and that you are an expert in the area and your evaluation, I mean, is a professional judgment. But by the same token I think you have to appreciate that we have had a very difficult time in trying to get any information that will quantify that kind of an effect.

Let me just ask if -- and request that if you have any information that you think will help us quantify that kind of an effect we would sure appreciate it.

MR. RUMPZA: I think some of the best statistics available, and there are very few available at all, are provided by the Center for Rural Studies of Walkhill, Nebraska and some of the information that they have dug up has been introduced into the record this evening, I think, by Ms. Kersch.

MR. MCMICHAEL: That's in the record now?

MS. KERSCH: Yes.

MR. RUMPZA: And I think they can be contacted for further documentation, but they did the study -- I think the name of it is Hoole -- The Corporate South, and they have done periodic updates and they have also studied the impacts of where the total hog production has moved in Nebraska from family farms to large-scale producer, also the University of Missouri study.

MS. KERSCH: I have entered that. This is

referenced in the Walkhill Study, but it's the entire Study too that you might want to look at.

MR. MCMICHAEL: Well, we appreciate that kind of information being submitted because that is very very helpful to this process and indeed I think it's been alluded to, at least on a couple of occasions before, we don't have any corner on intelligence and to the extent that you people can help us create a more complete record that's what this whole process is about, and we appreciate it.

MR. RUMPZA: Glad to help. Thank you.

MR. GREENBERG: Mae Dao.

MS. DAO: Could Verna Henry testify first?

MR. GREENBERG: Certainly.

MS. DAO: She is on the list. She is my sister.

MR. GREENBERG: Verna Henry.

MS. HENRY: I am Verna Henry from rural St. Peter and I happen to be unfortunate enough to live close to these pig barns. I have testified in front of some of you gentlemen before, but I will be brief.

The PCA authorized a pig barn to be built about 300 feet in front of my front yard and in the meantime -- and that was in 1976 and all went well. I protested it but that was lost in the fire, but now this -- the lagoon and the pit is built in lowland. It is an old lake bottom

and I got stuck in a Packard down there once and about a foot and a half of it is topsoil and after that I run into water and sand. So I'm not sure about what kind of land this pit is laying in. In the meantime the first year they farmed and they harvested -- I believe they harvested a crop off from the land that lay in between their lagoon and the ditch. A County ditch runs about 214 yards in between the road and the ditch and their lagoon and pig barn and the lagoon and pit lay in between the road and the ditch. They harvested a crop off of it and then the next year a pool of water developed next to the ditch and they didn't get rid of it. That was in 1978, it's been there since early 1978 and through 1979 until they just got through draining it and they opened up the tile and drained the accumulated sludge into the County ditch.

Well, I called the PCA and they have come down and they looked it over and they said it's a definite violation of the law. They gave me a letter this afternoon or this evening about this, but I am not sure what's going to happen to the Leonard Brothers.

I make no mistake about these things, really, the stench is unbearable. There have been times that I have thrown up and been sick to my stomach. The house reeks with it. You can't get away from it day or night. And

now this isn't a constant thing, it comes and it goes.

I have the Planning and Zoning out -- Oh, maybe a week and a half ago and he come into the door saying "I just -- I checked that barn yesterday and there is only normal operating odors." I happen to have been out there yesterday, he was talking about, and there was a stench. It depends on -- sometimes the whim of the wind, not always, because without a wind I have had a stench in my yard. But you go a little bit west of where evidently he had been and it stunk to high heavens. So I invited him in and the stench that had accumulated in the house from the week before was still there. I invited him in to sit down at my table and we had a nice visit. By the time we got through he agreed it was stinking. But he said "Well, the trouble of it is, when they first started building these complexes we didn't really know what they were going to be like so we were in the dark." He said, "But the contractor assured us that there would be no odor." He said "We took their word for it." And I can believe it because nobody really went out and actually smelled. You can go and investigate one of these things and maybe either a half an hour or a half a day or maybe a day and nothing happens, but you live by it and you really realize what's really happening is a shame, that the PCA and their County Commissioners forced these things on the

people of the State of Minnesota.

I am in full sympathy with the Farmers Union because I have talked to my State Senator and I have talked to the Planning and Zoning and they assure me that there is no limit to the amount of these permits that can be given out in the State of Minnesota. Now that's ridiculous.

If there is no limit to this sort of thing we are very apt to turn the State of Minnesota into the Great American Pig Sty.

(Applause.)

MS. HENRY: I do wish the people in authority would really look at what they are doing before they offer -- they give these permits out. They need a whole lot more investigation in the future than you have in the past.

I thank you.

My sister was down with me one weekend when this pungent odor was really something and she would like to tell about it.

MR. MCMICHAEL: Could I just ask what the location is?

MS. HENRY: I am 300 feet south -- or to the north of him. I get the nice summer odors but it isn't wind alone. It's the whole cotton pickin' operation. It's the aerators. He has got about 12 or 14 of them in two pits and it just whips up the smell so you can get a real

good whiff.

(Laughter.)

MR. MOILANEN: We would like to thank you very much for coming down.

MR. GREENBERG: Mae Dao.

MS. DAO: First, I would be very brief, but I would like to just briefly describe this place where Verna Henry, my sister, lives. It is located in nine acres of one of the few remaining pieces of virgin timber in the State of Minnesota. This piece of timber is an excellent example of the value of selective cutting. It is an old woodlot and it was -- the dead wood has been cut out over the years and the bad timber was cut down leaving these beautiful trees. If you can imagine nine acres of Dutchmen's Britches blooming underneath those trees.

Now my sister planned -- hoped to spend her retirement in this utterly delightful place. Can you imagine what that air smelled like underneath those trees?

Well, I haven't -- I visited her briefly for a couple of times -- well, a few times in the last two years. So you can imagine that I was really anticipating a pleasant weekend with her starting the 7th of June. I came down. To the south of us -- the south of this farrowing house you could smell it, it wasn't too bad, but my Lord, I was going to say my God. When she -- when we swung around

downwind of that farrowing house I simply -- the stench was unbearable. I could not breathe. I simply could not breathe. The house, the yard, everything was just permeated with this horrible stench.

If my nephew hadn't provided a place for us to spend the weekend I would have had to go in a motel. I couldn't breathe in that environment, I simply could not.

That's all I have to say so that's what happened to some of the -- one of the finest pieces of timber and one of the most beautiful homes in southern Minnesota.

MR. MOILANEN: Thank you for your comments and coming out tonight.

MR. GREENBERG: Marvelle Reckard.

MS. RECKARD: I am Mrs. Earl Reckard and that's spelled R-e-c-k-a-r-d, Lewisville, Minnesota Watonwan County and I live one half mile from the Watonwan-Cedar Cooperative, a 650 sow unit. There are some things we are very concerned about.

Number one is odor. Have you ever had the privilege of being awakened in the middle of the night to this horrible stench? Have any of you?

(No response.)

MS. RECKARD: Well, we have had to make a mad dash to close the windows and a dash for the lysol spray and all to no avail. And by this time everything is saturated

with that horrible stench. Your eyes burn, nose, throat and whole respiratory tract hurt. Your stomach is upset. These are also the symptoms of hydrogen sulfite, a toxic gas.

Three mile island wasn't considered a lethal hazard either until it was too late. Is that what is in store for those of us who have to live near large feedlot operations?

And water -- in the Fairmont Sentinel, May 12th, 1979 there was an article entitled "Water Tests Showed Some Area Wells Contaminated." Fifty of the 95 samples that were tested in Faribault, Martin, Jackson, Watonwan Counties, had levels of either colliform or nitrate or both in excess of State and Federal Health Standards and in several cases they have been traced to nearby feedlots or wells located near feedlot sites.

Now did I understand you before to say that if there is a leak in the lagoon that there could be water contamination?

MR. DEFIEUX: Could be water contamination?

MS. RECKARD: Is that right?

MR. DEFIEUX: Yes.

MS. RECKARD: Well, there is a hole that developed in the lagoon out there in the first year of operation in the spring. It was not corrected until fall and there

isn't a liner in those lagoons out there. Don't we have water pollution there?

MR. DEFIEUX: The question is the extent and the magnitude of the pollution -- the pollution will vary with the geological materials on the site.

MS. RECKARD: How are we to know that?

MR. DEFIEUX: There should be some soil testing before the thing was put in. I suspect that these are on coarse materials, I may be wrong.

MR. GREENBERG: Your name, again, sir?

MR. ANDERSON: Wayne Anderson. The hole that you are responding to was a tile that was located between -- it's a two stage lagoon and the ponds were located in an area that had previously been tiled and the plans called for removing of the tile. A portion of that tile that was located between the two lagoons had not been removed and it was this portion that the leak went from the first stage actually into the second stage. In other words, it seeped directly into the ground.

MR. DEFIEUX: No. It seeped from the first stage into the second stage, however, it was still contained. However, as far as we can tell there was no discharge from the site. However, that was an inadequacy in the construction.

MS. RECKARD: I remember you said as far as you can

tell, in other words, you don't know either?

MR. DEFIEUX: Well, we believe that in fact it was contained there.

MS. RECKARD: I don't. It says "What is going to happen to the family farmer who raises from 200 to 400 hogs a year in comparison to the large operation who have thousands? The predictions are for lower prices. Who is going to get hurt first and the worst?"

Our lifestyle has changed. You don't invite friends any more in case the wind would change direction and that stench moves in. You are through eating in a hurry. Any time you are downwind of it you get it and I do mean you get it. This is not just when the lagoons are being emptied, it's any time you are downwind of it. Is this the way we are going to have to be forced to live on account of large feedlots? I hope not.

And now in closing I would like to read something that Governor Quie told the Commissioner of Transportation, this was in the Mankato Free Press June 20th, 1979. "The State Department Head was told by Governor Al Quie that the Agency should adopt the idea that the customer is always right in fielding complaints from the public. Quie passed along the advice to the Department of Transportation Commissioner Richard Braun." It states in answer to a question, "He said State Agencies have a

tendency to be defensive and try to justify their actions rather than admit a mistake."

These feedlot operations, lagoons and support definitely are a mistake.

Thank you.

(Applause.)

MR. GREENBERG: Mr. Earl Reckard.

MR. RECKARD: I am Earl Reckard R-e-c-k-a-r-d, Lewisville, Minnesota, Wantonwan County. I live one half mile from the Wantonwan Feeder Pig Co-op, a 650 sow unit that has lagoons or stinkholes, whichever you prefer to call it.

The odor from this operation is horrible. It puts a sewer to shame. When I am working in the fields and downwind it gets into the tractor cab and you get it coming and going and never get away from it. I have a clipping taken from Horde's (phonetic) Dairyman, September 10th, 1978, the title is "Gases from Liquid Manure Kill Animals and People." This was prepared by Dave Williams, Extension Agriculture Engineer of Iowa State University.

"Toxic gases such as ammonia, methane, carbon dioxide, hydrogen sulfates, are released from decomposed manure. Concentrations as well as 10 to 15 parts per million can cause headaches, irritation of the respiratory tract, mucus membranes, nausea and dizziness. With

concentrations of over 1,000 parts per million fainting and death, falling, respiratory paralysis can occur with little or no warning."

Has there ever been a concentration contained from the lagoons?

MR. DEFIEUX: There is some data in the record that suggests that levels such as those that you are referring to only occur directly above pits or lagoons as directly above a matter of inches.

MR. RECKARD: Why do we get sick half a mile away then with headaches? You feel dizzy in the tractor cab.

MR. DEFIEUX: I can't answer that. I would suspect it isn't from a toxic level of a particular gas so much as it is your own personal response to an annoyance.

MR. RECKARD: Is that your personal response?

(Laughter.)

A SPECTATOR: You ought to live here.

MS. DAO: I would like to say when I come downwind I could not breathe, I was simply gasping for breath. I just couldn't, no way.

MS. HENRY: My throat has been so sore from time to time you couldn't believe it.

MR. MOILANEN: Mr. Reckard, you were asking about air sampling above the Wantonwan lagoons specifically?

MR. RECKARD: What was that again?

MR. MOILANEN: Whether we had done some air sampling above the Wantonwan lagoons?

MR. RECKARD: I mean, any of the lagoons, have you tested them from a distance where you get the terrific smell? I know one of the people from the PCA was down better than a half a mile away along a Township road and he said it was a terrific smell, he got it. I was wondering what the concentrations were that far away because I live a half a mile away. We experience these symptoms as were given here in this report.

Also, in the Land August '78, supplement of the Mankato Free Press, Dr. Philip Goodrich, Ag Engineers with the University of Minnesota talks of a new manure holding system to solve the hog producers' problem, odor. "The tank will have a 30 to 45 foot stack for a vent, which will send odors high into the air, diffusing the smell and removing dangerous methane fumes from ground level."

Now he says "Dangerous methane fumes from ground level." Isn't that what we are inhaling? That is definitely a health hazard. That is what we are forced to live with. Maybe that's why all the owners live at a distance from our setup.

And liquid waste have been on the topsoil before a heavy rain permitting it to seep into the topsoil and

eventually polluting the underground water supplies. That's another thing we are forced to live with.

Wayne Anderson of MPCA told us neighbors our wells would be tested before this operation would be started and also after it was in operation. This was never done. Why?

MR. DEFIEUX: We have never tested wells on neighbors around operations. No, so I don't believe we ever made that statement.

MR. RECKARD: I have proof that you said that. A good many -- he stood beside my house and he said you would test that well before it started operation and after it was in operation and you never did.

MR. ANDERSON: Are you referring to the wells on the sits or your well?

MR. RECKARD: Our wells. The neighbors' wells you said.

MR. ANDERSON: We have never had that policy or ever done that, nor do I recall saying it.

MR. RECKARD: You don't recall saying that?

MR. GREENBERG: Mr. Reckard, continue. The record reflects your concerns.

MR. RECKARD: We asked a realtor about the devaluation of our property. He said very definitely and you had better tell about the odors you got because if you

don't you will very likely have a Court case on your hands. Would you buy property that would be subjected to this horrible stench, health hazards and water pollutions? I don't think you would. I am sure you wouldn't want something to take place that would devaluate your property. Well, neither do we.

Some say it's just city noses that complain about these large feedlots. Well, I have spent all my life on a farm and I have also raised hogs. This terrible odor is not a hog odor, not by any means.

Thank you.

MR. MOILANEN: Thank you, Mr. Reckard. Would you or Mrs. Reckard submit your written comments?

MR. RECKARD: Isn't that what we said?

MR. MOILANEN: That's fine. I was just wondering if you'd like to submit them.

MR. RECKARD: I would rather keep what I got.

MR. MOILANEN: That's fine.

(Applause.)

MR. GREENBERG: Jean Seibert.

MS. SEIBERT: Jean Seibert from Lewisville. I haven't got any more facts or figures you have heard with all the different problems there are. But I just thought I would clue you in to what a possible week living at a pig factory can be. We live one quarter mile northwest

from this pig setup and odor to you people, if you smell a flower it smells nice and it's gone. You go by a dead skunk and it stinks and it's gone. But if you have odor day after day seven days a week, if you have your mentality after that time it's a miracle.

This is a sample from last year of one week that my family, three children at that time with seven, four and a year and a half.

On May 22nd I got up in the morning. This is just seven days. I got up in the morning, opened the curtains, you could smell the lagoon stink right off the bat. The wind changed slightly so I decided to wash sheets and hang them out. As they were drying the wind changed back. Everyone went to bed that night and complained that the sheets stunk.

May 23rd I rewashed the sheets and dried them in the dryer because the pig winds were still prevailing. By the way, it was the nicest sunshiny day and I thought this was real great for energy conservation.

On May 24th the stink was still coming on. A neighbor who lived two and a half miles away stopped as he was going by to plant corn. He said three times he had to pass our place and three times he had to hold his breath. The same day my mother-in-law brought lunch out to the men in our house. She had to wait a while before she fed

them. She said she had all she could take and was glad she could leave.

Even our children, ages 7, 4 and one and a half at that time complained about the smell from the "Stupid pig farm." My husband and I make it a point not to discuss it, so that was their own honest opinion.

May 24th continued. That night we went to bed. The smell seemed worse, perhaps it was, or perhaps it was because we had been in the smell for such a long time. Whatever, we all felt like we were suffocating. It was a nice evening with cool breezes. When windows can be opened anyone can sleep. Up to this time we have not had to have an air conditioner. We like to do our share for energy conservation. If you don't need it don't get it, do without. We feel that we can take two days of extreme heat and not have to use the extra energy. However, if we can't open our windows we may not have another choice.

We have found by keeping the windows shut the smell penetrates the house anyway. So perhaps the air conditioner wouldn't do any good. It wasn't long before I got a headache. My husband already had one from working out in the nice fresh? air. I even felt like I could taste it in my throat. When my children wake up in the middle of the night and that they can't breathe what should you do, take them outside for a nice breath of fresh air?

The last time I looked at the clock it was 3:00 in the morning, everybody woke up tired and pretty upset. And next day stink was still with us. Father-in-law said we shouldn't put up with the stink for one more night that we should come over and sleep at his house. I told him he would get tired of seeing us every night.

May 26th started stinking again bad enough to wake me up at 3:30 in the night. Smell woke my husband up too, that must tell you something.

May 27th. During the night woke up again with a nice fresh aroma.

May 28th. It still smelled but not quite as bad during the day. Thank goodness the next week the winds switched and we were able to get our wits about us, however, our poor neighbors in the other direction got it instead. Some consolation, don't you think?

That's just one period of time. That was just a few days in a row and we were all in very bad shape and we needed the break. Like they have said, before, it's not -- it's not often it's weeks in a row, but if you do have it weeks in a row I can't help but think it is bad for everybody's health.

What these people say is not made up, it's true.

I will stop now because there is lots of people to talk, but right now, in order to help keep the stink out

of the house, we are putting new windows in, the tightest ones we can find in hopes that when the wind is in our direction we can shut it up and keep it out. We are willing to spend any amount of money. My husband said one of these years we will not spend our money on our own projects, we will spend it on a lawsuit.

Thank you.

(Applause.)

(At this time a discussion was had off the record.)

MR. GREENBERG: I don't have your name and spelling so I would like you to state your name and spell it.

MR. CUCCHIARA: My name is Roy Cucchiara. I have tried to do a little studying in the odor problem because I do live in Haberdale (phonetic) Township, some four miles away from the proposed site. I tried to figure out whether you actually had a representative odor of swine manure or whether you just picked H2S because that was kind of all you had.

On page 5 of 5 and 5 of 6 of the draft EIS lists four major problems -- "Problems connected with the use of H2S as the most reasonable representative odorant."

Number one, wide variability of range of threshold concentration.

Number two. Annoyance levels, very difficult to

quantify.

Number three. Wide variability of H2S concentrations in swine buildings.

Number four. H2S even in swine operations virtually unknown.

So it sounds to me like you have got some pretty serious problems in using H2S as your representative odor which you point out. So I tried to find out some things about the chemistry of swine manure.

Now we know that H2S is a gas and tends not to -- tends not to carry along the ground because it is one of the lighter gases. So H2S may not be representative because of its weight. However, the carbonyl group of chemicals, which you list in the EIS, the carbonyl group of chemicals from pig manure are heavy, stay close to the ground so that odor carries farther, and can be considerably more annoying than even the H2S.

Thirdly, the combination of H2S in the short change fatty acids, which is probably in groups of two, they are fatty acids which may be one of the reasons that these people told you that their eyes burn and they can't get the stench out because it's not tear gas like H2S. It is a fatty acid component that sticks to things like peels on your apple trees, sheets, windows, clothes. A combination of H2S and short change fatty acids can cause a

vastly more intense and annoying odor than either of the components alone. And, secondly, residues can be very difficult to remove from items of contact. Thirdly, these combinations could carry far farther than H2S.

The EIS itself notes on page 5-3, investigators have shown that the carbonyls are believed to contribute to the perceived odor through an addative or synergistic effect. That is, resultant odor is stronger than the sum of any of the chemicals together. H2S, which you have studied, may not be as strong as the combination of these other things. We have pointed that out in the EIS.

Thus the entire odor problem, as addressed in the EIS, is based on H2S, which the EIS draft recognizes as inadequate, but does not really emphasize as such. So it seems to me that you made an error to base all your decisions or your major decisions on odor carrying on adequate -- inadequate and misleading information on H2S, realizing that's all you have to work with scientifically. O.K.

Is it possible that there is no representative odor, that there is no one chemical that represents the odor of swine manure? This is alluded to in the EIS and has been recognized but ignored in your search of a model. You had to take something so you picked H2S which looked reasonable but is not really the representative odor of swine manure. You don't smell rotten eggs when you go by

a swine feedlot, you smell something very different and that very different thing is real odor, it's not a gas of H2S. Swine manure odor is unique. The representative odor does not have the same -- the representative odor of H2S does not have the same intense characteristics, compounds, or effects as swine manure odor.

Now was there an attempt to verify the odor model? Page 57 of the EIS, the methodology for determining the hydrogen sulfide missions is based on four things:

"The limited data when concentrations of H2S inside swine facilities." And 5-3 it states "Virtually no studies have been performed for an actual anaerobic settling basin or outdoor waste storage facility, the component of swine operations that generally constitutes the principal source of odor." Number one, limited data means virtually no study; number two, results of nitrogen balance and ammonia release, that's valid work but it doesn't have a lot of bearing on odor because those are not the things that cause the odor; number three, assumptions regarding emissions; number four, assumptions regarding H2S ammonia ratio.

So I would suggest to you that your estimation of the quantity of H2S released is a flat-out guess based on limited data from no studies, results of something that doesn't have a bearing on odors and two assumptions.

Maybe that's all you have got to work with scientifically, but that's really not good enough to make a whole mathematical model.

You have made elaborate honest calculations based on a mathematical model which is never tested in a real live situation with swine removal.

Now if H2S is the wrong thing to measure the swine manure odor and the calculated model was not tested in this EIS what can we do to intelligently get the information about the spread of this odor? I would like to think of it myself as both a scientific and a guy with common sense. The scientist in me tells me there are no studies to this date that measure the ability of a person to perceive swine manure odor at a given distance and if you have that information you should have put it in there. You base the whole thing on H2S. However, in this room we have already heard from a bunch of people that live around these facilities the information as to how far swine manure odors can carry to people who are used to farm odors is available. All you have to do is ask people.

O.K. I will just quickly pull from a couple of letters to give you an idea of the range that people relate to us that this carries.

A letter to the Mayor of Adrian from the City Council

of Figaro. "The odors we endure are comparable to having dead animals on your lawn. The odor radius is five miles minimal, irregardless of wind velocity."

A letter from Mr. and Mrs. Jake, Rushmore, Virginia. "A half a mile south from the confinement setup the odor is so severe that being outside one can hardly keep from vomiting." They are also eight miles northwest of the Nassar (phonetic) hog confinement and when the wind is from that direction we can smell that too. Eight miles. That's not exactly what it estimates in the EIS.

A dairy farmer in Wisconsin lives three quarters of a mile from a 3,000 hog confinement setup. He says, "The odor comes in a five mile radius. We were informed it would deliver no odor before they put it in." The affects on their household, their eating, their sleeping, even the quality of their Grade A milk is influenced by this smell.

The Minneapolis Tribune carried an article about a lawsuit, $175,000 lawsuit, by a farmer against his neighbor because of odor problems. These are drastically different odor problems than a situation predicted by the model in the draft EIS. It seems more reasonable to me to believe the testimony of all these people living within known distances of hog confinement facilities as to the effect on their life style than it does to believe a

mathematical model which measures a disbursement of a gas which does not represent swine odor. So I think the EIS -- the draft EIS on odor needs to address the problem; number one, that there is no representative gas that represents swine odor; number two, the spread of this odor can be determined by talking to people around this State and other States who live near these things. That's not addressed in the EIS.

So it would seem to me that common sense would dictate that we listen to people who live there rather than to believe a mathematical model that's not tested.

MR. MCMICHAEL: O.K. Just quickly. You seem to be very knowledgeable about this odorant problem and you said "As a fellow scientist." What is your background, are you a chemist?

MR. CUCCHIARA: No, I am an anesthesiologist and one of my duties is to give people gases which have various and sundry smells to put them to sleep.

(Laughter.)

MR. CUCCHIARA: And so we learn about smells because there are some gases that have pungent odors that people cannot inhale without coughing. Even though they are great anesthetics people cannot breathe these things without coughing. None of the things you listed in here would make a very good anesthetic in the draft EIS.

MR. MCMICHAEL: Thank you. What I just want to do here is take a minute and kind of explain where we came from as an Agency. Obviously, in addressing this issue and this issue has obviously been going on for several years, one of the key issues has been odor. And as you indicated there is a possity (phonetic) of available data, in fact, I think to quote you, all you have to work with scientifically. That's exactly where we are at.

In selecting a consultant, and even the consultant, you may remember back to the interviews, we interviewed a number of consultants who had varying degrees of experience and kinds of experience with the agricultural industry. One of the key things that we were looking at is somebody who would take a stab at doing a model. This firm was the only one who would dare take a stab at modeling odors and indeed to our knowledge nobody else has tried that. To that extent it's very difficult to provide any verification. What I am saying is I think this draft EIS represents a first step in trying to get a handle on the odor problem. And in any first step you obviously don't have all the detailed answers that the people are going to need.

I don't want to leave the impression that the model is so precise that it's going to -- you know -- tell you exactly where the impact is going to occur. What I would

like to do is lay out and have our consultant lay out at least the approach that they took in modeling these odorants and try and explain for you why they did what they did.

MR. DEFIEUX: First of all, I would like to say that I agree with you on your point concerning utilization of subjective data from people who live in the area of a similar facility and that this the forum for recording that type of information and that it would be responsive to some sort of written way in the final. We are supposed to be collecting that information.

As far as the model goes, what I think what we are trying to do here is to determine whether the limitations of the model are adequately portrayed in the document and that's the most important thing. I am not -- we are not going to say that this model -- no model of a complex system is perfect. Its limitations have to be stated here. I don't say that it is exactly correct and you have some very good points to be concerned with.

One point I think we should clarify is that something doesn't have to small necessarily like swing manure in order to be a tracer. If H2S can be used as an indicator of what levels -- of what the odor affect is going to be without H2s its self-smelling like odor -- it's smelling like that exact odor.

MR. CUCCHIARA: I understand what you're saying, but I disagree with you.

MR. DEFIEUX: O.K. You are right before when you said that we dealt with what we had available. And the H2S was the only thing that you could model. There is ammonia but ammonia is not a significant contributor.

I think that again the most important thing we are trying to establish is that there are certain limitations to this study and that they are in this report.

MR. CUCCHIARA: Well, the thing that bothers me about the study is that from the mathematical model we proceeded to draw concentric lines around the facilities and from that to conclude that odor probably won't be a major difficulty. And now I see people talking about being five miles away and being bothered by these odors and when I draw those circles it's off the page. I mean, you know, Rochester is maybe seven miles long. So these circles get dramatically bigger than what's demonstrated on this chart and I think that is something that you are going to have to address because then you have taken a much larger population base than you are talking about.

MR. DEFIEUX: That type of information should be taken into account. I think as a scientist you realize the difficulties involved in taking subjective data and applying it too rigorously in a systematic fashion to a

case like this. There are immense problems with finals. With using subjective data it's very difficult to compare from one site to another, both physically, meteorologically, it's very difficult to compare management. These problems are as great or greater than the ones that go into a model such as this. It's that type of data that can be used probably easier.

MR. CUCCHIARA: But that type of data is hard core real world, that's where we are living.

MR. DEFIEUX: You could take ten different people and they would give you a different reaction.

MR. CUCCHIARA: Ten different people might, but I'll bet you out of the ten you could narrow it down to five. These people are farmers, you know, they don't make their living in the city like me and they are standing up here and complaining to you and they must know something.

MR. DEFIEUX: I'm not saying they don't know anything.

MR. CUCCHIARA: Let's get something that's not characterized by that model.

MR. DEFIEUX: Well, just as a devil's advocate I would throw out the fact that the people that don't mind it aren't here, but that's a dirty trick.

MS. KERSCH: So you won't do it?

MR. DEFIEUX: Right. I think the point is well taken and I think that to the extent possible subjective

data should be taken into account.

MR. CUCCHIARA: Sure. And I think what one of the things that you have to address as a Board is to minimize all of these impacts that we are talking about and I think you have to decide whether taking the risk of having odor flying five miles around these things is worth the price of putting in some kind of containment system that will reduce the odor dramatically.

MR. DEFIEUX: That is the PCA's realm.

MR. MCMICHAEL: Right. I guess what we are getting at, in the course of this Hearing, we are trying to get a better feel for what some of the worst case affects are. We have been through many many modeling exercises at the PCA. Some are in areas where we have verified models and they still go out the window on us. Thye still fool us and one of the most difficult things we had was to try and get this consultant to commit to putting a line on that map because we knew the minute we did that there was going to be a disagreement and that some people were going to say it was too much and other people were going to say it was too small and, again, I can't emphasize this enough, this is a poor stab at it, we appreciate the comments that you have brought in here because it's going to try to help us get some feeling for the sensitivity and the accuracy for what we have done.

Thank you.

MR. CUCCHIARA: O.K.

MR. GREENBERG: Next. Yes, sir.

MR. TINKER: My name is John Tinker, I am also a physician and by absolute coincidence I also happen to be an anesthesiologist and an anesthesiologist who wanted to live within some proximity to these fields.

I would like to call your attention to the odor circle map that's on page 5-12 of your book and draw a line between the two dots there. You will find where I live is right exactly in the middle so I'm not only assaulted by one but I'm assaulted by two and I feel perhaps a little paranoid, but anyway, I would like to just make one comment regarding the last testimony and that is that under the worst case condition that you have listed on your model 40 -- if I read it right -- 41 residences would be affected by -- on the Penz proposal and 37 on the Schroeder proposal. I would like to put in the record any question, it's an open question, but I wonder if there really is an ethical -- if this is really ethical for someone to pollute that many residences for his economic gain. I think that's something that should be stated somehow or other. That's a lot of residences even with your own model, given the limitations that I fully agree with.

Now let me go on to another area though that I would like to investigate and say in the beginning that I am not an expert on public health or infectious disease. I am, however, a resident of medical school and I also am able to read scientific papers, in fact I am an official reviewer of scientific papers for three recognized medical journals. I can tell you that I would not accept this paper for any of the three of them as a scientific document because it is very biased and has a lot of problems.

Let me start with this infectious disease business and refer you to table 4.3-1 which is on page 4-26. You note 14 diseases there, by my count, and in your hazard columns there is mostly no's. I have been doing a little checking and the reference that I have, and I will submit this in writing before the 20 day period is up. My reference is Doctor Hubbert, which you also referred to. Doctor Hubbert, et al, it's entitled "Diseases Transmitted from Animals to Man" Sixth Edition, 1975 and I have come up with a list of 55 of them so far of diseases that can be documented to be transmitted from swine to humans. And now I, unlike you, in this draft EIS you are trying to negate the impact of these. I do not want to employ the opposite kind of scare tactics and say by any means that all of these diseases are likely to happen. Some of these even I, as a physician, have never heard of and I

fully admit that, but there are many of them that are not so uncommon and I would like to mention a few of them. The list begins with actitomicosis (phonetic) and ends with yrsinius (phonetic) and, so it goes from A to Y and I don't have any Z. I have two that start with D and there is a whole long list of them which I will submit.

There are a number of diseases that are discussed reasonably well with some problems in your draft EIS, but I would like to discuss four separate diseases and make some comments about them.

The first is methemoglobanemia (phonetic).

MR. GREENBERG: Doctor, I don't think he knows that one.

MR. TINKER: Hemoglobin is the pigment in your blood that carries and it can be destroyed in many different ways. One of the ways that it can be destroyed is by oxidizing it and that is methemoglobin. And methemoglobin is basically useless hemoglobin. We all need hemoglobin, it's absolutely crucial for life. It is the transporting pigment for oxygen.

And according to William's Text of Hematology, I will submit all this in writing -- some of this in writing, but anyway, according to William's Text of Hematology more than one percent of methemaglobin is considered to be the disease methemoglobanemia. Now many causes of

this disease do exist. Among those causes, and very prominent among those causes, is nitrate poisoning from contaminated wells. Nitrates are congested and changed to nitrite by the stomach and antaric (phonetic) acids and these nitrites react with your normal hemoglobin to produce methemoglobin. And the problem is obvious; namely, the more hemoglobin the less oxygen carrying ability your blood has. The it says in the draft EIS that this is -- that this disease is particularly dangerous to infants, which I certainly agree. However, it implies, in fact I think it really comes right out and says that infants are the ones that are susceptible, implying that adults are not. I would like to correct that and I think adults are just as susceptible to any form of methemoglobanemia, if ingesting the right amounts, obviously, because of a weight basis you are going to take less nitrites to produce methemoglobanemia in infants. This is not a new disease at all and it is referenced as early as 1945 in the Journal of the American Medical Association entitled "Scionosis in Infants Caused by Nitrates in Well Water." And Scionosis (phonetic) in infants -- scionosis meaning blueness -- blue color to the skin, and that blue color implying lack of oxygen and lack of oxygen has enormous implications for infants especially; namely, the possibility of retardation, the possibility of altered

development. Chronic -- the deprivation of oxygen to developing tissues, I think it's pretty obvious how dangerous that is. This is not a disease that comes on over night. This is not a disease that the neighbor to this facility might recognize in his or her infant right away. This is a disease that might come on over a period of months, slow enough so that the mother of the child might not even recognize it, at least for a while, and who knows how many brain cells have been destroyed during that time. This is not known, certainly not to me.

But clearly methemoglobanemia is not something to laugh at. And if these -- if well water does become contaminated, not with bacteria but merely with the nitrates -- the nitrogenous wastes from these facilities, this is a significant public health problem and I don't think that the seriousness of this disease is emphasized properly in the Environmental Impact Statement.

Another disease, until I read about it, knew very little about, and maybe you haven't heard about it, that's leptospirosis and it's caused by a bacteria which is of the genus treupenoma, which is similar to the bacteria which causes syphilis, actually. The symptoms are very different, however. The symptoms are very severe and they include yellowness of the skin, which we call jaundice, and abnormalities of the urine and abnormalities

of the blood and severe fever, headache and watering of the eyes and so on. This is aseptic, that is a bacterial caused disease and I think it -- although it says in the draft EIS that it is a serious illness, I think that the true seriousness of this illness is not emphasized enough. It says in Nelson's textbook of pediatrics that children can be taken abruptly ill from this disease from even swimming in streams that have been polluted by animal waste that contain leptospirosis. And now I know that you are going to say that most hogs are vaccinated against leptospirosis, which is certainly true, and I agree it is a rare disease and it is a rare disease especially in this country primarily because of the good management and public health practices which I hope to address in the permitting process and so on.

Salmonellosis is another disease that is mentioned. I'm not going to go through all of these diseases but I do want to mention two more diseases and perhaps three more. Salmonellosis -- and what is not mentioned, at least on two times reading it I could not find it, is the fact that one form of salmonellosis that's known to everyone in this room and that's typhoid fever. And salmonellosis is a disease which is known to be transmissible from hogs and other animals to humans. It is, of course, now that you have heard the term typhoid fever

you know quite a bit about it. It is a sever debilitating diahrreal disease. At many times it's diarrheal. It certainly can be fatal and hogs are natural resources and it can involve meningitis and many other symptoms.

And the other problem with salmonellosis that's not addressed in this EIS, in my opinion, is the treatment of salmonellosis. People say, well, it's a bacterial disease, we can get rid of it with antibiotics. Well, the antibiotics treats salmonellosis are not very benign antibiotics. One of them is recommended is chlormenphenicol, and that is a very dangerous antibiotic and has been associated with a bone marrow depression disease that is fatal called aplasticanemia. So that the treatment of that disease is anything but benign and these are very dangerous illnesses.

And the one that I think -- I would probably fear the worst, if one of these lagoons ruptured or leaked or contaminated the well somehow, is also indemic (phonetic) in hogs, is brucellosis. Now I admit brucellosis is far less common today than it was many years ago. Another name for brucellosis is ondulin (phonetic) fever and it is a very insidious disease in its chronic form and, again, I think this should be spelled out a little more clearly in the EIS. Its symptoms are those of chest pain and some cough and some fever and some chills and some

nocturnal sweating and lack of appetite and maybe some diarrhea, but it's a disease that comes on over months and is not -- it's one of the hardest of all the infectious diseases to diagnose and there is somebody with nonspecific complaints such as some of the ones we have raised today -- we have heard raised, somebody up there was nontoxic complaints. I found out over the years if you do listen to peoples' complaints they are not in their head when they come to a doctor asking them for help or when they come to the PCA perhaps.

But, anyway, brucellosis is not a disease to take lightly and it is, as I say, a very hard disease to diagnose.

Another one, and this is the last one I promise I won't say any more about these others. Another one that's referred to only very briefly in the EIS is ascarid eggs. Ascarid eggs. What isn't mentioned and should be is that ascariasis, or ascarids, are worms. They are about a quarter of an inch or an eighth of an inch in diameter and they are about two inches to eight inches long and they are very benign, actually, usually and they may infest your intestinal tract and those of your children and not cause any troubles that you can diagnose for a long time unless they suddenly multiply and plug things up, which they sometimes do. But these --

becuase they do get along with their host; namely, man so well they can be spread very easily and certainly the eggs of ascarids are very very long-time survivors, many many months, if not years of viability of these eggs in dust. It doesn't have to be liquid at all and these eggs can live in the soil for long periods of time. So ascariasis, while it is not a particularly severe disease in most people, it is endmic and certainly would not be eliminated by showering in -- showering out kind of things, I wouldn't think. I don't have any evidence for that.

Now I would like to do one other thing and that is I would like to introduce a scientific paper into evidence because of some earlier testimony that this paper is no good. Now this paper, the author of which Doctor Katzenslon. This paper is in what I consider to be one of the, if not the finest, scientific journal; namely, "The Journal of Science" and it comes from November 1976 and I will introduce this into evidence. This is the really study, of course, that was alluded to earlier and was knocked down earlier actually. I would like to say that I do believe that scientific studies should be put into print and if there is opposition to this study that it ought to be in a reputable journal which has peer review such as "Science" which is an excellent journal.

So I would like to read the abstract of that journal, at least some of it, and I would like to not stop and spell all these things if that's all right, but I think this abstract should be entered because this has been knocked down and yet I think this does provide some pretty good evidence about this spray irrigation business we have talked about a little earlier.

It says "The incidences of interica (phonetic) communicable diseases in '77 kabutzin, which are agricultural settlements, are practicing wastewater spray irrigation with partially treated non-disinfectant oxidation pondeffluent, as compared with that in 130 of these kabutzin's, which practice no form of wastewater irrigation. The incidents of shigollogis --" which I parenthetically did not mention because it's not a swine disease, that's a bacterial disease -- "Salmonellosis, typhoid fever, and infectious hepatitis is two to four times higher in communities practicing wastewater irrigation." And there is a lot of other things there that I don't think are relevant, but this paper is in a reputable journal. It does say -- it concludes on the basis of near scientific study that communities which irrigate with the aerosolizing wastewater could be subject to higher diseases and I think it should be entered into the record because it has been maligned a while back.

Let me see. The other thing I wanted to mention that hasn't been brought up at all and that is the additive business. The additives that are placed in hog feeds and I'm concerned also about this personally because I happen to be allergic to penicillin, I suspect, a number of other people in this room are allergic to penicillin. Penicillin is widely added to these animals and I have noted as to whether it could possibly get into the groundwater, how long it would last in the groundwater, but I would think that because of the higher incidents of allergies to penicillin in the surrounding community that might be a question that the PCA would want to address. I certainly would not want any kind of concentration of penicillin in my drinking water and that would constitute a hazard to my own particular health, there is no question about that. However, much more important consideration with respect to these food additives is the formation of the resistant bacteria. I am sure the PCA is very worried about this as well and rightly so because the -- I guess doctors are as guilty of this as anybody else. If a little is good, a lot is better and we figure if we can treat a disease with a bacteria maybe with an antibiotic maybe we can prevent that disease by adding that same antibiotic ahead of time. Well, what happens to many bacteria are because they have so many

generation times -- such a short generation time and they reproduce so fast that they can pass resistance to disease -- develop resistance to disease in a matter of years rather than in a matter of generations -- well, in a matter of years or even months perhaps.

Clearly, the first -- just as one example, the first dosage of penicillin that was used to treat the common disease that penicillin happens to work very well on; namely, gonorrhea, the first dose was 10,000 units, and now most physicians would give one million units of penicillin to treat that same disease in one dose. So we are not talking about something that isn't of major public health problem already. The development of resistant bacteria is truly a major public health problem.

Another kind of bacteria that have developed resistance to antibiotics are the group of bacteria, among which is the disease -- I've got a mental block now, tuberculosis. The microbacteria have been, in the recent past, since 1950 or so, susceptible to various kinds of antibiotics. Some of these microbacteria are possibly transmissible from swine to humans and I will submit the reference for that.

And the additives in these large hog producers that they add these antibiotics may well produce resistant bacteria at an even greater rate. This is a residual of

problems that I think should be addressed and I don't really think -- although that is mentioned, I don't think it's really mentioned with very much emphasis. So that's what I have to say about the public health aspects.

I also would like to raise one objection again as an interested person and that is this business that other people have alluded to and that is so many of our activities seem to be tax related. We seem to have this crazy tax structure in this country that with all these crazy exemptions and much of it does favor capital formation, I mean, favor capital intensive activities, and I feel very strongly that some of this activity wouldn't -- you wouldn't even be bothered by it if it wasn't for the tremendous tax advantages already alluded to.

Thank you very much.

MR. GREENBERG: We will recess for seven minutes and resume at 25 minutes to twelve.

(At this time a recess was had and the Hearing reconvened at 11:45 o'clock P.M.)

MR. GREENBERG: Ladies and gentlemen, if we can begin again. O.K. If the Agency has any questions of Doctor Tinker he has consented to remain and answer whatever questions you may have or respond.

MR. MOILANEN: If I could just make a statement

first. Again, I am with the Attorney General's Office and I am not with the Agency and I have seen this EIS process occur before and I think the people in this room ought to understand something that I see happening here tonight that I haven't seen in other processes like this and that's that the Agency, I think, is to be somewhat commended for attempting to carry on a dialog tonight. The rules don't require the Agency to have come with its technical people. The Agency could have just sent me down here and taken your comments and written them all down and gone home. I could have taken the comments back and then they could have responded within 20 days. I think the Agency knew when it came down here that there were going to be a lot of test questions, but it felt that the issues that were being raised were important and deserve some response and I am not attempting to be an apologist for the Agency, but I think it's important to understand that they have put their cards on the table during the course of this Hearing in a way that a lot of other Agencies just haven't done in the past.

With that I will turn it over to Doctor Bane. May the record show just tremendous applause from the audience. I will turn it over to Mr. McMichael for a response to Dr. Tinker.

MR. MRMICHAEL: Thank you for that overwhelming

support from the Attorney General's Office.

One comment initially, as a fellow scientist I also would throw this document out and would not even consider reviewing it for publication in some journals such as "Science." I think that that should not necessarily be reflective of the accuracy of the document.

I think that the clientele of people we are trying to reach are quite different than somebody we are trying to reach in perhaps a scientific journal and yet I appreciate the detail and the documentation that we are trying to lay out here. Sometimes it's very difficult to strike that kind of a balance.

Secondly, I guess I am kind of interested in your evaluation. You mention the number of diseases and obviously you did know something about those. Do you consider it, and I noticed at one point you were talking about a major public health problem, is that what you consider that we have potentially here?

MR. TINKER: The major public health problem that I was talking about was resistant bacteria.

MR. MCMICHAEL: Yeah.

MR. TINKER: That is a major public health problem, it's been documented in many reports, and the FDA is considering it and I am not at all implying that these three producers are any different in terms of their additives of

penicillin and so on. I am, I guess, implying, and I am only implying, that if you have large concentrations of hogs and that means the economic risk of an epidemic of hog diseases becomes greater and greater and greater and the temptation, if I were running the show, would be to add more and more antibiotics. That's a temptation that is -- you know -- against the directives, but it's a temptation that's nonetheless there and it is a management problem. So the more antibiotics you add the more resistant bacteria you may produce and that is a major public health problem in this country, the formation of resistant bacteria. I will stand by that.

I would like to, if I could, respond to that first statement of yours about science. I do not -- I happen to have a small grant from the NIH to do scientific research, so I do consider myself a scientist, but I don't really think that we should eliminate the general public from science. I still believe there is such a thing as truth in here somewhere and if that takes science to get it out I think the general public ought to be allowed to participate in a scientific process and a scientific process to me is one that requires peer review and is one that does go into meticulous detail, as best we can, with whatever is known and let the chips fall where they may.

MR. MCMICHAEL: Well, I agree, but I don't think

that -- you know -- it's proper for this Environmental Impact Statement to be written in medical terms to the point where people can't understand it. I think you agree.

MR. TINKER: I agree with that, yes, absolutely.

MR. MCMICHAEL: And I think, again, we have to try and strike a balance here between what we feel that the public will understand and what is technically acceptable to all of the various specialists in the area. But again, I guess, dwelling on the point, you mentioned about a National problem and a potential on the National level. Can we bring your evaluation down to this level, these three facilities?

MR. TINKER: Yes.

MR. MCMICHAEL: I mean, what do you regard as the potential?

MR. TINKER: If one of these worst case conditions, like the engine falling off of a DC-10, were to happen; i.e., a sink hole forming underneath one of these lagoons and wells becoming a contaminated area, and I am no hydrologist or geologist, but if the wells in the area were to become contaminated certainly the infants in that area would be under the direct possibility of methemoglobanemia. I think that would be a local major public health problem if all the infants in that area were

subjected to methemoglobanemia. My point is this, the ingestion of nitrite -- nitrates does not sometimes produce methemoglobanemia, it's a dose related phenomena, the more you take the more likely you will be to get it. It's not a here or there type of thing and so if nitrates get into wells, as any public health official will tell you, this is why they work so very hard to keep them out. This is one of the reasons. Yeah, I think that would be a major health problem, but I agree, it's unlikely, as you have said, the geologists have said as well.

MR. MCMICHAEL: O.K. Well, that kind of gets to the bottom line here then in trying to assess what the potential is and I'm trying to, as accurately, as I can, try and get a feeling for what you think the potential is.

MR. TINKER: Right. I assess risk every day in my own practice and I have written several papers on risk of technical things happening in anesthesia. O.K. So I have studied risk and the risk has always got to be balanced against the benefit ratio and the higher the risk -- what I am trying to say is that, the kinds of questions that need to be asked are how many cases of meningitis occur per year per let's say County, will you tolerate it? Will you tolerate one? Will you tolerate two? These kinds of questions are just unanswerable because our own

political and medical system has always said we should treat everybody as carefully as we can. We should treat every individual as being the most important guy around.

So in today's society we wouldn't tolerate any cases of meningitis or cases of salmonellosis, or any of these other diseases. You know, it is not a great statistical risk. It is a low statistical risk, no question about that. But you have to ask yourself -- you know -- how many cases, as I do in the operating room, how many cases of death on the operating table am I going to tolerate. And the answer to that in today's society in America is none. We are in a zero risk -- trying to get to zero risk. I realize we aren't going to get there, but how many cases will you tolerate? This is a risk. It is a risk. And, very frankly, I didn't think it was as great a risk until I heard the testimony of the geologist about the very -- the distinct possibility of these holes forming underneath the thing. I guess I think it's a bigger risk right now than I did four hours ago, to tell you the truth.

MR. MCMICHAEL: That's a benefit of a public meeting of this kind.

I assume from the comments that you have made that you would like to see in the draft EIS an expanded discussion of the diseases you mentioned and the effects?

MR. TINKER: Yes.

MR. MCMICHAEL: Is that basically the substance?

MR. TINKER: Yes, and consonant on this, I would fully support Ms. Kersch's recommendation that instead of the lagoon something maybe a little safer from this standpoint in the tank with the cement like the floor kind of business. I don't know very much about the technical aspects of that but rather than having kind of a glorified use of saran wrap between me and those diseases I think I would rather have a chunk of concrete and a piece of steel. I'm thinking totally as a layman on that. But I guess that is a correlary notion that I should mention in there.

MR. DEFIEUX: Before I pass this along to Dr. Bane and Dr. Loehr, I just want to very quickly mention, you started out what seems like a long time ago now discussing methemoglobanemia and I agree with your statement that the wording is such that on page 5-25 that the reader could infer that it's only a problem with infants and no one meant to imply that and the wording will change accordingly. I think Dr. Bane is going to talk briefly about some of the diseases you mentioned.

MR. BANE: I don't want to refute anything you said, Dr. Tinker, but I just want to clarify a few points that should be specific for these three operations that we are

concerned with this evening. I will start out with leptospirosis. You did say that that can be vaccinated and that is true and vaccination is extremely effective against it. It decreases shedding to zero and there is no shedding of organisms after a vaccination. The majority of the leptospirosis organisms that we come in contact with can probably be traced back to wild animal reservoirs, that's where the majority are coming from. The confinement facilities like we are dealing with are going to decrease the pig contact with these wild animals. These animals are going to be confined inside buildings, closed gates, closed doors and have decreased contact with the wild animals, therefore, probably it will decrease exposure to the leptospirosis organisms.

Also, there is some indication that the lepto organism in the manure slurry have decreased spirosis. There is some evidence that they do remain alive but they are unable to cause disease when given or injected back into laboratory animals.

The next disease you talked about was salmonellosis. Salmonellosis we commonly think of as a feeder pig type disease. We talked about different methods of raising pigs. We want to make a distinction between feeder pigs and a farrow to finish operation. The three operations that we are dealing with here are farrow to finish.

Feeder pig operations the pigs are usually purchased after they are weaned off the sow and they are fed out from that period on and usually these pigs are assembled from a different site or out of the country on the one farm and then you have these pigs come in contact with strange pigs, but they don't have common intestinal microorganisms and, therefore, they seem to be more commonly involved with salmonellosis outbreaks. Breeding herds, on the other hand, are relatively close. We don't have any mixing of animals from one area to the other and, therefore, we have less problems with this type of disease.

MR. TINKER: Could I interject something there now?

MR. BANE: Yeah.

MR. TINKER: Suppose you had a pig that is not clinically ill but he could carry salmonella, I am no vet, but is that right?

MR. BANE: That is correct.

MR. TINKER: So there could be a pig, or two, or 100 in this facility that is a carrier and, therefore, a shedder?

MR. BANE: Well, that's not exactly true because if the pig has been on the farm all its life there is no way he could pick up salmonella organisms if there is none to start with.

MR. TINKER: But if the disease can be present

without the farmer's knowledge then the disease could be there all along actually. I mean, it could be there in a silent form, as I understand salmonella.

MR. BANE: That is right. O.K. The next disease we talked about was brucellosis. There is a widespread blood testing program in most breeding stock that is followed throughout the State. What happens when animals of breeder stock are blood tested and are found positive as to brucellosis, these animals are not retained in the herd. Any kind of treatment is not attempted. These animals go directly to slaughter.

And I guess I should end up my discussion on brucellosis by saying it is a relatively uncommon disease, as we see it in Minnesota swine today.

MR. TINKER: I would like to ask you one more question. You are a veterinarian?

MR. BANE: Correct.

MR. TINKER: And of all the zoonatic diseases which one are you the most worried about catching, is that brucellosis?

MR. BANE: I don't think that's really pertinent because I think most of the brucellosis probably comes from cattle people so --

MR. TINKER: It's not the swine people, it's the cattle people?

MR. BANE: Right.

MR. TINKER: But you wouldn't agree, and I think I'm right when I say that brucellosis is a tough disease to diagnose?

MR. BANE: Yes.

MR. TINKER: For us as physicians?

MR. BANE: Yes. O.K. I should say these three diseases, brucellosis, solmonellosis and leptospirosis would be extremely toxic diseases if there was an outbreak that did occur and in these livestock herds and it would be and extreme financial disadvantage if these three diseases were allowed to continue and there was an active amount of shedding into the environment. So it would be really difficult for him to maintain optimum production in the presence of anyone or a combination of these three diseases. So it's really advantageous for him to limit these three diseases as much as possible in these swine collection facilities.

MR. TINKER: But I hope you can see that I really don't care about that at this point. When it comes down to leptospirosis I won't know how to diagnose it because I would have to read the symptoms again and that is a rare disease so I'm worried about -- you know -- me.

MR. BANE: O.K. You talked a little about ascariasis or ascar infection. This, again, is not a really big

problem in the confinement of swine. Ascarid eggs, as they are passed out in the manure, these eggs have to remain in the environment for 14 days before the eggs become infected to another animal. With our confinement facilities, the manure passes through the slats and the eggs don't remain viable in the manure slurry environment, they are washed away -- you know -- the pigs aren't exposed to ascarids. Also, on most swine herds there are routine and extremely effective treatment programs for ascarid infections.

Now I want to address a little bit the feed additive problem. The FDA is extremely concerned about the feed additive situation as are most veterinarians.

Do you have any documented evidence of transfer of resistance transfer factors from animals to man?

MR. TINKER: Well, if you mean a resistance transfer factor of bacteria --

MR. BANE: Or resistant organisms?

MR. TINKER: Well, let me explain what I mean by the words "Resistant transfer factor." What I mean by that is the formation between the two bacteria of a bridge -- two bacteria that were separate little round organisms can join together to form a bridge and going across that bridge can be found DNA. And that's what I mean by resistance transfer factor. No, it doesn't

transfer to the human. What it does is a resistant bacteria is well-known to be able to transfer its resistance to an antibiotic to another bacteria. It's kind of a mating, if you will, of bacteria. They actually do it, that's been known for years, it must have been known for years if I know it. And the resistance transfer of bacteria has got to be one of the major reasons for the development of these resistance forms, I'm not sure it's the only reason.

MR. BANE: But do you have any documented evidance of transfer of this trait, from animals to man?

MR. TINKER: "Trait." Well, if I had a salmonella organism that was developed in a hog and was made resistant to an antibiotic in that hog then that salmonella organism would have been more resistant to me had it not been made resistant.

MR. BANE: But since they have been there for 25 years there are no instances of transfer of animals to man, am I correct in that?

MR. TINKER: No, I don't think so. The microbacteria -- the TB bacteria, which there are, at least according to my reference anyway, endemic to hogs can be -- we know that microbacteria -- there are many different forms of microbacteria which formerly didn't cause disease or were totally resistant to antibiotics. So whether they were

bred in hogs I can't answer that, but the bacteria -- some of the bacteria that are on my list, anyway, as possible disease factors of hogs are being made resistant, I think.

MR. BANE: Well, I agree with you 100 percent, but the scientific community too states what you say happens.

MR. TINKER: Well, I would like to argue with your idea of transferring resistance to antibiotics. My body doesn't have any resistance to penicillin. Penicillin doesn't work on me, but penicillin will generate resistant bacteria or give me an allergic reaction too.

MR. BANE: I guess I would talk to you about this a little bit later, but the crux of the argument, as I understand it, is that we are worried -- FDA is worried about organisms transferring resistance -- resistant organisms in animals and their ability to resist antibiotics to organisms in the intestinal track of humans. Therefore, they would become resistant to antibiotics and, therefore, creating super-infections that we are unable to treat.

MR. TINKER: I agree.

MR. BANE: And that has never been proven.

MR. TINKER: I agree. There is one bacteria, however, bacteria which the resistant factor that was discovered, if I'm not wrong, e. coli -- very common intestinal bacteria. The pathogenic, that is, the bad toxic forms of

that bacteria, cause really quite riproaring diarrhea, but I agree, there is no --

MR. BANE: O.K. It's interesting that you should bring up e. coli, because that's the last point I want to make about feed animals. There is a trend now in progressive swine practices in large swine facilities now, a trend away from treatment and more toward prevention. We do have extremely effective vaccines now for e. coli organisms and there are some being developed for salmonella also. So in the future we may not be treating it, but may in fact be preventing them with vaccination.

MR. TINKER: I hope so. That gets back to management.

MR. BANE: Thank you for your comments, doctor.

MR. TINKER: Thank you.

MR. GREENBERG: Any questions?

MR. DEFIEUX: Doctor Loehr is going to briefly respond to the mention of the Israeli article.

MR. LOEHR: Doctor Tinker's comments inferred that I maligned or that the article itself maligned. I think the record will show that what was said was that I was urging caution in extrapolating data from a different geographical, meteorological, hydrological and application sense than conditions in the United States. The studies that have taken place in the United States, in Europe,

in Australia, in other countries have not yet borne out the Israeli data. There was no maligning intended. What I was attempting to do was to identify more recent -- more complete data that had been threatened that is not yet in the particular article that Doctor Tinker has entered into the record.

The Environmental Protection Agency, because of its concern about the material that has appeared in the article Doctor Tinker has entered into the record, has entertained and financed a fairly exhaustive prospective and retrospective study in Israel that is ongoing currently. In the last two weeks there has been meetings around the country with the Environmental Protection Agency attempting to advise and show how land treatment systems can be designed. And at those meetings, which were held in Chicago, Atlanta, Phoenix, Boise and Boston, those people from the Environmental Protection Agency gave a very exhaustive study on the details about the public health hazards associated with the aerosol question. With reporting on the data, which have not yet been released, we showed that more extensive studies coming from the Israeli situation are indicated that that must be considered as a preliminary document, not as a complete document, and the more exhaustive studies are indeed showing that there are other mitigating affects.

So one cannot draw the conclusion that there is an obvious difference simply because in one situation wastewater was applied, in other words, there were -- not others, but there were different things. If one gets into discussions with the authors of those documents, Doctor Calmetson (phonetic), Doctor Schussel (phonetic), and others who have been following these various studies, they will admit that they now have some concerns about what was in that article. Now that they feel that it's inaccurate, but they feel that greater information has now been gathered which sheds different light upon that.

If you would wish I would be very happy to provide you with a name of the project officer and his telephone number from the Environmental Protection Agency that can fill you in on all the details of the latest study.

MR. TINKER: I have no response to that other than to say that all I can do is what I read. I do not mean to say that you maligned this study. I said -- what I mean to say is that this is incomplete, that's all I meant to say.

MR. LOEHR: I wonder if I may ask a question, Doctor Tinker. When you were talking about your concern about methemoglobanemia, which indeed is a concern, and the nitrate problem, were you putting that in the context of the worst case situation, for instance, of a sink hole

occurring right at or underneath one of these ponds?

MR. TINKER: I have -- if a sink hole -- if a worst case condition were to occur I have no idea how far the nitrate pollution would spread into whose wells. My only contention is that since the wells aren't counted in this document we don't know. I'm not sure that counting the wells would do the whole job, but I have no idea how far that would spread, nor do I know -- and I didn't ever say that I -- I never said that application of this manure in the soil at the proper rates, as written down very nicely here, would necessarily pollute anybody's well. I'm not implying that. In the worst case condition I don't know how far it's going to go.

MR. LOEHR: Let me simply offer some thoughts that we all might wonder about with regard to the worst case situation. With regard to the lagoon, it will be an anaerobic lagoon, but by the very loading on it we are not going to have nitrates in it. In the worst case situation of the sink hole, let's say occurring right underneath it so the whole thing goes whoosh down, as Doctor Alexander identified, it could happen. We will find then that what we are having going into that subterrainean channel, going someplace from which the wells might tap, those situations, primarily the nitrogen in the form of ammonia or organic -- the case of it going

into nitrate would have to occur only if we have some aerobic conditions whereby the nitrofying bacteria could produce the nitrate. Now the documentation that was indicated by Doctor Alexander, the typical movement from that kind of a sink hole is relatively rapid, moving in whatever number you like, minutes, hours, or days, at least. I was wondering if it might not be possible, in the first instance, a notice of something like that in peoples' wells might not really be a taste and odor problem and certainly not likely to be a nitrite problem. This does not negate any other type of a problem that might be associated with that, but I'm wondering if under worst case situation we might not have an obvious condition that would mitigate against nitrate gas leak problem. However, there are other situations where we might have it, but probably not under the worst case situation.

MR. TINKER: I agree, no problem.

MR. GREENBERG: Doctor Alexander, do you have a comment on something that was just said?

MR. ALEXANDER: I am a little bit distressed, as I am sure you must be, to see this discussion going in terms of the catastrophic sink hole failure because I don't view that as the probable event. It is not an impossible event, however. To my mind the worst case event is not a catastrophic failure, it's the six inch

rain that happens a day or two after you spread the manure in the fall and then it simply runs down the nearest drainage and these farms in general are sitting right on that drainage device so they will not get one but two drainages. I simply go back to the West Plains event and 750 people got sick before they could tell people to stop drinking the water. It happens.

The other answer to your question is, yes, the anaerobically digested hog manure drops down the sink hole and spreads horizontally, but what happens to it then, it comes out someplace and runs down the stream. I mean, it doesn't disappear, it goes into the ground and it dribbles out.

MR. TINKER: For a good approximation to it. And who pays for all of the peoples' wells, I mean, you are right, you can probably tell them "Don't feed your kids this water," you know, drink boiled water and if you drink it fast enough you won't have children dying all over the place, but what you are saying is don't drink that water for a year, or two years, or three years. I don't know how long, some length of time and who is going to buy those people new wells?

MR. LOEHR: I have no comment. The discussion was simply trying to put in a technical perspective of the situation under the worst case condition, which was

potentially brought up by Doctor Tinker.

MR. TINKER: This is a quote regarding the last statement. This is a quote from the January 1979 Minnesota Health Department Publication entitled "Problems Relating to Safe Water Supply in Southeastern Minnesota." This is one of their summary statements, it happens to be number three, it happens to be on page 66 and it says "Groundwater Aquifers Can be Contaminated by a Wide Variety of Land Use Practices and, once Contaminated are difficult and Impossible to rehabilitate."

So when he says one year I guess it might even be forever. So I would leave it with that.

MR. GREENBERG: Any other questions or comments?

(No response.)

MR. GREENBERG: This Hearing will stand recessed to 7:00 o'clock P.M. on July 5th in the same general hospital complex, notice of which will be at the notice board upstairs.

* * *

REPORTER'S CERTIFICATE

I, Kirby A. Kennedy, do hereby certify that I recorded in stenotype the Hearing on the foregoing matter on the 25th day of June, 1979, at Rochester, Minnesota;

That I was then and there a notary public in and for the County of Washington, State of Minnesota;

I further certify that thereafter and on that same date I transcribed into typewriting under my direction the foregoing transcript of said recorded Hearing, which transcript consists of the 173 typewritten pages.

I further certify that said interview is true and correct to the best of my ability.

Kirby A. Kennedy, Court Reporter

STATE OF MINNESOTA

MINNESOTA POLLUTION CONTROL AGENCY

Public Meeting on the Penz Farms Company/Darwin Schroeder/ Hilltop Pork Producers Confined Swine Facilities Draft Environmental Impact Statement.

VOLUME II

The above-entitled Hearing came duly on before Myron Greenberg, Hearing Examiner, State Office of Hearing Examiners, on the 5th day of July, 1979, at the State Highway Building, Highway 52 North, Rochester, Minnesota, commencing at approximately 7:00 o'clock P.M.

* * *

MPCA Staff Members Present:

Robert Moilanen, SSAG

Rick Defieux

Janet Cain

David Bane

* * *

WHEREUPON, the following proceedings were duly had: --

* * *

I N D E X

STATEMENTS:	PAGE	STATEMENTS:	PAGE
Doris Blinks	181	Calvin Alexander	233
Ronald Faust	186	John Davidson	250
Susan Rohl	188	Robert Sloan	262
John Regehr	194	Bruce Thompson	263
Len Feuling	199	Don Kunde	266
Laura Perrett	202	Eric Mohring	275
Carol Mestad	211	John Tinker	284
Lyndon Olson	214		
Lavonne Feuling	223		
Sharalla Regehr	228		
Gary Esterby	231		

MR. GREENBERG: This Hearing is called to order. This is a continuation of the Hearing in the matter of a public meeting to receive comments and questions regarding Penz Company, Darwin Schroeder, Hilltop Pork Producers Confined Swine Facilities on the draft Environmental Impact Statement.

My name is Myron Greenberg, I am the Hearing Examiner in this matter. We are continuing this Hearing today, July 5th, here in the State Highway Building on Highway 52 in Rochester, Minnesota, pursuant to a continuation notice to those present at the Hearing which began on the 25th day of June.

Just to make a brief comment, let me see a show of hands of those who were present at that Hearing.

(Indicating.)

MR. GREENBERG: We will continue taking questions and comments regarding the draft Environmental Impact Statement and continue to have with us the representatives of the Minnesota Pollution Control Agency and certain individuals which they have employed, who I understand have been involved in the preparation of the draft Environmental Impact Statement.

Before we begin with taking of comments I will allow the PCA to make any comment that they have at this time.

Let me just advise everyone present that at the

conclusion of this Hearing, which I assume will conclude this evening, there will be an opportunity to present written comments by sending them to my attention and I will gather the comments and then submit them 20 days after the Hearing to the Director of the Pollution Control Agency and the Pollution Control Agency will then make the decision as to the completing of the Final Environmental Impact Statement. If at the end of the Hearing, if anyone needs my address, I have cards or I will make an announcement at the end of the Hearing.

Mr. Moilanen.

MR. MOILANEN: Thank you. We will just begin with a very brief opening comment. My name is Robert Moilanen, I am a Special Assistant Attorney General and I am assisting the Minnesota Pollution Control Agency in conducting this public meeting.

I think it is important to understand why we are here. We are not here tonight, first of all, to decide on whether or not permits should be issued for the three facilities that were the subject of the Environmental Impact Statement. Subsequent Hearings will be held on the issuance of those permits. Nor are we here tonight to make a determination as to the adequacy or inadequacy of the Environmental Impact Statement, that will be done at subsequent meetings by the Minnesota Pollution Control

Agency Board and the Minnesota Environmental Quality Council. However, we are here tonight to discuss with you the adequacy and the inadequacy of the Draft Environmental Impact Statement. This opportunity for public comments and discussion is afforded to interested parties by the rules governing the Drafting of Environmental Impact Statements. The comments made this evening will become part of the Final Environmental Impact Statement.

I want to assure you at the beginning of this meeting that the Agency looks forward to your participation tonight.

Let me begin by introducing Ms. Janet Cain, who is on my right. She was the Project Manager for the Agency in the preparation of this Draft Environmental Statement. On Ms. Cain's right is Rick Defieux and he is with Environmental Research and Technology. He is a hydrologist and he was the Project Manager for ERT in the preparation of this document. Environmental Research and Technology assisted the Agency in developing this Environmental Impact Statement. Also, I would like to take the opportunity to introduce Mr. Larry Lander, of the Minnesota Pollution Control Agency Regional Office in Rochester. He is here this evening. Doctor David Bane will be joining us later. He worked on the Health Impact of the Environmental Impact Statement and he has been delayed in

coming tonight because of some problem at the airport in Minneapolis.

There is one final preparatory note I would just like to introduce a few documents into the record of this meeting. One is a copy of the Notice of Continuation of Public -- of this Public Meeting and this Notice was published in the Rochester Post Bulletin. The Agency attempted to publish it in the Cannon Falls Beacon but was told that that paper would only go to print today and the Agency felt that that would not be sufficient to assist people this evening. However, the Agency did mail out to a number of their participants in the last meeting a copy of this Notice and I have an Affidavit of Mailing and a Publication with an attached mailing list on it. So the Affidavit, the Notice, the rejection from the Cannon Falls Beacon and one final item are these documents, they are entitled "Technical Work Papers," and they are the work papers that went into the preparation of the Draft Environmental Impact Statement. We do not have many copies of these. Mr. Lander, who is sitting in the audience, has a copy of these. He will be happy to share these documents with you this evening, otherwise a copy of all of these documents will be in our regional office as in our main office and are available for your inspection at any time.

So with that note I would like to introduce these four documents into this record.

MR. GREENBERG: They are received.

MR. MOILANEN: And with that I will just note that Ms. Blinks requested to speak first because she has a subsequent meeting to go to and it is fine with the Agency if she has an opportunity to go ahead at this time.

MR. GREENBERG: Commissioner.

MS. BLINKS: I am Doris D-o-r-i-s Blinks B-l-i-n-k-s, 2715 Salem Road Southwest, Rochester, Minnesota.

I speak only in relation to the two Olmsted County proposals. My primary concern is land use. I am a member of the Olmsted County Planning Advisory Commission, as well as a member of the committee appointed by the County Board to investigate feedlot regulation in Olmsted County.

I had expected the EIS under consideration to provide some criteria -- facts on which to base future land use decisions, specifically siting and evaluation of future large feedlot proposals. I do not find that the draft EIS has done this. It addresses problems only in general terms, such as protection of ground water; surface runoff, wind velocity and direction and management practices. I respectfully request that these generalities

be made more specific before filing of the Final EIS.

Olmsted County has a combination of problems uncommon in Minnesota -- a rapidly increasing non-farm population and residential growth rate, a major agricultural component of land use and the County's economy and a geological Karst topography in large areas of the County. A pure water source is of primary importance to both non-farm and agricultural uses. The problems associated with groundwater in a Karst topography are clearly addressed in the January 1979 report to the Legislative Commission on Minnesota Resources relating to Safe Water Supply in Southeastern Minnesota, cited in the Draft EIS. This report strongly recommends critical site and hydrologic system evaluation for developments which involve potentially polluting effluents. It was my expectation that the Draft EIS would provide such critical site evaluation but find that it addresses sites primarily in general terms. One shallow soil boring per site and one test well 3,500 feet away from one site do not provide enough data for critical site evaluation.

Also, given the capability for area-wide groundwater contamination, I would expect the EIS to evaluate proposed technology. The acknowledged expectation of seepage, as well as potential rupture of storage basins using plastic liners would seem to deserve more attention than is given

to safer available technology such as above ground glass-lined storage tanks.

Additionally, the EIS assumes optimal management practices but does not address the question of what would happen if management's attention to environmentally sensitive factors was not adequate. The complaint/nuisance suit route would be too slow to prevent major pollution to groundwater in the event of leakage of storage tanks, overflow, surface water runoff, et cetera. Responses to poor management which could accomplish immediate correction should be considered by the EIS; perhaps fines or bonding.

The impact of a mistake in the siting or operation of these feedlots could extend so far because of the area geology that I urge inclusion of these considerations in the Final EIS. There are too many people and too many animals dependent on safe water supply to take chances. Inclusion of more current population figures would show that Havehill Township is no longer a slow growth area. One hundred new houses have been built since 1970.

Other matters which the Draft EIS inadequately considers are the increased potential for pollutant runoff to surface waters associated with spray irrigation as compared with incorporation of manure into the soil. Also, since wind direction and to a lesser degree velocity are

associated with the topography of a specific site, the wind direction information given should be supplemented by evaluation at each of the proposed sites to verify correlation with the figures recorded at the Rochester Airport.

One matter is included in the Draft EIS which I believe is not pertinent and should be removed. The existing cattle feedlot with uncontrolled runoff at the Schroeder site is an entirely separate problem which should be corrected immediately and independently of whether or not the proposed swine operation is permitted. In fact this is an example of the slow correctional response time cited earlier.

You have heard a lot of technically specific testimony. I hope that by the time this EIS becomes final it will answer the questions which have been raised and will provide a model for future evaluation of large confined feedlot facilities and operations.

Thank you.

MR. GREENBERG: Any questions of the Commissioner?

MS. CAIN: I have one question.

MR. GREENBERG: Ms. Cain.

MS. CAIN: You mentioned that there is new population data available and 100 new houses. Is there some additional information beside that?

MS. BLINKS: That's available from the Consolidated Planning Office.

MS. CAIN: And what address was that?

MS. BLINKS: Third Street Southeast. It's in the phone book, it's a Highway Department Building.

MS. CAIN: O.K. And what would we ask for, just the new population data information that's been developed within the last --

MS. BLINKS: Yes. I believe that Mr. Phillip Wheeler, the Director of Long Range Planning, has used these figures in compiling the current land use plan.

MS. CAIN: Thank you.

MR. GREENBERG: Any other questions?

(No response.)

MR. GREENBERG: Thank you, Commissioner.

MR. FLORES: I have a statement, sir. I am a Town Board Supervisor for that Township.

MR. GREENBERG: Do you want to step to the microphone and identify yourself?

MR. FLORES: There is no --

MR. GREENBERG: Just a moment. What is your name, sir?

MR. FLORES: Dick Flores F-l-o-r-e-s. It averages to about ten houses per year. We would still like to have it sort of restricted, mostly agricultural. You can

find documentation also by contacting our Township Clerk, Jerome Lawler -- Township Clerk, Rural Route 2, Eyota, Minnesota. It's close to the City but it's still rural.

Thank you.

MR. GREENBERG: Any additional questions or comments?

(No response.)

MR. GREENBERG: Anyone who wishes to make a comment or raise a question? Yes, sir.

MR. FAUST: I am Doctor Ronald Faust F-a-u-s-t.

I'm speaking as Chairman of the local Wasioja group of the Sierra Club. The Sierra Club was founded in 1892 and works in the United States and other countries to restore the quality of the natural environment and to maintain the integrity of ecosystems.

Those members of the Sierra Club who read the Environmental Impact Statement found it to be very vague and of poor quality. Many parts of it appeared to be based on oversimplifications and not on actual field investigations. For example, statements of prevailing wind were based on conditions at the Rochester Airport, many miles away from the actual confinement sites being planned.

This Draft Environment Impact State (EIS) deals with serious potential environmental problems. The major of these are (1) groundwater and stream contamination;

(2) air quality reduction odors; and (3) aerosol spread of disease.

Each of these problems is being examined at this Hearing by other interested individuals. The purpose of my testimony is (1) to present to the Minnesota Pollution Control Agency (MPCA) the Sierra Club's interest in and awareness of the environmental issues raised by this Draft EIS and (2) to ask the MPCA in its deliberations to consider how it has and how it will correct these environmental and health problems should they occur. Well contamination adjacent to a hog operation has already occurred in our local area. Such contamination is a clear health problem. Odor has been a problem for neighbors miles from confined hog operations. Citizens groups have had to bear the burden in daily life, in time and in money in trying to correct this problem.

The Sierra Club asks the MPCA to consider the enormous potention for environmental damage with these projects and find a way to allow business to grow without these great risks to the environment, and with clear written means of correcting any environmental damage which might occur.

Thank you.

MR. GREENBERG: Any questions of Dr. Faust?

MS. CAIN: I just have on comment and that is we

recognize many times that we would like to do a lot more field work and investigatory work. The Environmental Impact Statement, by regulation, deals with information which is currently available and this is one of the problems we run into many times is that often we don't find information available and certainly through this and through the contributions of many people in this room we are learning more and more, but we recognize that and we hope that with the help of interested citizens and so forth we can move in that direction that oftentimes field work and original data collection isn't possible in this kind of process.

MR. GREENBERG: Thank you. Any other questions or comments?

MS. ROHL: My name is Susan Rohl and I am secretary for Concerned Citizens of Goodhue County.

MR. GREENBERG: How do you spell your last name?

MS. ROHL: R-o-h-l. We do not feel that you have addressed the very important issue of site examination in regard to the Hilltop Proposal. Information was provided regarding shallow wells, springs, sink holes, a boring done one mile northeast for a natural gas storage site, and holes in the hillside north of application parcel A. To the best of my knowledge no effort was made to contact any of our group or return the form letter to

Janet Cain.

To further show how unfamiliar you are with our area could you tell me when the Township road south of the proposed site became a County Road as stated on pages 3-5 and 3-10?

Also, you might want to put the Town Hall back in Goodhue County. I think some of the other buildings are located in the wrong spot.

On pages 4-56, 4-59, 5-20 you refer to our "Intermittent stream." And on page 4-90 you state "No fish population expected to occur."

Now this spring fed limerock bottom stream has flowed the 19 years that the Nesseths have lived in the valley below the proposed site. I am including pictures of trout that my boys have caught in the stream. I believe they are brown trout and rainbow and they are 15 to 19 inches long.

I am including a list of people with shallow wells or springs in our area also and a list of two of the well-drillers in the area who do a lot of work so they might give you more information on borings.

I also have a statement that the couple right next to the site sent. They were here at last week's Hearing but they were on vacation this week and they have asked me to read this, is that all right?

MR. GREENBERG: No, that can be submitted in writing into the record.

MS. ROHL: O.K. I will turn that in to you then. O.K. Thank you.

I will give you their -- I am going to mail mine because I have to get a copy.

MR. GREENBERG: O.K.

MR. MOILANEN: Ms. Rohl, can I just ask, are you going to submit in writing what you read into the record?

MS. ROHL: Yes, it's right here.

MR. MOILANEN: I missed a couple of pages. Are you going to submit it?

MS. ROHL: I am going to mail it in later. I have a copy I have to give to Dr. Alexander.

MR. MOILANEN: Fine. Thank you.

MR. DEPIEUX: I just wanted to clarify where the spring was that we are talking about, the intermittent steam. I hope everyone doesn't run out there to go trout fishing.

MR. GREENBERG: Would you identify the page that you are looking at and the location that you are describing?

MS. ROHL: Yes.

MR. GREENBERG: And you are looking at the Draft Environmental Impact Statement?

MS. ROHL: My place is right here (indicating).

MR. GREENBERG: Where is "Right here?"

MS. ROHL: He can locate it for you.

MR. GREENBERG: Excuse me, just a minute. Just a minute. I will have to have one person speaking at a time and I want you to identify the page you are on, the location by some method on the map.

MR. DEPIEUX: Page 3-13 of the Draft Environmental Impact Statement. We are referring to a house approximately one mile southeast of the Hilltop Pork Producers Facility Site and the stream abuts the property.

MS. ROHL: It flows past the site.

MR. GREENBERG: Thank you. Anyone else wish to make a comment or raise a question? Yes, ma'm.

MS. NESSETH: My name is LaVerne Nesseth N-e-s-s-e-t-h. I live less than five tenths of a mile away from the proposed site.

A SPECTATOR: Speak up.

MS. NESSETH: I live less than five tenths of a mile away from the proposed site. I am concerned about Hilltop Pork Producers proposal because:

Any changes in the value of property surrounding the proposed facilities sites would be caused by the effect of odor produced during operation. Since the proposed operations would not interfere with any of the factors that contribute to the value of adjacent agricultural

land, it is highly unlikely that these values would be affected. However it is possible that the value of the farm residences adjacent to or near the facilities sites would decline.

We have lived on our farm 19 years this year and are proud of it. Someone devaluing my home for their own benefit is inexcusable. The study admits to this. To me a farm is not complete without an occupied farm home. We have a dairy farm and set up for Grade A. Our home and family are being threatened by big-time tax benefit farmers.

The runoff from this proposed site is excessive. This runoff drains directly for animals to live in it. There are many springs in the area. We have a few in our pasture. The family west of the site receive their drinking water from a spring in the hill and runs into their house. They have no pressure pump to get their water into their house. And this is their only drinking water.

On page 3-18 it refers to existing livestock operations. It is stated that manure is not spread from this existing swing operation and it's spread twice a year. Hogwash. He spreads on that site a lot and any time he feels like it. I can sit at my kitchen table and I can watch him spread and that is on the parcel of land,

Section A, and it has to be thoroughly saturated by now. When he spreads the odors filter through my house and stays for supper.

MR. GREENBERG: Any questions of Ms. Nesseth?

MS. CAIN: Yes.

MR. GREENBERG: Ms. Cain.

MS. CAIN: Yes. Are you going to submit that in writing?

MS. NESSETH: Uh huh.

MR. MOILANEN: Ms. Nesseth, could I ask you to just step up here and refer to a map and point to the seizure which you mentioned and, as requested by the Hearing Examiner, please identify the page number of the Draft Environmental Impact Statement.

MS. NESSETH: Page 3-13. There is a map here of the sites -- facility Site A and that's the one I'm talking about. This would be up right along -- there is woods there they cleared away.

MR. GREENBERG: Where?

MR. DEFIEUX: I will clarify it in a second.

MS. NESSETH: And it's right at the end and then there is a drop down at the creek.

MR. DEFIEUX: Ms. Nesseth is pointing on page 3-13 to the northwestern corner of the proposed manure application parcel A on Figure 3.2-3.

MR. MOILANEN: Thank you, Ms. Nesseth.

MR. GREENBERG: Any other questions or comments? Yes, sir.

MR. REGEHR: My name John Regehr R-e-g-e-h-r. Including my wife's grandfather, who lives with us, there are six in our family. We live just a little over a half a mile from a large confinement hog farm in Rockdale Township here in Olmsted County. The hog farm has 17 confinement buildings and a total capacity of about 3,000 hogs. The buildings have holding pits which overflow into a two-stage lagoon system. The lagoons cover about five acres and are emptied by spray irrigation onto croplands. The facility was built and first operated by Midwest Swine Breeders, Incorporated in 1971. A few years later it was sold to Babcock Swine Incorporated who operated it through 1977. The facility is presently owned and operated by Penz Farms Company under the name of International Swine.

Throughout this Draft Environmental Impact Statement good management practices are assumed. Adverse odor, water quality and public health affects are considered unlikely. From our eight years of experience living next to a large hog confinement facility I would like to discuss these effects or impacts one at a time.

First, let's take the odor. The odor is probably

our singlemost serious problem. We live in the most undesirable direction from the hogfarm, north. We get your standard southern lake-breezes and wastewater winds most of the summer. Testimony that's already been given as to how odor affects or impacts the quality of life for those of us who live near the hog facility is all too true. An impact study on odor effects does not have to be made using inadequate modeling and single odorants and textbook analysis. People living near these farms, from all over Minnesota, people from our neighborhood, many of who are here tonight, can provide you with much better true-to-life data. This data is based not on chemical breakdown of odorants but simply how this very offensive hog odor impacts our daily lives.

Many mitigating measures have been tried by the past owner to combat this serious odor problem. Chemicals were added to the wastewater to improve the oxidation, the odorants were tried and aeration was attempted by a lagoon storing machine. These had only very small affects on the level of odor. They did not substantially reduce or eliminate odors as this EIS claims.

Water Quality. Section 5-5.2, Water Quality and 7.1 Adverse Impacts, would lead one to believe that the probability or potential of accidental runoff is considered to be low. In the real world experience with the

hog farm in Rockdale Township -- I'm sorry -- if the real world experience with the hog farm in Rockdale Township has any merit the words "Is considered the low" should be changed to "Can be expected."

Improper irrigation practices by every owner have repeatedly resulted in significant amounts of runoff into streams. Insufficient irrigation has resulted in lagoon overflow, not so accidental runoff has occurred when the building pits were pumped onto the ground because it plugged lines to the lagoon. These are all due to poor management practices I know, but with the Minnesota Pollution Control Agency that tolerates runoff violations, water qualify effects should be considered more seriously.

In the area of public health our biggest concern is the handling of dead pigs. We have seen piles of dead pigs lie for days in front of confinement buildings. One wonders what gauge is used for disposal, the height of the pile or the smell of the decaying flesh. Various methods of disposal seem to be practiced.

Number one, pick up by rendering truck.

Number two, incineration in a fuel oil fired furnace. The incinerator next door has had its problems, either it's not working right, or a worker overloads it. The resulting smell of insufficient burning of hogflesh is enough to turn the strongest stomach.

Burying is another method. This in the past has been done improperly in shallow graves that would later cave in as the animal decayed or was opened by rodents or dogs.

The final method, and probably the most popular in dealing with dead little pigs, is just to throw them in a nearby cornfield.

Because of what we have seen in Rockdale Township the EIS should present a more realistic health picture as it relates to real disposal methods of dead animals, not assumed, or proposed methods.

In conclusion, the EIS needs to reflect the real world in a hog confinement operation. A true Environmental Impact must consider a non-enforcing PCA which does little to promote good management practices. It should also consider that the hog facilities will be operated by a minimum amount of manpower as well as a large turnover in help. In contrast, the Draft Eis seems to imply unlimited manpower for the comprehensive implementation of all recommended procedures, which in total constitute good management.

Thank you.

MR. GREENBERG: Any questions of Mr. Regehr?

MS. CAIN: Just one question. The methods that you mentioned of handling dead animals, which of those

do you feel is the best mitigative measure or what in your experience?

MR. REGEHR: Which is the best means to dispose of animals?

MS. CAIN: Right. You mentioned picking up by rendering, which you didn't mention as having adverse affects.

MR. REGEHR: Well, along with picking up by rendering there still had been problems, this is in the past with the timing at which that rendering facility was called and, as I indicated, there seemed to be no gauge as to when that happened.

MS. CAIN: With a new facility in your experience that you have found, would that method, if the rendering plant were called in a timely manner help?

MR. REGEHR: Well, looking at a large facility like we have in our Township it should be a standard pickup stop daily because there are dead pigs daily that should be taken care of. Now that's not necessarily reasonable for the farmer to do that because of the cost involved with the daily pickup. It's more advantageous for him to let them pile up for a while. I don't know what the Health Department's requirement is, I would like to know that.

MS. CAIN: Thank you. Will you be submitting your

testimony in writing?

MR. REGEHR: I can. I will have to rewrite it.

MR. GREENBERG: Any other questions or comments? Come forward, sir.

MR. FEULING: Len Feuling from Olmsted County.

MR. GREENBERG: How do you spell your name, sir?

MR. FEULING: F-e-u-l-i-n-g. I think we are attacking this at the wrong angle. I feel they should have to prove to us that this is not going to cause any pollution or anything else. Why do we have to prove to you people that it is going to? They are the ones that are jeopardizing us.

You play down the worst case. When I served on the Town Board we had to replace a bridge we had to look at the 100-year flood, which may never come, but it still had to be there.

Another thing is before we had concentration of livestock we did not have the pollution problem we have now. Now that we have the concentration we are starting to get into things.

This road where this one is proposed to go is a half a mile on a Township Road which will be badly under strain when it comes to disposing of the waste because it was stated that he was going to take this out in a matter of 10 days, which would put a truck on the road about every

three minutes.

MR. GREENBERG: Do you just want to specify which one you are talking about?

MR. FEULING: Goodhue County, Wanamingo Township.

Also, the manure storage separation was set up for a six month storage, which is probably fine in Missouri, Nebraska, or some place down south. In our climate who can rely on eliminating this every six months and if you don't get rid of it what are you going to do for the next six months?

Who is going to monitor these? Is the State going to monitor them, or are they going to be left up to the farmer?

This site is stuck away a ways. If this was put closer to the building site I am sure we would have -- would have had a better eye on it and things would be taken care of in a good fashion.

Now foreign countries have problems with water as everybody knows. So we contacted the British Republic, which we call England, and they get rather upset with that. But they have in theirs an article, and I will read it, it's quite short. It says "Legislation is, of course, primarily concerned with prevention and control of pollution with the disposal of waste or surplus materials, but the position of agriculture is rather

different. The normal farming practices may sometimes result in water pollution. Farmers are, therefore, afforded some protection by the Act. Briefly, so long as the farmer produces good agricultural practices in going about his business he is protected from the prosecution of the act. However, in provisions and new procedures whereby this protection may be withdrawn if the Water Authority can convince the Secretary of State that pollution has been or may be caused by a particular activity, in which case a notice shall be served on the farmers concerned. Where a notice is served the good agricultural practice protection is removed after a period of 28 days and the farmer will be open to prosecution the same way as anyone else."

Now when you talk about us saying this will cause pollution, I think they should have to prove that they are not going to, not only as far as water, which is one of the main things because with the Clean Water Act that's due in what, '83, or something like that, it seems to me that this should be looked into with a little more endeavor than just what is being done.

I would like to ask if borings are done on all of these facilities or just once where there is complaint?

MS. CAIN: Soil borings, as far as I know, everyone that has a lagoon storage site soil borings are done.

Above ground storage, I believe, so far, do not require soil borings, so that's --

MR. FEULING: All lagoons have?

MS. CAIN: I believe that all lagoons have required soil borings.

MR. FEULING: O.K. I guess that's all.

MR. GREENBERG: Do you have any questions or response from the Agency?

MS. CAIN: Would you submit your --

MR. FEULING: I will have to rewrite it.

MR. MOILANEN: Thank you, Mr. Feuling. I would just like to note for the record that Doctor Bane has just joined us.

MR. GREENBERG: Any additional questions or comments?

(No response.)

MR. GREENBERG: Anyone else with questions or comments?

MS. PERRETT: I am Laura Perrett, P-e-r-r-e-t-t, Wanamingo Township, Goodhue County and I am speaking in referral to the Hilltop Pork Producers.

My family, my husband and two teenagers operate a 230-acre 50-cow dairy farm within two miles of the proposed site.

MR. GREENBERG: Can everyone hear Ms. Perrett?

A SPECTATOR: No.

MS. PERRETT: Do you want me to start over?

MR. GREENBERG: Well, why don't you start over.

A SPECTATOR: If she were facing back here then everyone could hear.

MR. GREENBERG: Well, then the court reporter would have a hard time. The important thing is to build the record in this case. Do you want to turn around this way?

MS. PERRETT: O.K. I am Laura Perrett. My family and my husband and two children operate a 230-acre dairy farm within two miles of the proposed site, Wanamingo Township, Goodhue County.

Following the Township Hearing on Hilltop Pork Producers proposed operation, about 50 persons in the area formed a Concerned Citizens of Goodhue County to pool funds, time and energy to research methods and techniques to update factors concerning local and County zoning, PCA Permitting, and Legislation to deal effectively with multi-investor nonresident confinement animal operations. We are well aware that there is little to prevent this type of operation and similar ones from going into operation at this time.

Our contention that if our community must have this type of operation it must be a success to both the proposer and for the community. Also, we feel that the proposed investors have not investigated the impacts of

such an operation beyond that of the profitability financially to themselves. We feel that along with PCA Citizen's Board that the State should evaluate the effects that this type of operation has had in other states and possible affects on the hog production family farm and the environment in our own State.

Since this operation is bound to set a precedent in our County we feel it's obvious that we should try to prevent as many of the disadvantages before the proposal goes into operation.

I am addressing those areas with the concern -- to areas of concern and suggestions. One is PCA permitting and zoning. The other is socio-economic impacts on the community.

As far as PCA permitting goes, though it's been stated many times, I think a site check is necessary beyond County zoned soil maps and a few questions on the type of construction that this type is not -- the type of site selection is not sufficient when there is to be manure storage such as slurry and composting or slabbing for laggons.

The next area that we have to deal with is management. The EIS has come through that good management will solve most of the problems. We agree, but operations where the proposers do not live on the site tend to have

poor management. Now this is borne out in a study done by "New Land Review" summer edition, '79. "A study of hog confinement operations in Nebraska." And I quote, "Confinement operations present managers with a new set of problems which few have experienced in solving."

It goes on to comment of 34 new units in Nebraska only 11 still employed their first manager, 13 had had two managers, 10 operations three managers or more. Most of those still on their first manager had been in operation less than one year. Managers reportedly quit in the middle of farrowing when offered a higher wage from another unit in need of scarce management.

Companies offering pack additions -- I'm not stating that correctly, but the proposals that they offer for sale now include management training or even offer trained management steadily as part of their operation pack.

I think the PCA needs to address itself somehow, how do we make sure that these type of operations have the sophisticated management from the very beginning and that we don't have to suffer from the mistakes as they learn how to be better managers.

One of the things that we found out, as we did much research in this state and in three other states, of this type and size of operation, was "Don't worry, the

management does not live on the operation, it will probably go under in about a year." That's what we do worry about because if it does go under then the operation goes on sale and then someone even farther away probably takes over, has less concern for our community. Again, we feel that if we have to have this type of operation it must be a success.

The third area under permitting that I am concerned about is expansion. The current process is that once you get a permit after that most anything goes. You can expand most any direction -- the PCA doesn't seem to have too much control over it.

Some states require a review of existing operations before expansion. According to the hog producers handbook it also suggests that zoning can be protection against nuisance lawsuits.

The second major area that I addressed is the socio-economic impact. I feel that the EIS addressed primarily only one side of that, that side being that the trend to large operations is the way everything is going, let's get on the bandwagon and go with it. That's kind of an oversimplification. The area I feel that was disregarded was the people and the quality of life in Wanamingo Township.

Two of my major concerns, and I am digressing a

little bit, why should a community risk its primary income while for the most part investors risk only their secondary income and even if they go under the losses can be partially covered by a tax writeoff. I take issue with the Corporate structure statement in the EIS that there are some cited tax advantages for the family farm as well as the corporate farmer. Going back to the New Land Review summer edition, there is considerable information that the tax advantages are decidedly in favor of the operator who has a -- who is in the 50 percent income bracket.

Then going again to the people. A lot was said about historical landmarks in the Township, even though they weren't identified in the correct location. I am a history buff and a sociology buff, therefore, I have studied quite a bit about the early history of Wanamingo Township and if you will allow me to take just a little bit to give background information it leads to a conclusion which I think is important to this study. In 1854 this Township was one of the first settled in the area. And of those many early homesteaders there are 16 farms in the Township that have been in operation over 100 to up to 125 years still in operation by the same family. There are at least six that are close to that time. The township was described in an early history book, and this

we say with tongue in cheek, but the early settlers appreciated the area too as we do today, "No other Township in the country is said to afford similar advantages to the farmers."

To the new person coming into the community you hear about how the Wanamingo Township and surrounding area is kind of an island of good life that's kind of somehow managed to keep going forward without being affected by all the adverse conditions of the outside world. This is fast changing. And you kind of smirk, if you are a new resident, and this is just kind of smugness on the part of residents, but after living there almost 20 years I find that there is a lot to be said for this because the community is stable because of the long-time residency of the people there, because of the influence on two churches and, according to trends, you know, we are keeping up with trends. The trends said a few years ago that rural churches were passing out of existence because they couldn't manage to stay alive economically.

We have two rural churches that were built in the 1860's, the original buildings, they are going strong today. They are having a very favorable affect on the stability of the community. In the Sunday Schools, if anyone goes to a Sunday School Convention they say "My, how do you still get your people to stay in Sunday School

after confirmation?" These two churches manage very well because the families are interested in the church and the family life.

The homesteaders, with great trial and labor, soon established many schools and these two churches are the forerunners, one of St. Olaf College, and one of Red Wing Seminary. That's how much impact this Township has had on the State.

They established schools and decided that a stable economy for this Township, with its good weather, its reasonably good farming land, they have had really no serious adverse situation in the time that they have been there, the community is economically strong today. They did this by diversified farming. Now the trend is for intensive farming, one type operation. Wanamingo Township has changed with the times in farming and kept up, but that's one of the trends that it's a little behind on, it's still very diversified. My contention that this type of confinement operation is a threat to diversified operation in this economy and this Township -- there are about 18 people that use hogs as part of their diversification, not their main line necessarily of operation, probably there is any one livestock operation that prevails it probably is dairy, though that's not the only one.

The proposal said that these type of operations

would probably only make up about two percent of the marketing -- hog market in the State and that this was probably not significant. Going back to the New Land Review and what's happening in Nebraska, and they are quoting of what's happening in the rest of the country, "Confinement operations are making up to 16 to 17 percent of the total marketing of hogs." A little bit here and a little bit there makes quite a difference.

To digress a little bit more on this idea of trends where Wanamingo Township has stayed viably economically sound and not kept up with all the trends, as I said, we still have two rural churches that are very much alive. We have an enterprising village community in Wanamingo. The Village of Wanamingo, that is not dying out as a lot of small towns and rural communities are supposed to be, it's growing.

In conclusion, I think the quality of life in Wanamingo Township is what has been referred to as that good rural small farm life that Minnesota is supposedly trying to preserve. I am trying to say, in giving all this history, that this quality of life has been established by the people who were there first before large confinement operations. Shouldn't they be given pretty strong consideration?

Now, as I said before, we expect to have to live

with some type of confinement operation, but we want to be really sure that it's not going to endanger this quality of life because it's a pretty valuable resource.

With that I will close.

MR. GREENBERG: Any questions of Ms. Perrett?

(No response.)

MR. GREENBERG: Thank you.

MR. MOILANEN: Thank you, Ms. Perrett.

MR. GREENBERG: Any other questions or comments? I saw a number of other hands. Yes, ma'm.

MS. MESTAD: My name is Carol Mestad M-e-s-t-a-d. Our home is 14 miles southeast of Rochester on Highway 30, it's about 500 feet southeast of one pig setup, plus one third mile northeast -- or northwest from another pig setup. We have lived 15 years in the country. Out of those 15 years eight of these have been less than happy, but rather depressing, miserable, unhappy years because of the poor -- and I want to quote -- poor management and development of these pig setups.

Here are some questions or comments, if you will, that we have had to contend with. Have you ever wanted to hang your wash on the line and couldn't because the smell gets in your clothes? Have you ever woke from a sound sleep in the night having the taste in your mouth because your windows were open on a hot summer night?

Have you ever lost a dog you loved very much because the dog had been poisoned with some type of say D-Con or other unknown substance? Have you ever had your house and windows sprayed not once but three times because they were emptying the lagoons? Have you ever wanted to cook out or invite friends for a picnic and couldn't because the smell is so strong and penetrating? Have you ever had to finish eating your dinner down in the basement because of the strong pig odor, you couldn't stand eating up at your kitchen table? Have you ever had your friends and guests ask you what that terrible smell was because it penetrates through the whole house even with one window open? Have you ever wondered how it is or has it affected your water and well because of the runoff from the lagoons, not from the buildings emptying into the lagoons, but from them emptying it anywhere they pleased -- it goes any direction?

These questions I would like to have answered if possible and checked into.

Thank you.

MR. GREENBERG: Any response from the Agency? Comments?

MS. CAIN: First, you should, I think, contact the Agency with your location because I don't know if you have ever done that.

MS. MESTAD: Yes.

MS. CAIN: That is one step. Am I correct that both of these are lagoon storage facilities?

MS. MESTAD: Yes.

MS. CAIN: And both use spray irrigation?

MS. MESTAD: Yes, the one sprays. The one that's 500 feet from our home. The other one, I think, has these tanks they haul out.

MR. GREENBERG: One person at a time speaking will make for a more understandable record.

MS. CAIN: O.K. One has spray irrigation the other does injection spraying, is that right?

MS. MESTAD: It's tanks they haul out into the field, honeywagons they call them.

MS. CAIN: Do you know whether they injected in the soil or if it's just sprayed on the surface, the one that hauls it out into the field?

MS. MESTAD: It's spread.

MS. CAIN: On the top -- the surface and it's not disced in the soil?

MS. MESTAD: Uh huh.

MS. CAIN: Thank you very much. Would you submit your testimony in writing to the Hearing Examiner, too, please?

MS. MESTAD: I will have to write another one up.

MS. CAIN: Thank you.

MR. GREENBERG: The requests for submission of testimony, of course, is purely voluntary, you can do it if you want to, but the record will speak for itself and your comments that are made orally are a part of the record.

MS. MESTAD: Just for the record, we live southwest of Rochester.

MR. GREENBERG: Thank you, Ms. Mestad. Any other comments?

(No response.)

MR. GREENBERG: It's not an auction, I don't ask three times. Any other comments? The gentleman in the back, the one in the yellow.

MR. OLSON: We had a little trouble finding the place over where you said it would be, there were no --

MR. GREENBERG: So did I.

MR. MOILANEN: Was there a sign?

MR. OLSON: No. We had to make a lot of telephone calls, had a group come over there.

My name is Lyndon Olson, I am from Worthington, Minnesota and I am here to provide information not in support or opposition to any of these feedlots in question. I sat through the meeting last time and my ideas on Environmental Impact Statement seeks to answer a

question is can these proposed feedlots be operated without undesirable restrictions to the environment or the people surrounding it. Is that correct, basically, or am I wrong?

MR. GREENBERG: The question that the Environmental Impact Statement is supposed to answer is what are the environmental affects of the proposal.

MR. OLSON: And how they can or cannot be mitigated, right?

MR. GREENBERG: Yes, and alternatives for mitigation, that's correct, that's part of the Statement.

MR. OLSON: And the Environmental Impact Statement in this question -- process is not to answer the question can the proposed management operate these proposed feedlots, but can any type of management operate such a facility without those risks. The question of whether the proposed management can operate these type of facilities is for the Pollution Control Agency permitting process to answer because in case of a change in ownership, any time in the future, the Pollution Control Agency has the authority that must repermit that feedlot.

MR. GREENBERG: You may address that to the Pollution Control Agency staff.

MR. MOILANEN: I'm sorry, I didn't quite understand that to be a question. I thought it was a statement.

MR. OLSON: Well, is that statement correct?

MR. MOILANEN: When there is a change of ownership people are to come in for a new permit.

MR. OLSON: So then in any case where there is a repermitting decision possible the original decision then must be made by that authority, in this case it's the Pollution Control Agency. The Environmental Impact Statement is not then a means to determine whether the proposed management can operate that feedlot, but whether or not any type of feedlot can be operated without these risks and then the management of a given facility is for the Pollution Control Agency to determine in their permitting process.

An Environmental Impact Statement is not a means to determine that nothing adverse to the Environment will happen, but rather if the proposed project, through proper design practices, procedures and techniques, can mitigate the risks that are inherent in the project. If there were no risks -- if the no-risk philosophy were to decide how an Environmental Impact Statement would go, any project, by the fact that an Environmental Impact Statement was required, would be in fact proof that a risk does exist and, therefore, the project could not proceed.

In these particular Environmental Impact Statements

before us I think past history of similar projects is one of the things that we can look at. In 1974 a study by Glenn Grimes of the University of Missouri, a survey was conducted of the large scale hog operations to be found in the United States. He found in his study that over 500 operations in the United States in 1974 were producing over 4,000 hogs per year. The study then asked questions of the people involved in management and ownership of these facilities, what their problems were. Odor control was found to be extremely low on the list of problems encountered in these -- in this study. In some cases where they were listed high on the list of problems it was because of lawsuits and nuisance complaints by their neighbors. If a problem odor would rank higher on the list in this survey -- in a letter from the National Hog Farmer, which is a publication which goes out to pork producers through find qualification cards, there are over 135 producers in the State of Minnesota marketing over 5,000 hogs per year with only a few of these having any complaints as far as odor to their operation. Both the Missouri study and the National Hog Farm Report would strongly suggest that most large hog operations can and have been operated without harm or nuisance to the neighbors or the environment through odor or any other problems.

To be more specific, concerning odor, I have a paper

entitled "Odor Control in Animal Waste Management" written by Dr. Philip Goodrich of the University of Minnesota, which I would like for to be in the record.

I think the statement that would most concern this Environmental Impact Statement is this, "The most frequent odor complaints come from anaerobic swine waste treatment lagoons. Overloaded or shock loaded lagoons are likely to have objectionable odors. It is important that the lagoon be properly designed and managed to keep odor levels at a minimum."

Sitting through this particular Hearing the word "Lagoons" have been used. But in the proposed Draft the term lagoon is not used at all. I think it is very desirable that the difference between lagoons and what is proposed in this Draft be addressed. First of all, what is proposed in this Draft are detention ponds or earth storage basins and not lagoons. Lagoons have the function and basically are not used in operations of this kind because they take from 10 to 15 acres of land to properly function, but these are rather detention ponds designed to hold the waste until they are removed.

The examples that were used in the last -- the last meeting, the one at Lewisville and the one south of Bigelow, Minnesota, and also at least one of them familiar with mentioned here tonight, lagoons are not used for

the waste storage structures, they are detention ponds. The effluent comes into these detention ponds from the top which, in my experience, is found to be extremely -- result in some extremely high odor levels not particularly pleasant. I have seen several of detention ponds used where there are no odor problems and in those cases the effluent is pumped via a pump from underneath. When that type of a system is used the odor is very negligible. Also, the design of these particular detention ponds, as proposed in this EIS Draft, it should be noted that they were designed by the ASCS Service and the ASCS function is to design these structures so as not to contaminate the groundwaters through leakage or seepage. The ASCS function is not to design these storage basins so as not to control odor. And I think the record of the ASCS and the design of these facilities to not to contaminate groundwater is one that is extremely good.

A second one I would wish to introduce, a paper entitled "Odor Control in Animal Waste Management -- Oh, that's the one I just did, there is another one here, excuse me -- was "Utilization and Application of Liquid Hog Manure." This is by Doctor Gyles Randall, Southern Experiment Station. It deals with using manure as fertilizer and nitrite and nitrates movement within the soil. Basically a summary of this says that "When used at

agronomic rates nitrogen in manure does not move into the groundwater particularly when injected into the soil or incorporated immediately after application. In fact, there is less chance of groundwater contamination by nitrogen in manure than by commercial sources of nitrogen because of the organic form of nitrogen found in manure."

Previous statements addressed to this Hearing have also suggested that methane digesters be discounted as a method of odor control in that it is necessary to have a higher amount of expertise necessary to operate one than may be present. Here I would suggest that this management decision is one that PCA must address and decide rather than an Environmental Impact Statement. I think the Environmental Impact Statement should say that methane digesters are a method of odor control which are very effective when properly operated.

Another area which this Hearing has dealt with is that of health. There is available within the swine industry a type of disease control hog called "SPF," which stands for specific pathogen free hogs, which are used in many operations. These specific pathogen free hogs originate from stock in which the little pigs are taken by Caesarean Section and are raised in isolation and are free of certain diseases, most of which were referred to at the last meeting, that would be any disease which is

not -- cannot be transmitted across the parental barrier.

One other area, the socio-economic things that have been addressed to this Hearing. If there are socio-economic factors which favor large operations or give disadvantage to smaller operations the place to deal with such factors is the Legislature. An Environmental Impact Statement cannot give more than passing consideration to factors which the Legislature or the State of Minnesota has not declared illegal.

I think when the factors are all analysed the question becomes one of whether hog units of this size or larger can be designed, built and managed so as not to harm the environment or the neighbors. I think there are a number of units that have been built and are being built and have been operated and that will continue to operate, that the answer is yes, the question of whether the particular design of these and the proposed management part of which becomes a Pollution Control Agency decision.

One other -- and I have to recall this from a glance at the proposed or the Draft EIS and that was that one thing that could be done was to cut the size of operation down and that would take care of the problems. It has been my experience that size of operation does not necessarily -- let's say one half the size or quarter of the

size does not cut down odors by one-half or one-quarter. Odor control is not a function of size of operation but rather one of design management and other practices which are available to the swine industry.

I live not too far from a swine operation of about 50 sows which causes some odor problems far greater than one of 200 sows, which I am fairly close to. So just the fact that size alone, if these operations were reduced in size, would not necessarily cut the risks involved or inherent in any swine operation.

MR. GREENBERG: Did you wish those articles that you mentioned to be entered into the record?

MR. OLSON: Two of them.

MR. GREENBERG: What is your name again, sir?

MR. OLSON: Lyndon Olson.

MR. GREENBERG: Any questions of Mr. Olson by the Agency?

MR. MOILANEN: Again, Mr. Olson, you are welcome to submit what you read into the record. I want to apologize for any inconvenience that you had in finding the location of this meeting tonight.

MR. GREENBERG: We will recess for seven minutes. During the recess, if there is anyone who is a representative of any of the applicants in this matter, who is here, somebody might want to slip a note to the front

table just to advise me, I'm just curious.

(At this time a recess was had and the Hearing reconvened at 8:45 o'clock P.M.)

MR. GREENBERG: Who wished to speak now in the back? Before you begin to speak the record will show that Ms. Kersch has submitted some written documents into the record during the break and they are part of the record. Go ahead.

MS. FEULING: My name is Lavonne Feuling, and before I begin I will hand this in, but I have to rewrite it.

MR. GREENBERG: O.K. Is your name F-e-u-l-i-n-g?

MS. FEULING: Yes. To begin with, I guess I kind of disagree that we can't speak about management only in permitting. Why can't we speak about management? The management, the site design and the structure of this are the three most important things and even if you sell this the person picking up or carrying on and having to get another permit ought to know what he is going to have to be in for.

O.K. I am kind of a stickler for the family farmer and I kind of feel like in the future family hog farmers will be eliminated, or normal family. And this last one we were at, I think this doctor was talking about all kinds of diseases and things of this nature. I didn't

really keep up with it but -- you know -- they won't recycle the feed because of disease and yet they will spread this disease, or this manure, or whatever. What if we have a heavy rain and it runs off in our water and pollutes and there is disease there and what if your rock formation, or whatever, is like such that it will get into the shallow wells. We are surely going to have the disease transmitted right there from the hog to the human.

And he talked about these methane digesters. I don't know too much about them but I would like to know, does this take care of all the dangerous health hazardous gases that are in the -- whatever -- you know -- hog manure. Can anybody answer that?

MR. DEFIEUX: Is the question whether --

MS. FEULING: Whether this methane will take care of all the hazardous gas because there is evidently many, according to the anesthesiologist.

MR. DEFIEUS: If you mean will it take care of it in terms of not allowing community levels to reach toxic portions or something, yes.

MS. FEULING: Well, will it eliminate -- I figure this odor bit that we are talking about has to be -- the problem has got to come from the gases within this liquid manure causing the eyes to burn and the throats to be sore and vomiting and the nausea or the headaches.

MR. DEFIEUX: The digestion is one of a number of methods available that attempt to reduce it.

MS. FEULING: Is it one of the best?

MR. DEFIEUX: It is one of the best, I would say, yes.

MS. FEULING: O.K. Another thing is that he had said that this liquid manure is somewhat like a fatty acid and that will cling to anything and I think Mrs. Nesseth, she is a dairy farmer, she has testified, I don't know how close they are to this site and that could cling to the milk and what would that do? I would think that that would be something to really think about -- you know -- and -- you know -- we have lived in Goodhue County now 17 years and when we first moved out there my husband used to go pheasant hunting -- you know -- all of this and we are from down by Kellogg and Wabasha area and we had company and they would come back and they would be wet clear up to their seat ends. You know, why were you wet, were you in the swamp? No, we weren't in the swamp. I walked over the top of the hill and I stepped in something and I got wet. Well, this went on for a few years but -- you know -- it's gotten now there is -- they don't get wet any more now. The only thing I can think of is there evidently had to be sink holes or something around. They were in unusual spots. This is the funny thing about it. It was unusual. They even wore hip boots. I

remember one guy in hip boots in there. And they aren't around, but the thing was they weren't -- the farmers at that time -- I don't know how many, weren't piled like they are now, so I'm sure all of these sink holes really are kind of drained out, but the hole itself is still there, evidently, and there are many springs around. And coming -- moving into that area, that's like a heavensent farmland. They could have a bad year all summer and they would still have some type of a crop.

I just get kind of a little concerned because I know there has been other operations that have been given a permit and it's kind of in a funny place. There wasn't any opposition and the permit has been gone through and we are just sort of wondering if the only time the PCA Board will act or really look into these things is when they have opposition. If the only time they do look into these things is when there is all of this opposition here and I would think in reality, if you would listen to some of this, how can you get data from books when you haven't really had stuff to give you data, then go to the people around the sites -- you know -- it's more reality. But what I was getting at is if the only time that you do react then I don't know, then the Board isn't doing its duty or something of that nature. If you were a farmer and a dairy farmer or anything, if you had an animal that

wasn't producing too well you surely wouldn't keep it around.

So I just really think that the Board ought to really look into these things because they are far more health hazards. I think the health hazards in -- like some of them had said, your rural life, your smaller communities, everything is involved. I don't think it's just odor and one little thing here and there, but it's everything and I think that they should really take a better look.

Thank you.

MR. GREENBERG: Any questions?

(No response.)

MR. GREENBERG: Thank you, Mrs. Feuling. Additional comments?

MS. FEULING: There is one additional thing I forgot. Isn't this so that you can kind of set standards as to how they should go or what they should follow or something like this, things to help them like to build these yields to make them better and safer?

MS. CAIN: We are looking at alternatives and within the alternatives are mitigative measures, sure.

MS. FEULING: O.K. Well, I would like to see that all of them require this methane digester with a slurry and that this gas be generated right away into some use

because it's a very hard gas to store. It surely would help them. It would help them for their electricity and then you have it. I think that is a requirement.

MR. MOILANEN: Thank you.

MR. GREENBERG: Yes. Ms. Regehr.

MS. REGEHR: My name Sharalla S-h-a-r-a-l-l-a Regehr R-e-g-e-h-r. I live about one half mile north of the pigpen confinement in Rockdale Township.

In 1971 we were very concerned when a facility that housed nearly 3,000 hogs was proposed to built only one half mile south of our house. But when we inquired about it we were told that there would be no major pollution or odor problems. However, the permit violations, the water pollution and the odor problems that have resulted from the facility are worse than anything I could have imagined. Many of these problems are the result of poor or non-existent management.

I am very concerned when dead animals from the Penz confinement are left exposed for days in hot weather, easily accessible to rodents, cats and dogs. I am also very concerned when I see a wide stream of effluent from the lagoon flowing directly into the Zumbro River, but it is the odor that mostly impacts my day to day activities.

Having been raised on the farm I would not consider myself overly sensitive to typical farm odors. I am the

oldest of five children and my father is partially disabled. Therefore, the evening chores, including milking the cows and feeding the pigs, were often my responsibility. Our farm was not highly mechanized. We did not push a button to start the gutter cleaner, instead we put on our high boots and hand scooped the manure into the spreader. Cleaning the barn is no pleasant chore and did sell. However, there is absolutely no comparison between the odor from a typical family farm and that of a large animal confinement.

Others have testified as to the affect and severity of the stench from these large confinements, and let me tell you they are not exaggerating. One area that has not been delved too deeply into is the emotional aspects. When we are subjected to these obnoxious swine odors the even temperament and the emotional stability of our family is threatened. There are stress situations in any normal family relationship but when we are subjected to the offensive swine odor, especially when it reaches the intensity as to invade our home, these tensions increase and the ability to cope with this decreases. Patience wears thin, tempers flare, situations which ordinarily would not be a problem become a problem because of the increased irritability of the family members.

When we have an enjoyable odor-free day or a

miserable smelly day is solely controlled by Penz pigs and the whim of the wind. We are at the mercy of both and have no control over either. This gives us a feeling of helplessness and hopelessness.

One year ago today Rochester experienced the great floods. Afterward a group called Razor was formed by the area churches to help people cope with emotional problems resulting from the floods. If all of the proposed pig confinements are erected Rochester will need another similar group to deal with the emotional problems caused by exposure to pig confinement odors.

Is it right for Penz and his associates to subject our whole neighborhood to these odors and surface and groundwater pollution for monetary gain? I don't think so. In my opinion this neither morally correct nor acceptable. There must be a better way. I am hoping the PCA will thoroughly study this issue and help us find some answers.

The EIS reminds me of our textbooks we used in nursing arts class. It describes theoretical ideal solutions to patient care problems, but in an actual hospital setting caring for real people as patients it was a very different story. Likewise, the EIS does not reflect real world problems experienced by those of us living next to real world pig confinements.

MR. GREENBERG: Any questions?

(No response.)

MR. GREENBERG: Thank you, Mr. Regehr. There was a gentleman here that stood up just a moment ago that wished to speak.

MR. ESTERBY: My name is Gary Esterby, a resident of Wanamingo Township.

MR. GREENBERG: How do you spell your last name?

MR. ESTERBY: E-s-t-e-r-b-y. My property borders Mr. Kunde's property, not the specific site in question.

The first question is to the PCA directly is, there have been quite a few questions that have been asked during the Hearing and I would like to know when specifically some of these questions will be answered if ever?

MS. CAIN: The process for the Environmental Impact Statement is to have this meeting and collect a record and we will go through the record and address the questions in the final Environmental Impact Statement. They may not be addressed in a manner of answering each individual question, they may be answered in groups or areas similar areas. However, we will consider all the information that's presented and will, to the best of our ability, address them in as much detail as we can. That final Environmental Impact Statement is to be submitted to the Environmental -- well, to our Board approximately

50 days after this Hearing ends.

MR. ESTERBY: O.K. Most of the other questions I have have been gone over so many times I won't go over them again.

One thing I will add, it's been said, I think in this report, that they will produce two percent of the hogs in southeastern Minnesota. O.K. Last week when the USDA's report came out on the Beam acreage for the country it was about a three percent increase and that sent Bean prices down about a dollar. So the quantity of a product or a commodity available -- the price will remain fairly stable, it's just when you get a slight increase or decrease is when you are going to have your large price fluctuations.

Now these pig factories, quote unquote, will go at or near capacity and leave it up to the small marginal farmer, quote unquote, as stated in our Impact Statement, that this small farmer will have to pick up the slack for the commodity. It seems that a lot of these proposed pig factories seem to attract a lot of outside non-resident investors and that's not the kind of people that are going to be your top notch managers, certainly.

Thank you.

MR. GREENBERG: Questions?

MS. CAIN: Mr. Esterby, would you submit your

testimony in writing or repeat the information about the commodities, the fluctuations?

MR. ESTERBY: I will submit it.

MR. GREENBERG: That's part of the record. I am sorry, I have forgotten your name, sir.

MR. ALEXANDER: Alexander. I apologize to all of you kind people for putting up with me again. I testified last Monday night a week ago. I said at that time that I had only seen two of the sites and so I made time over the weekend and this afternoon to look at another one and have prepared geologic maps and gathered data which I think are relevant to the geology discussion in this EIS. So I would like to restrain myself to that portion of the talk tonight.

If you will permit me, let me simply start out with a story. My grandfather walked into Oklahoma in 1897 carrying the shirt on his back and a rifle and $3.00 in his pocket, raised 10 kids through the depression. My father was one of them. Incredible old gentleman. When I was about eleven, about a year before he died, I was sitting on the front porch of his farm in southern Oklahoma and he gave me a lecture which I have remembered to this day and I would like to share that lecture with you. It was a lecture on how you lie. He says "There are --." My grandfather told me that "There are three ways that

you can lie in increasing degrees of effectiveness and sophistication. The first way you can lie is you can simply tell an untruth. Now that's foolish because you are going to get caught, someone is going to check up on you and that's not a very good way to lie. People do that all the time though. You seem to find politicians doing that a lot." Anyway, my grandfather said that "A more effective way to lie is to tell the truth but to only tell a little piece of it." Now we have a group of people who make their living doing this, I think they are called lawyers.

MR. GREENBERG: As opposed to Hearing Examiners.

MR. ALEXANDER: As opposed to Hearing Examiners.

(Laughter.)

MR. ALEXANDER: The third and most effective way to lie that my grandfather told me about is "To tell the truth, the whole truth, and nothing but the truth, but to tell it in such a fashion that nobody will believe you." And I just had to laugh at your effect, maybe I should say that I think that people who are most guilty of this latter kind of lying are scientists like myself.

(Applause.)

MR. ALEXANDER: Sometimes intentionally and sometimes unintentionally. I would like to spend a few minutes of your time tonight going through the geology section

of this talk and simply explain to you how I think all three of these things have been done, in the course of this talk. I don't mean to be picking on Mr. Penz, but he is at the top of the list so we will start there.

This is on page 4-47 of the Environmental Impact Statement where it's describing the geology and the hydrology of the area. They describe the geology and hydrology of the Penz Farm Site in three sentences. The first one reads "A test well drilled approximately 3500 feet west of the Penz Farm Company facility site encountered 95 feet of unconsolidated surficial deposits of overlying dolomite bedrock, Minnesota Geological Survey, undated." I drove around that area and there is not a single chance that there is 95 feet of unconsolidated surficial material sitting on top of that ridge. The only way that you could hit 95 feet of soil in that ridge is if you drilled into a buried sink hole, and that's what I suspected might have happened. But I called up the Minnesota Geological Survey and I got a copy of the record that I think this conversation relates to. This sentence says "A test well drilled encountered 95 feet of unconsolidated surficial deposits." That sounds impressive. First of all, it's not a test well, it's a perfectly ordinary water well drilled by the Rowland Well Company of Chatfield, Minnesota for Dave Struckman of Eyota,

Minnesota. And the record says 93 feet of sand, not unconsolidated surficial deposits. Ninety three to 300 dolomite. Now I have looked at a little bit of the geology and there is no way that there can be 207 feet of dolomite at that place. So I called up the well company and I said "Did you drill a well in December of 1977 on the east side of Section 23 of Haverhill Township?" And they said "Yes, we did." And I said "Do you have any records on it?" And they said "Yes." And I said "Would you give them to me?" And they have a little more detail than was available in the record. Their records read zero to 61 feet of sand, 63 to 90 -- I'm sorry, 61 to 93 feet of sand and gravel, 93 to 173 feet of Shakopee, 173 to 373 feet of oneota.

Now this ridge is sitting on the Galena and the Decorah and the Patteville and the Glenwood and the St. Peter and then it's sitting on the Shakopee and oneota. And I didn't quite understand that so I called up the information on the oneota and I said "Do you have a listing for Dave Struckman?" And they said "Yes." And I called that number and the lady answered the phone and I said "Mrs. Struckman --." And she said "Yes." And I identified myself and I said "Did you have a well drilled by the Rowland Well Company in December 1977?" She said "Yes." And I said "Is it 300 feet deep?" And she said

"Yes." And I said "Is it located at your house?" And she said "Yes." We discovered that oftentimes people who own the wells don't live in houses where they would have them drilled.

So I said -- finally I said "Ma'm, do you live in Section 23 of Haverhill Township?" And she says "No, we live in Section 14 of Marion Township."

That well isn't there, it's six miles south of there.

Now in all honesty I must say that the PCA was taking a record which said it was in that Township, that's where the record does say it is. You had to have enough sense to look at the record and realize it was an impossible record to be there. O.K.

That brings up an interesting point though. Why did they call it a test well? Why did they change sand into unconsolidated surficial deposits? Those are interesting questions.

However, another interesting question is that they referenced the Minnesota Geological Survey Well Record. The Minnesota Geological Survey is in the process of putting together well records of all of the State of Minnesota and that's where they got this record, but there is a lot of other records in there that they didn't reference.

Mr. Penz, in 1963, according to Mr. Chuck Duryea, you had a well drilled on your property for stock water and his records show that it went through 18 feet of clay and then you went down to 100 feet in the Galena. I haven't checked this location, maybe it's right and maybe it's not and perhaps you can attest to that, but the record shows that they hit 18 feet of surficial material sitting on top of it, not 93 feet.

About 1960 the same company drilled a well on John Scanlon's farm, which is the south side of Section 25 of Haverhill Township, just on the south edge of the area. That well went through 20 feet of surficial material and then went through the Galena, Decorah, Platteville and Glenwood and St. Peter and in the right sequence. The south edge of Section 18, Viola Township, just across the road from one of your sites, the Rowland Well Company drilled a well for Darrel Brown. They went through ten feet of material then they hit the Galena and went down from there.

I will enter these well logs into the record. They are available.

There is not 95 feet of material sitting on top of that site, there is maybe 20 feet.

In your own record, on the next page -- on page 4-48 you list two test drills which were made by Twin City

Testing Company, one of which went through zero to two feet of silty clay soil, two to 15 feet of silty clay and sand and 15 to 20 feet of clay. And at 20 feet you have got the refusal and a footnote it says "Obstruction encountered at 20 feet." Yeah. It's called a Galena. It's called bedrock.

All right. You did not show on the site facilities plans on -- in Figures 3.3 on page 3.3 -- I'm sorry, it's Figure 3.1-2 on Figure 3.3 -- where theirs are located. Do you know where those are located on the facilities plan?

MR. DEFIEUX: No.

MR. ALEXANDER: O.K. One of them hits bedrock at 20 feet and the other one hits bedrock but you stopped at 29 feet.

I just entered into the record wells in the immediate area which hit bedrock from six to 10 to 18 feet. That's the kind of bedrock that's around there.

Look at this proposed storage basin, that's going to be 10 feet deep, I understand, with a liner covered by a foot of soil. That means the hole is going to be 11 feet deep, right? That's sitting on a gradient of about six feet from one side to the other. I assume that you are going to cut in one side and bank up the other so one corner of that will be 14 feet down in the ground.

Somewhere in that site, you don't show where, you have got bedrock at 20 feet. That means there may be six feet of soil between the bottom of the container and the bedrock, if there isn't higher bedrock somewhere, which there is in all probability.

Reading on down. The Darwin Schroeder site, again on page 4-47. It says "The uppermost bedrock in it at the project site --" and as I understand your terminology "Project site" means the immediate area about ten square mile area, correct?

MR. DEFIEUX: No, that's the --

MR. ALEXANDER: It's the area which encloses the spreading area?

MR. DEFIEUX: Right.

MR. ALEXANDER: O.K. It says "The uppermost bedrock is the St. Peter Sandstone." That is simply wrong. The uppermost bedrock in that unit is at least Decorah and maybe Galena in places.

In the next one you say -- on Hilltop Pork Producers -- you say "Surficial deposits consist of glacial till overlain by loess." All right. You say "No soil borings have been conducted at the proposed site. The records of test wells within two miles of the facility indicates that elevation of the upper bedrock surface ranges from 1100 to a little over that feet above mean sea level on

this basis, it's estimated on the thickness of the surficial deposits at the site and is between 15 and 30 feet." Well, again, I tramped around this and there is indeed some glacial till in places around there. It's very thin and spotty though and I went into the well records and looked them up and again I have about seven here which I am going to enter into the record tonight. All sorts of records show up.

One by Mr. Kunde. He had a well drilled in May of 1978, went through 42 feet of drift. Maybe there is 40 feet of drift in places in there. Drilled on down all the way into the Shakopee, it was cased down to there. He has got a nice water well down at the Shakopee. Mr. Pfeffer, of the Christenson well put a very interesting note on this well log though. It says "Galena limestone very creviced -- 6.9 yards of grout required to seal the casing."

Darrel -- Mr. Nesseth, I believe I missed Mrs. Nesseth's speaking earlier, lives just south of the site. Their well log reads zero to six feet of dirt, six to 145 feet of limerock, so there was six feet there.

John Flom, who is just to the north of the site. The well log reads zero to 24 feet of drift, 24 to 50 feet of Galena and so forth.

It is quite clear that there is nowhere near as much

drift anywhere on that area as you claim in this area.

Last Monday, when I started my talk, I asked what I thought was a rhetorical question and that was have you ever seen this site and you answered "Yes." And I very foolishly didn't have enough sense to ask the next question and I will ask it now for the record and that is when did you see the site?

MR. DEFIEUX: That particular site I saw in February. The other sites I have seen in February and this month, June, pardon me.

MR. ALEXANDER: How long did you see them in February?

MR. DEFIEUX: Briefly.

MR. ALEXANDER: One afternoon?

MR. DEFIEUX: Right.

MR. ALEXANDER: In February, so there was two or three feet of snow on the ground?

MR. DEFIEUX: Right.

MR. ALEXANDER: O.K. If I may make an editorial comment, it shows.

Figure 4-51 -- I'm sorry, Figure 4.5-1 on page 4-51. It purports to be a geologic map of the Penz Farm and Schroeder's site. You show white areas along the top edge of it and along the upper righthand corner which, according to your legend, are Galena formation. That's not Galena formation, that's Shakopee and oneota.

Page 4-59 you are talking about the hydrology of the area. You note that the Schroeder site is on the tributaries of something called Dry Creek. Did it ever occur to you to wonder why it's called Dry Creek? It's because it runs down the St. Peter and the water simply drops out during a big part of the year, that's a losing stream.

Page 4-62, the bottom of the third paragraph. "Additionally, the presence of numerous uncased multi aquifered wells in the project region provides a greater opportunity for downward -- inward aquifer flow," and it references Hault, 1969. That is simply not what Mark said. Mark looked very hard for uncased multi aquifer wells. He wasn't able to find them. He had to go drill one himself and it closed itself. That is simply an untrue statement.

Page 4-64, the depth of the watertable at the project site, this is the Darwin Schroeder site, ranges from six to 10 feet USDA. These same well logs which I have entered into the record contain height to standing water and it's not six to 10 feet, it's much lower than that.

On the Hilltop Pork Producers site on the next -- I'm sorry, I skipped one. At the top of 4-64 on the Penz Farm you have got a statement that says that "The watertable ranges from two to 10 feet in depth." The watertable in Mr. Penz' well, according to the record, is

58 feet. It's well down to go in.

I just talked about the Schroeder Farm. The depth to the water at the Hilltop Pork Producers you say is 60 feet -- I mean, I'm sorry, it's six to 10 feet. You should talk to Mr. Nesseth and those other people who live around there who have wells and you will find it's quite a bit deeper than that.

On the next two pages, 4-66 and 4-67, you are talking about the Karst hydrology and 4-67 you say "Although hydrologic conditions in Karst regions are complicated it is generally recognized that there is less potential for sink hole development where six surficial deposits or noncarbonate formations overlie the limestone or dolomite rocks." Last week I told you that that is simply not true. The catastrophic failure begins to occur where you have got from 40 to 50 feet of surficial soil overlying carbonate bedrock. And I will enter the references for this into the record.

I could go on like this. There are cute statements in here. Page 4-74, "The Village of Elgin, approximately 600, was just beyond the three mile radius directly west of the Darwin Schroeder site." Some of you people who are here tonight from Elgin, you know that you live west of the Schroeder site, right? East of the Schroeder site. That's east of the Schroeder site. This sort of statements.

I said last week and I will say it again tonight, it is not my job and I don't want the job of deciding whether or not these facilities should be built. It is my job to try to comment on whether or not the geology on which you are presumably making part of the decisions is correct and that geology, as is present in the Environmental Impact Statement, is simply not correct.

We have prepared geologic maps of the immediate areas around the sites and the facility sites based on the well logs and very very limited field work that we have been able to do in our spare time in the last week and a half and we will enter those into the record as part of our written testimony. We have to take them back with us tonight because we haven't finished preparing that written testimony yet.

One of the things that we have done is we have looked at aerial photographs of the area. Good aerial photographic coverage of the whole area exists going back into the 1930's at about 10-year intervals and if you look at these aerial photographs you can see all sorts of interesting things. If you look at the photographs, which are taken in the late summer or early fall, particularly in the dry years when the crops were under a lot of water stress, you can see lots of what I call, for lack of a better term, freckles. They are little spots. Some

fraction of those spots overlie buried sink holes. We don't know what fraction it is, there are certainly other things that we are seeing, but in general, as you look at these, you get the impression, which I think is correct, that the whole area is just covered with potential sink holes.

We spent an hour on our way down this afternoon talking to the people just west of the Hilltop Pork Producers site and discovered three sink holes. Mrs. Rohl had done a lot of the field work and told us where to go, which line up to form a very nice line on a northwest-southeast trend, which agrees with one of the joint sets. You can see that there are some of those dots right on the specific sites -- the specific facility sites in the case of the Hilltop site. There don't seem to be any under the immediate facility site in the case of the Penz Farm or Schroeder's, but there are disappearing streams and springs on -- within the fields that they are going to spread them on and the Penz site there are springs just below the fields at the Hilltop site and from what I can see of the geology, a major portion of the Schroeder site that sits on the St. Peter, is probably simply feeding water directly into the groundwater aquifer.

Another point which comes under my class 2 comments is several places in here, when you refer to the literature

on the impact of swine disposals at other parts in the country, they are not in Karst terrains in general. I think it's very important that you look at the literature that exists on the impact of perhaps not swine feedlot disposal but other lagoons in Karst terrains. That literature does exist. What you find when you look at that is that there is an impact on the terrain, that there may be some level at which it can be taken, but then again there may not be.

Finally, when I was up there around the Hilltop site last Saturday I ran into Mr. Esterby, who was in the area, and he pointed out something which I had naively not thought to ask and that was that several of the sites, at least at the Hilltop area, the fields have been tiled. And so if that is the case the whole discussion about how many feet of surficial material overlies bedrock is simply irrelevant. The material is going to go through four feet of the soil, hit the tile and run horizontally and be dumped in the nearest creek.

It is by no means obvious to me whether these sites should or should not be built. It is obvious to me that if you decide to build them that decision should be based on correct geology and correct hydrology and that the Draft Environmental Impact Statement does not contain correct geology and correct hydrology to the extent that

we are able to know it at this time.

In the course of my reading in the last couple of weeks on this question I came across a quote which perhaps should be a model for this Environmental Impact Statement and it's by a man named Tom Eylie who lives in Missouri and works around the Karst regions and Mr. Eylie said that "People who live in Karst regions --" which everyone in southeastern Minnesota does, "Should remember that they do not live on an infinite filter, they live on a very finite sponge." And that I think is a good summary of what the situation is down here and I hope that people, when they look at the decision of whether or not to build these sites, will do it based on correct geology and correct hydrology.

Thank you.

(Applause.)

MR. DEFIEUX: You have entered quite a bit of broad data that I would like to take a look at. One thing I would like to ask you for is that reference on the lagoons in the Karst region. I don't believe you mentioned the citation.

MR. ALEXANDER: I don't have it in my head, I will submit it in my written testimony. The conclusion -- this was a study looking at spray disposal of sewage lagoon waste and the conclusion is that there are very critical

rates above which it doesn't work below which the area does seem to be able to take the impact.

I hope in the permit process, if it's decided to grant these, that you will treat this as an opportunity to answer a lot of what really are the unanswered questions which are present here. The things like this -- these tiled fields, for instance. Again, I don't live here and I don't have to view it in this way, but from a scientific viewpoint these tiled fields represent an opportunity. You can measure the groundwater quality coming out of the tile fields now for a year or two or for a year. You can measure the groundwater quality coming out after the manure starts being applied and simply see that it is different. It is not inconceivable that it can improve. I will be surprised if that happens, but it's not inconceivable, but then you would at least have evidence of data in which to argue from. A lot of the problems with this are simply that we don't know the answers to questions and you are -- and people in the area are being asked to gamble their water wells, their property values and their -- what was the example the lady last used, family happiness, on the fact that there won't be problems. Why don't you show on the site plans where the drills are?

MR. DEFIEUX: That data isn't available and the

drills reports don't specify precisely where they are.

MR. ALEXANDER: Twin City Testing will tell you where they are drilling the wells if you ask them before you drill them. Maybe you didn't have an opportunity to do this, I don't know.

MR. DEFIEUX: Are you asking me if I did? I didn't, no.

MR. GREENBERG: I just want to make it clear at this time that the Agency does not have to respond at this time. The purpose of the Final Environmental Impact Statement is to present a more complete picture of the reaction to the Draft Environmental Impact Statement and this is obviously, in my experience, the most extensive reaction that I have seen in a Draft Environmental Impact Statement where indeed, as Mr. McMichael indicated last week, there is in fact a give and take of information which is, I'm sure, valuable to the Pollution Control Agency. Do you have a question of Dr. Alexander, sir?

MR. DAVIDSON: Yes.

MR. GREENBERG: What is your name, sir?

MR. DAVIDSON: John Davidson, Goodhue County Commissioner and I come here as a neutral observer and sitting on the Zoning Board. You sent out this inch and a half catalog about a month ago and I have been trying to study it. Here we have a civilian in two weeks, after these

two meetings, comes back on these wells that are six miles away from the location and I am really disappointed We have spent a year waiting for this impact and when we get this literature back in a week and a half he finds ou more as a civilian than I have in that book on these well When the well is six miles from the location don't you people check any of these things? I think it's sad. We spent a year paying taxpayers' money. Hell, when I do something wrong in a day they give me hell in a day and now he comes out here in a week and a half and he drives down here in a week and like it sounds and he comes with all this literature and here you guys have a whole year and, I mean, what's wrong with it?

MR. DEFIEUX: I think one of the -- I think it's possible that -- I was at the Minnesota Geological Survey Offices and looked through all the borings available and it was quite some time ago, as you mentioned. It's been a long study. I think that the records were not particularly in an organized shape at that time and one of the representatives of the survey and myself went through them the best we could and we took out the borings that we found in the area. Now is that as it turns out there are others that were not there and weren't listed at that time.

MR. DAVIDSON: I think before you do any more I

think you had better check all those borings. You have these boring machines, the State has their own boring machines, they can go out and bore those and give you the accurate borings. I think that should be done.

Thank you.

MR. DEFIEUX: That's one of the mitigating measures that is in the report.

MR. GREENBERG: Yes, sir, you have a question?

MR. WARREN: My name is Mark Warren. I was just concerned with the wells. Don'tyou have geologists in your own organization that go out and check definitely the sites?

MS. CAIN: The Agency -- in the Environmental Impact Statement process, the Legislature and the Statute, when it was written, and the regulation which we have to operate under, specified that the information that we use is that information which is readily available and this essentially -- then I guess from my own opinion -- is a drawback and you are seeing this all the time. I guess I have mentioned this before. We have 120 days to prepare a project, we do have to go with existing data. Dr. Alexander has gone out and in a short amount of time has come up with a lot of information that we are very glad to receive and in fact that's the reason that we have these Hearings is to get this kind of information.

As Dr. Alexander mentioned, and Mr. Defieux mentioned, when we started this project it was in January and we have 120 days to do that. We did talk in terms of doing soil borings on a site and we came to the conclusion that in the winter and under the conditions that existed there that was not considered available -- readily available information at that time. We don't have people that go out and do the field checking as Dr. Alexander has done. That isn't a part of this process and I certainly think, as evidenced by this and probably other Hearings, that we wish that we had a longer time or that we could do original data gathering work. It isn't possible under this process and often Environmental Impact Statements are criticized for this very reason and many times rightly so. We don't have the kind of -- we don't have the people nor does the process really in effect allow us to go out and do all kinds of original research.

MR. WARREN: Would your recommendation be no permit be issued in the future without this type of study before this permit is issued?

MS. CAIN: I don't have a recommendation at this time. That's a decision that our Board has to make about issuing a permit. The Environmental Impact Statement does not make a recommendation. It is information only on the specific project. I think that there are

opportunities for people to participate in Hearings and so forth where regulations are developed and many of the things I think that have been mentioned in this Environmental Impact Statement Hearing are things that you people have to take to the Legislature perhaps to get new Statutes or to get changes in the regulations that allow other approaches to environmental problems. We don't have the answers. We don't have the best system and I think it's important that we recognize this and the people who are interested in furthering it do contact the people that make the laws and those are the Legislators.

If the Environmental Impact Statement is not a process which satisfies you then that is the place to make the changes.

MR. WARREN: Can I direct a question to the geologist?

MR. GREENBERG: Yes.

MR. WARREN: Could I ask in your opinion if a site -- can I do this? If in your opinion a hog operation was put on these sites with the geology that's there and one did leak into the groundwater and get down into the bottom water where the wells, what would the impacts be on the people in the area and how long would it take to clear it up if it could be?

MR. ALEXANDER: I simply don't know. There is no known way of cleaning up an aquifer once it is dirty. It

will presumably cleanse itself as the water goes through it, but we have no idea and I will not hazard a guess as to what the time scale of this would be.

The best way I can answer your question is I was talking Saturday to Mr. Kitzman, who gets his water from the spring coming just below the Hilltop Producers site, and suggested if I were him I would get that spring analyzed and I would analyze it every month if that site gets built so I could prove in a Court of law if and when the nitrate levels jump in that well. It is inconceivable to me that it would not have some adverse affect on the water. You simply cannot dump hogs -- I'm sorry, tons of hog manure into drinking water without it having an adverse affect. I don't know. I can't quantify that affect. I don't know.

MR. WARREN: Well, the reason I asked is we live about two miles from two existing sites now and we were just wondering what would happen to our well if one of these did leak into it.

MR. ALEXANDER: I would give you the same advice, analyze the well, have it repeatedly analyzed, keep the records so you can spot something when it happens. I don't know what your possible remedies are at that point, but at least you can document it. I think it's very important if such a site has this are built that people

go in and carefully get the background data for the water quality of the water wells in the area before the site is built so you can document a change if it occurs after the site is built. Equally well, if there is not a change, you can document that. If there isn't a change it isn't, we just don't know. It is possible that you can build these sites and not have an adverse impact on the water wells. I think it's a question -- it's an important question and it's one that we should find the answer to.

I have talked to Mrs. Cain about this and she says this is not -- I don't believe the MPCA's fault and she says that they applied to the Legislature a couple years ago for money to do this kind of study.

MS. CAIN: And these citizens were involved in that and we did ask for funding to do a generic study on swine facilities in general and that funding was not granted by the Legislature so we have gone on with the site specific information.

MR. GREENBERG: Ms. Kersch.

MS. KERSCH: I would like to make a comment. You were congratulating the PCA on allowing the give and take of this meeting and I want to congratulate all of the people, a lot of them here tonight, but a lot of them who aren't here tonight who have hung on for two years and are giving of themselves and taking away from their

families and are hanging in there. And I think it's -- I want to thank them and compliment them.

MR. GREENBERG: That comment wasn't directed to the PCA though. Yes, ma'm. What is your name again?

MS. PERRETT: Laura Perrett. I would like to ask the PCA people, when you do a site study is there anybody that has geology knowledge enough to look at the maps, as Dr. Alexander has, to come up with some of these very obvious observations from the geology maps or are they even looked at all?

MS. CAIN: In our own Agency?

MS. PERRETT: Yes, in your own Agency.

MS. CAIN: We have hydrologists in our Agency who do have the expertise to look at those maps.

MS. PERRETT: But do they?

MS. CAIN: Yes. I guess I shouldn't speak for the Division. A part of the Environmental Planning and Review Unit, and I guess the Divisions grant the permit, we work with the Environmental Impact Statement and maybe I assume that when permits are given that they are reviewed by the people who have expertise in that area.

MS. PERRETT: How can we -- does this have to come when we have the permit Hearings that we can say -- you know -- that this obviously needs to be done?

MS. CAIN: I guess, Mrs. Perrett, especially the

information that you gave in your testimony I think is very relevant when you address the kind of things you would like to see in the permit and I do believe that when the Environmental Impact Statement process is over that everybody who has identified issues that they want to be in the permit should submit those in writing and there will be other opportunities, bot in a Hearing process, I believe, that each of these would have a Hearing on them and also before our Pollution Control Agency Board. The Board is the group -- is the organization that issues the permit or makes a decision on whether to issue the permits or not and so certainly all of the things which you mentioned should be submitted to the Agency for consideration in the permit.

MR. GREENBERG: Dr. Alexander.

MR. ALEXANDER: Let me simply add one thing. It goes back to my story. For those of you who haven't read this document, I hope you will. They tell you all sorts of things, you just don't believe it when you read it.

One of the things that it points out right in the start, and I checked this with Mrs. Cain and I think I'm correct, the Final Environmental Impact Statement, as I understand the process, will consist of this Draft Environmental Impact Statement with all its imperfections and incorrections, plus an additional portion which

consists of this public record plus the written material that we put in and so forth. And so they are going to pick this thing up and change its cover to say "Environmental Impact Statement" of these things, the Draft will disappear, and a person who hasn't been to these Hearings or hasn't listened will have to read through these -- however many pages there are of incorrect data before they get to your comments and my comments about what's wrong with it.

Now the people that you are appealing to, or want to appeal to, are your State Legislators. They are very busy people. They have a lot of time -- a lot of demands on their time. They are going to pick this up, they are going to read the executive summary if you are lucky. They are going to look at the rest of it and say "Huh, that's a lot of work," and that's what they are going to make the decisions on. This is not the MPCA's decision, this is the way the law reads. This is what they are supposed to be doing. The MPCA is bound by the laws which people have passed. If you think that's the correct way it should be handled, well, you can do it.

MR. GREENBERG: Just so there is no misconception, the Final EIS does not have bound into it the transcript of this Hearing. The Final EIS has comments that are received as well as an additional section which contains

the response of the preparers of the Statement. Is that not correct, Mr. Moilanen?

MR. MOILANEN: I'm sorry, I missed the last part.

MR. GREENBERG: The Final EIS is the Draft, plus comments, plus the response of the preparer of the Statement?

MR. MOILANEN: That's correct.

MR. ALEXANDER: What have we been doing if not making a comment?

MR. MOILANEN: The transcription will be a part of the Final EIS, that is why we are transcribing this meeting. We are making that a part of it. We will respond to some of the questions that were raised, that will be part of the Final Environmental Impact Statement too. There will be a series of documents.

MR. GREENBERG: I see. O.K.

MS. KERSCH: I'm sorry, Mary Ellen Kersch. This has been bothering me too because I know I have gotten calls from reporters and one of the problems with this Draft EIS is that the press has said "Well, it's going to be O.K. because they did exactly what Dr. Alexander said, what the Legislators are going to do. I have had dealings with Legislators and he is right, maybe they will read it. If they do that's all they will read. Is there any chance that we could have this put on the bottom when it goes to

the printers, have the Draft put on the bottom and have the Agency's response to the Hearing and the submitted material put on the top as the executive summary and then have the transcript and other material sandwiched in the middle?

MS. CAIN: I don't see any problem with that. I guess we haven't really discussed the format of the Environmental Impact Statement, although the Impact Statement itself will not be reprinted in the Environmental Impact Statement.

MS. KERSCH: Put it on the bottom and the State -- don't even recover it. We want them to know that's the Draft because obviously --

MS. CAIN: I believe what will be sent out in the Final EIS will be a document which is clearly identified as the Final EIS.

MS. KERSCH: As a matter of fact --

MR. GREENBERG: Ms. Kersch, just a moment, please.

MS. CAIN: -- which contains those things which were mentioned and I think that we would be open to any kind of suggestions or comments on how this would be of most benefit -- presented to the greatest benefit as far as format is concerned and I guess since Mr. McMichael, my boss, isn't here I can say that, but I don't believe any kind of format is standardized so that there is certainly

room for change.

MR. GREENBERG: Yes, sir.

MR. SLOAN: I wish to speak on another point. You spoke about not making any attempts to do any checking on the sealed geology. I am Professor Robert Sloan of the University of Minnesota and I am responsible for having done the basic geology in the area. It was done with this map (indicating) as the base, the one that covers all of southeastern Minnesota at a scale of four miles to the inch. The particular areas you have abstracted from this map that you used for your report consisted of areas roughly one half by three quarters of an inch rectangles in three different spots.

I am well known as a member of the University faculty. My name is on the map. The citation is not just the Minnesota Geological Survey, 1966, it is "Robert E. Sloan, Author." It would be quite easy to simply pick up a telephone and call me at the University and see if I have any additional information. In fact, I did have maps available at considerably larger scale which were not published because of inadequate funding. You could have had the data in plenty of time for your 120-day report if you had simply called.

MS. CAIN: Thank you, Dr. Sloan.

(Applause.)

MR. GREENBERG: Any other comments?

(No response.)

MR. GREENBERG: I think there was some other people who indicated a desire to speak earlier. Anyone else? Yes, sir.

MR. THOMPSON: My apologies for not having anything written to work from and I am just going to make a few brief comments.

MR. GREENBERG: What is your name, sir?

MR. THOMPSON: My name is Bruce Thompson T-h-o-m-p-s-o-n, Route 1, Stewartville. We live about 15 miles southwest of town.

We were involved in a number of meetings with the PCA. John Regehr, who is involved -- wasn't that about 1974? And the only people that are present now that were present at that time are Mr. Lander and Mr. Pauletti (phonetic). We talked about many of the same things we are talking about here tonight that we talked about at the last meeting.

One of the things that came out of that that bothered me a great deal was the remark -- the question was asked whether this foul odor was a pollutant and the statement was made that it was not a pollutant, it was an agricultural smell and, therefore, not a concern to the PCA. Now if it is not a concern to the PCA I don't know how it

can possibly be considered as one of the conditions as to whether or not these things will be granted in the future. Is that statement still true?

MR. GREENBERG: Mr. Moilanen.

MR. MOILANEN: There is a section on odors in the Draft Environmental Impact Statement. The State of Minnesota does regulate odors, it regulates odors through Minnesota Rule ATC9. It does consider odors -- a odorous air pollution as a type of pollutant. That particular regulation has an exemption within it, an agra business exemption. That exemption has an exemption within it for the storage of manure in a -- has to be done in a nuisance-free manner. So there is some regulatory handle on odors from manure storage when it is not done in a nuisance-free manner.

MR. THOMPSON: O.K. There was a couple of words in your response that were familiar back to that time. One of them was nuisance and the statement was that a nuisance was not again considered a problem with PCA and another thing was your remark about agra business.

Now at the time that we were involved in this in 1974 we were -- our primary discussion was over the Midwest Swine Breeders or Babcock Swine, whichever you prefer to call it, and one of the statements that was made at that time was that this was zoned as an agra

business, not as an agriculture swine production facility. That has since been sold and is presently in production as a swine production facility.

And in the comments that were made earlier regarding permitting, are these permits a matter of public record?

MR. MOILANEN: Yes.

MR. THOMPSON: O.K. Are the permits current on this particular piece of property that I am speaking of?

MR. GREENBERG: Your name, sir?

MR. LANDER: Lawrence Lander. I was introduced earlier. I assume that you are referring to the International Swine facility, that's the current name for the same facility.

MR. THOMPSON: I am.

MR. LANDER: Yeah, the current permit is an NPDES permit which is available in our files for anybody to review.

MR. THOMPSON: O.K. I guess the other primary concern that I have is that it -- you know -- we talked about an Agency having the responsibility and the the authority to issue the permits to conduct this kind of business and with the comments, the travel that people have made from all over the State, people that have had nothing personally to gain about the ones that are currently being addressed, including myself, that an Agency

be authorized to issue those permits and yet not have guidelines, laws, rules that govern the way that these things are going to be operated, the standards that they have to meet. We are meeting tonight in the basement of the Highway Building. Now anyone that wants to operate an automobile has to meet standards of testing that are constantly monitored by the sheriff, police, highway patrol and if they don't perform they pay a penalty, they lose the privilege and that doesn't exist with the kind of situation we are talking about. In fact, comments that have been made to me is that don't concern yourselves with one that exists, they come under a grandfather clause. How many of these grandfather clauses are we going to issue before we reach a point and let's say O.K. it's a bad deal, we shouldn't have done it. We have to know what we are doing before we can issue grandfather clauses and give a free wheeling act to operate.

That's all I've got to say. Thank you.

MR. GREENBERG: Any response from the Agency?

(No response.)

MR. GREENBERG: O.K. Any other comments, questions?

(No response.)

MR. GREENBERG: Anyone who has not yet spoken? Yes, sir.

MR. KUNDE: My name is Don Kunde, I am one of the

proposers of the Hilltop Pork Producers.

I realize that what I am going to say probably most of the people in this room don't agree with, but I want it to go into the record anyway.

First of all, on page 5-49 in the Draft Environmental Impact Statement it says that we will not comply with the County Zoning and that was a misunderstanding on my part. When I gave him the information I thought they meant the acreage for the actual facility site. So we will comply.

Then I would like to add a few personal comments and then comment on some of the testimony that's been given.

Now the movement of hogs to confinement is relatively new, most of it happening in the last five to ten years, and that movement to confinement will accelerate because it is more efficient. Because this movement is new -- confinement is new, we are still learning, and it is the kind of learning that comes only from experience. Now you can plan your facility to take advantage of the latest technology, but you probably won't be in operation very long before there is something better, but I don't believe that this fact justifies waiting for new technology. Where would we be today if the pioneers of our country had adopted that philosophy?

Now the control of odors is one area of confinement waste handling that needs to be improved. And now we have

never indicated that hog waste does not smell, so I think that control is the key word. Also, along those same lines, I do not think that a hog in a confinement building knows that he is a family hog or a corporate hog. So my point is that the operation we propose would not smell any better or any worse than any other farm that has hog confinement facilities.

Also, we would be willing to have on-site inspections by PCA staff or whoever, but I wonder how many of the people that are pointing their fingers at us would be willing to subject their facilities to the same inspection.

Now pollution is a problem that all of us contribute to and we should be devoting our time to that issue. I feel this applies not only to hogs but to all livestock. It is easy to single out these operations and criticize them but it is harder to come up with workable solutions that can and should be applied to the whole livestock industry.

I would like to make a few comments on some previous testimony. I think in the first Hearing the drug use was brought up and our operation, as well as anybody elses, would have to comply with food and drug regulations. Also, it was brought up that the economic phase of this study -- from the testimony it was pointed out that the hog industry would go this same route as the poultry

industry. I don't believe this to be true because the poultry industry was virtually integrated, but what we are proposing is horizontal, in other words, we would have local control. Now I agree that there should be thorough on-site testing. I do not agree that Murphy's Law should be applied, rather a plan of action devised to be implemented in case of a catastrophe.

I also feel that operations of this size would have a stabilizing affect on the markets and, therefore, advantageous to the small operators.

Tonight it was brought out that there is a trout stream in the immediate neighborhood and there is. I also know that some of the people who testified about this trout stream are currently polluting it and then they tell us that we might.

Also, it was mentioned that feed -- that waste from hogs cannot be recycled. I believe there is work being done with this and it is not due to drugs. I think she was referring to recycling or using the effluent from storage basins for flushing systems in regard to the health hazard. That's really about all I have.

I kind of feel like Daniel in the lion's den, but there are two sides to it and if we are going to have agriculture you cannot raise livestock without odors. I don't care if it's ten dogs, you are going to have odors.

I think we should be addressing that issue and preserving ag areas for agriculture and working at it from that angle because we have to have food.

Thank you.

One more thing I would like to introduce into the record, the pork industry is aware of the odor problem and at the National Pork Congress there were several seminars on odors and how to improve on them and how to handle them. So I would like to introduce that into the record.

MR. GREENBERG: That document will be received. It's the seminar proceedings from the American Pork Congress, 1979.

MR. MOILANEN: I notice that Mr. Alexander appears to have a question here for you.

MR. KUNDE: I am not a geologist.

MR. MOILANEN: You can answer it. You don't have to answer it, but go ahead.

MR. GREENBERG: Dr. Alexander.

MR. ALEXANDER: I was simply going to ask, can you tell us which of the parcels that you have outlined in your proposal have been tiled?

MR. KUNDE: Some of those to the east I have been. The site location is not.

MR. ALEXANDER: How about B or C, the one to the

north?

MR. KUNDE: What page is that on?

MR. ALEXANDER: Page 3-13.

MR. KUNDE: I do not know about either one. I think C is tiled on the south edge, at least it is to the east of it. I don't know about the north.

MR. ALEXANDER: On the next page, D and E and F.

MR. KUNDE: D and -- I know that D has some tile in it, I don't know about E. F, I do not know about.

MR. ALEXANDER: So parts of C and parts of D have been tiled?

MR. KUNDE: I'm not sure of C. I think that it does because there is a line coming from the east and I think he hooked onto it but I'm not sure.

MR. ALEXANDER: Can I simply make a comment that I am familiar with your David in the Lion's den feeling and I tried repeatedly to say that I think a lot of these questions are potentially answerable questions and that we have to make them on the best available information that we have, but I feel obligated to comment on your analogy a little bit about the pioneers because I am a scientist and I am continually working on new ideas and the impact of them and so forth.

Your analogy to the pioneers breaks down a little bit because when the pioneers, as my grandparents and I

suspect your grandparents did, got in their wagons and headed west, they were taking their chances, that's true, drawing a new technology that they were risking their lives. What these technologies are risking is not your lands alone and your water alone but your neighbors' water and land alone. Now you are not unique in that, this is a situation that's happening to all of us and several of the points that Mrs. Cain has made I think are valid, that we do not yet have the legal tools to assess this risk taking. Maybe that's one of the messages we should learn from an Environmental Impact Statement like this is the need to get more tools because what you are asking for is the Nesseth's and the Kisson's and the Ketzman's and the other neighbors to risk their water supply.

MR. KUNDE: No, I'm not, because I am agreeing to. I think there should be thorough on-site testing, I really do, because I don't think anybody would deliberately pollute somebody's water, at least I don't think anybody would. I think I mentioned that I am in favor of thorough on-site testing. I think it should be done. I think it also should be done to dairy and beef.

MR. ALEXANDER: That I think is a very good point too.

MR. KUNDE: Yeah. I think the hog industry is being unfairly treated because there a lot of big dairy

operations and beef operations that have the potential to pollute, probably more.

MR. GREENBERG: Any other questions or comments?

MR. ESTERBY: Yeah, one more. I handled a portion of my manure from my dairy operation as a liquid and one of the problems comes in handling it in the liquid is you handle such a tremendous amount of weight and the problems comes in not applying a lot of manure to the fields but in the tremendous amount of additional compaction that you get from hauling these heavy wagons across the field time after time after time. Some of the neighbors have found that where they have been spreading a lot they think that they have a reduced yield and it's not because they are having a lot of manure on it it's because they are driving across that field so much with the heavy wagons. The roots can't get through to get the amount of nutrients to get the big crops that we are shooting for.

MR. GREENBERG: Discing doesn't take care of that?

MR. ESTERBY: No, not at all.

MR. GREENBERG: Shows how long it's been since I have been on a farm.

MR. KUNDE: If that is true, Gary, then I feel it is a problem of the landowner.

MR. ESTERBY: Yeah, that's very true.

MR. NELSON: Roland Nelson. If you get this compaction would you not have a lot more runoff because of the density compaction, lack of penetration?

MR. ESTERBY: More than likely and you have to get your big tractor out and run through the subsoil and try and loosen it up again.

MR. GREENBERG: Let's get back to the Environmental Impact Statement. Any other questions directed to the witness?

MR. GREENBERG: Commissioner.

MR. DAVIDSON: John Davidson. Don, do you still plan to build that slurry store that you had set up?

MR. KUNDE: That was our original proposal, right.

MR. DAVIDSON: Yeah.

MR. KUNDE: I think I mentioned and I think it reflects in the EIS that an alternative --

MR. DAVIDSON: I mean, I don't mean to put you on the spot, but I know you did talk about it at one time that you were going to build a slurry store, right?

MR. KUNDE: Right. Well, we -- I may as well comment on that. Right, we did originally plan to build a slurry store and it is in the plan as one of the methods. I think everybody knows that's a very expensive method to go. One of the reasons why I suggested an alternative was because the people did not seem to think a slurry

store was good enough either. So why not build a cheaper one -- you know -- if the people are going to be upset anyway and maybe that's not sound rationalizing but I am just being honest and I think a slurry store or a cement containment pit is the best, very expensive.

MR. GREENBERG: Thank you, Mr. Kunde. Any other questions or comments? Yes, sir.

MR. MOHRING: My name is Eric Mohring.

I am working as a research assistant with the Minnesota Geological Survey under the supervision of Dr. Alexander.

I just wanted to ask the PCA staff about the preparation of the final document and specifically how much -- we touched on this a little bit, but I think it deserves to be talked about a little more, that is, how much rewriting is going to be going on for the preparation of the final document? It's my opinion that anything labeled an Environmental Impact Statement should be just that, something which somebody can pick up and be able to assess the impacts to the environment and with this information that's just been turned out I would not like to see that document in print with the label "Environmental Impact Statement" on it. I realize we are talking about a lot of manhours and a limited funding and I am not even sure about how this operation works, but -- well, could

you answer that question? How much can that be rewritten? Because as I see it, in the preparation of some of the geology maps around here, there are some gaping holes in the document. When I write a rough draft and someone criticizes it, I am not leveling any personal accusations or anything, but just wondering how much rewriting?

MS. CAIN: I guess I have to comment that Eric used to be a student of mine in ninth grade and now he is asking me questions, so maybe all our turns will come.

(Laughter.)

MS. CAIN: I guess, to be perfectly honest, this is the first Environmental Impact Statement I have been involved in. I know that the process involves a lot of rewriting and I can't commit myself to say that -- what exactly will be written. Certainly the information on geology is extensive and I would expect that there would be a lot of consideration given to geology. Other areas will be expanded and in some areas there were not so many contradictions as there were concerns with emphasis given to certain points.

So I guess I can't answer your question, to give you the amount that will be rewritten, but certainly we will do rewriting and then, of course, the document has to be found adequate and there are opportunities that people disagree with the emphasis or the direction that the

Final Impact Statement -- if they disagree with that direction there are opportunities for them to express their concerns about that at the Board meeting and at the EQB meeting also. So I guess in a way I am dodging your question because I simply don't know the extent of the rewriting. Certainly certain areas will be extensively looked at and I think that as Rick said there is a lot of raw data that's been submitted and we do have to look at it and all of us together will have to come to some decision.

MR. MOHRING: O.K. But my concern is that whatever comes out as the Final EIS will be as correct as possible in view of the new data that has been turned up in a relatively short amount of time.

MS. CAIN: We will strive to make it as correct as possible within the constraints -- well, we would hope that we would not put out anything that was incorrect and certainly I think that we can do that with the kind of cooperation that we have got here. We have lots of people watching us so it is a short amount of time. It's a lot of manhours, that's correct, and I guess all I can say is that we will do the best we can. We invite you to come in and give us a hand if you want to.

MR. GREENBERG: Mr. Moilanen, did you want to add anything to that?

MR. MOILANEN: No.

MR. GREENBERG: Just so you are not misled, Ms. Cain is not trying to mislead you, but I just want to make sure that you understand that at least it's my experience, and it's based on the rules currently in effect, this is part of the Environmental Impact Statement in its final form. There are additional materials. If warning is appropriate perhaps it should appear on the front of the package as it may be as to what --

MR. MOHRING: That's what I wanted to hear. Is that going to be part of the final document and if so I would like to object or something.

MR. GREENBERG: Just a moment. Do you have a question or comment on that?

MR. REGEHR: Yes, my name is John Regehr and I would like to just make a recommendation that if this Draft EIS is part of the Final EIS in this form that the areas that are going to be changed be highlighted in the margin with a black bar. This is often used in other documents and then also in the margin reference be made to the area in the addendum where the correction is made.

MR. MOILANEN: We will certainly take that under advisement. I am kind of a novice at this myself. That makes sense to me -- you know -- we will look at it. It does come in -- it will be coming in in the form of an

addendum with our comments. I don't know that that's been done in the past. If it makes the document any clearer it doesn't strike me that it would hurt anything.

MR. REGEHR: There has to be a way to correlate the addendum information with the Draft.

MR. GREENBERG: That is the way it's done.

MR. MOHRING: All I wanted to say is if it goes in there will still be a lot of wrong information there. Dr. Alexander said the wrong maps will still be there. There should be some way of at least getting people to know that.

MR. GREENBERG: Any other comments or questions? Yes, sir.

MR. WARREN: May I just address the Board?

MR. GREENBERG: Yes, sir.

MR. WARREN: Mark Warren again. I would like to have each one of them give us an opinion of what they think of that document as it appears.

MR. GREENBERG: Well, I don't think that's a fair question to them at this type of a meeting. It's a meeting to discuss the Draft Environmental Impact Statement and I think that study is necessary and that's the purpose of the meeting. If they want to proffer a comment in response to your question they may do so but they are certainly not required to do so at this type of meeting.

I am not trying to put up a barrier, I am just explaining that I do not believe that it is the type of reaction which is going to be productive in this process of gathering information about the Environmental Impact of the project. If the Agency wishes to respond they may.

MR. MOILANEN: Well, I would just say one thing and that is that I won't comment on what my opinion is on the adequacy or inadequacy of this because I am not a technical person and am not in that position, but I will say that I think that the process -- the EIS process is working its will this evening and I am pleased with this process. Again, I differentiate that opinion from an opinion on the adequacy of this document.

MS. CAIN: I guess I would like to say that I agree with Bob, that when we come to these meetings I think a lot of times people think that we are coming in an adversary role, that we are coming into defend the EIS. If you realize it, the whole purpose of the meeting is to solicit your comment and I think it's recognized by the State and certainly by us that the people that can contribute to a process like this and to an Environmental Impact Statement, or assessing Environmental Impacts, are not all sitting in State Agencies or consulting firms or in law offices or wherever we may be and that's where we are coming to. I have not felt that this was an

adversary kind of meeting and I guess I am of the opinion, as some of the other people I have talked to in State Agencies over the week, that we have gotten a lot of good information and certainly what you have contributed has helped us to look at this Draft Environmental Impact Statement with a different perspective. I just think that the process is working, that we have gotten all kinds of information and certainly that's what we intended to do and so I think that this procedure we have been going through is very successful. I think that it's a credit to everybody that's been involved. So I feel good about the whole process.

MR. GREENBERG: Anyone else? Yes, sir. Your name, again?

MR. NELSON: Roland Nelson. Just in helping you people, do you actually go out and visit with farmers in areas where there are facilities?

MS. CAIN: We do not. I do not. Our office -- when we are assigned to compare an Environmental Impact Statement, what we do is -- because of staff limitations and so forth, we have to get the people to prepare it essentially with us in a sense, but we do not go out and talk individually to the people. Now that would be an alternative that could be used in other cases. Perhaps this was -- I think it has been brought up many times that

this may be the direction that we should go, but in this particular process we did not do that.

MR. NELSON: Just one more question. Just to clarify me, if I'm wrong, last week -- a week and a half ago you talked about setting up a mock odor system, is this correct, to check for odor within mileage?

MS. CAIN: Modeling?

MR. NELSON: Yeah, modeling. Is this true?

MS. CAIN: The modeling that we did in the Environmental Impact Statement, that's part of the Environmental Impact Statement, what has been discussed in these Hearings is getting some information from people that live in the area, assessing perhaps the distance they live, how often they have the odors and for how long a time. I am not sure how we could do that in the time that we have, but it's certainly something that we could consider.

MR. WARREN: I was just concerned that you spent quite a little time on this model. It would save you a lot of time if you did a little visitation and so forth.

MS. CAIN: I think that's true. I think the problems with people going out and doing their own subjective analysis -- I mean, us going out and doing this is that we are all different and if someone mentioned that hasn't been brought up on a farm they have one perception of what odor is and other people that have never had those

experiences would have quite a different perception. There are what are called odor panels that are sometimes developed and it's very difficult to get an odor panel together to go out and come up with some kind of objective view of this. So there are all kinds of difficulties involved and certainly some of those can be overcome. But what we tried to do with this was make the very best effort we could using what information was available to us, being extremely conservative in our estimates and we hope that that would give us an estimation of what it would be like. I think that we succeeded in that goal and now there has been additional information under certain circumstances, things can be much worse than that and this was our attempt to try to do that in a way that had some kind of quantification and it may not have totally succeeded, but I don't think it totally failed either.

MR. GREENBERG: Let me see the hands of those who wish to testify?

(Indicating.)

MR. GREENBERG: We will recess for five minutes, a very brief recess, and then we will reconvene to hear Dr. Tinker's testimony, the response of anyone on the panel, and then we will adjourn the meeting.

(At this time a recess was had

and the Hearing reconvened at 10:50 o'clock P.M.)

MR. GREENBERG: Doctor Tinker.

MR. TINKER: I have been lugging this heavy book around for a week.

Again, my name is John Tinker, I am interested in this from a very personal point of view because on page 5-12 of your book, as I mentioned last week, if you draw a line between the center of those two target areas or circles I live almost equidistant from the two, right dead center. So they have bracketed me so I am interested.

I am a physician and I can read medical literature, perhaps not as well as Dr. Alexander can read the geological literature because this is not my specialty, as I mentioned last week.

I talked last week about bacteria and I talked about the disease methemoglobanemia that you had so much trouble recording, but it's in there last week. This week I just want to very briefly touch on the other aspect that you do mention in your draft EIS and that is viruses.

I don't think you make a very large point, in fact I don't think you mention at all, unless I missed it, how difficult it is to understand and culture and document

the presence of viruses. The problem with a virus is that it is not quite a living thing. It's almost a living thing but it's missing some of the things that you need to really be considered a living thing. So, in other words, it has to grow inside of a living cell. It needs some of the machinery of that living cell in order to grow and that's important because if you are going to detect its presence you have to provide it with something to grow inside, a living cell. You have to provide that virus with something to attach to and grow inside of.

Now getting back to bacteria such as we talked about last week such as the diseases that are listed here such as leptospirosis and brucellosis and things of that nature -- not brucellosis, leptospirosis and other diseases, those are bacteria. Now to grow them all you need is a culture plate with some medis on it and you just plant it on there and it either grows or it doesn't and it will grow on something we call agar. But with viruses you have got to grow the viruses inside a sheet of living cells and the sheet of living cells is formed on what they call a tissue culture plate and then you have to deposit the virus on it. And then if the virus is there it will kill the cells and then you are left with kind of a hole in the middle of the sheet. It's extremely difficult to do and, therefore, the information in here that basically would have

you believe that there is virtually no danger from viruses I think is incomplete, not because you try to make it incomplete, but because our ability to culture viruses is so lousy. Medical diagnosis of virus illness, you go to the doctor and he says you have a cold and you have a virus, well how many different viruses are there? You don't know how many there are but there are many many hundreds. And the reason he doesn't go any further to try to identify which one it is; number one, there isn't any treatment for it; and, number two, the identification process is extremely difficult. However, the fact that there isn't any treatment for it is something you ought to think about.

Now I just want to talk about one kind of virus, and you mentioned it on page 4-31 and that's influenza and you correctly say that influenza is probably a disease which can be transmitted between -- from pig to pig and from pig to humans and from humans to pigs. We can give them influenza.

Now perhaps some of you in this room are old enough to remember the epidemic of influenza that occurred in 1918 to 1919. It really isn't an epidemic, it was what they call a pandemic, which really is a world-wide epidemic. It devastated the population of the world. It killed off the older folks by the hundreds of thousands and the people

who got this influenza epidemic in 1918 to 1919 who survived it, some of them may well be in this room, it turns out that it later was associated with the incidents of Parkinson's disease in many people who had influenza way back in 1918. We are talking 20, 30, 40 years later. A poor soul who got influenza, no fault of his own, back in 1918 later developed the disease you all know of as Parkinson's disease of the tremor and the stooped posture and the faces and so on.

Well, this book, which I will introduce into the record, but I can't let you have since it belongs to the Mayo Clinic, is by Hubbert and it is entitled "Diseases Transmitted From Animals To Man," and on page 814 it says, and I would rather just type this out, but I would just like to read it fast and not have you --

MR. GREENBERG: Read it slowly so he can get it.

MR. TINKER: Well, I will have to spell the words.

"Subsequently retrospective serologic studies confirmed that a swine influenza-like virus circulated in the human population at the time of the 1918 to 1919 pandemic." Now that does not prove that epidemic was swine flu but it suggests it was and there is a mountain of literature that says as best they could tell that virus no longer exists. You can't find that virus to test it, the one that causes that pandemic, but it was such a

virulent virus that it swept the world and it may well have originated in swine.

A little further down that same page in the same text they say "Perhaps a more important consideration than a frequent transmission of influenza viruses between animals and man is the potential for the development of antigenic variance in one species, which may be particularly virulent in other species." Now what does that mean? To me that means that if there is a disease which can be transmitted from animals to man and back to animals again, and if you have large concentrations of animals developing, as one gentleman said, only over the last five or ten years, you may be able in those confined facilities eventually to grow very virulent bacteria or viruses which can be passed back and forth and made more and more resistant to that animal but can be virulent in man. So as I say, there is evidence that pandemic, for those of you who are old enough to remember it, was no laughing matter throughout the entire civilized world. It may well have been caused by a swine influenza.

Now I would like to emphasize just one other thing and that is on the same page in the Draft EIS, 4-31, it says "It was shown that humans transmitted Hong Kong flu virus to swine but the reverse sequence has not been documented under natural conditions." And the very next

sentence goes on to say "Experimentally man has become infected with viruses of swine origin." Well, I think that's misleading because even though it hasn't been shown to occur -- you know -- in communities and on farms it certainly has been shown, quoting again from the same text, page 844, "Human volunteers have been infected experimentally with these viruses isolated from pigs."

Now even though it was done in the lab, all that was done was merely swabbing the nasal passage of the volunteer with a known virus that was originally grown in a pig. So there is no doubt, and that's what bothers me about this statement in the Draft EIS, there is really no doubt that pigs can transmit viruses to man and that there is little doubt, at least in my mind having read this business, that it is possible for some of these viruses to sweep around pretty rapidly. You know how fast these viral outbreaks occur.

So I would just like to add to my testimony last time about bacteria and about nitrates, I would like to add an emphasis on viruses, which I think is perhaps a little short here and I will put that in writing and submit it with my other stuff.

Thank you. That's all I wanted to say about diseases.

MR. GREENBERG: Any comments? Any questions?

(No response.)

MR. GREENBERG: I can't see anyone over there.

MR. BANE: I guess the first -- Dr. David Bane. First of all, I want to ask about -- you talked about methods of viral detection and you only talked about being able to grow viruses.

MR. TINKER: There are other ways.

MR. BANE: There are many other ways.

MR. TINKER: Right.

MR. BANE: The majority of viral infections are detected by serology and not by getting that virus out --

MR. TINKER: Serology --

MR. GREENBERG: One person at a time.

MR. TINKER: Serology, I should explain what that means. Serology means that if I give you a virus and you have a disease and the disease causes you illness or maybe doesn't cause you illness, but anyway the virus grows in your body, your body develops antibodies against that virus. And if then in retrospect I'm interested in which kind of virus you had, I can draw your blood and have complex tests that can be done and that's what's called serology. And the reason why I didn't mention it is because it's a retrospective way of looking at it, absolutely right. You certainly can detect diseases -- the presence of viral diseases in the past by serology. Presumably I could tell whether you had measles and so on

in the past by looking at your serology. The problem with that, from public health point of view, is just that, that it is retrospective. I didn't mean to imply that it's the only way.

MR. BANE: Then talking about the potential of transfer of influenza virus from pigs to man, you stated, and correctly, that there is some documentation that it has been done in the laboratory, but also some surveys have shown that the general incidents of influenza in high-risk populations like farmers and veterinarians that are in close contact with swine have no higher incidents of influenza than the rest of the population.

MR. TINKER: The problem with that is -- I agree, that's true. The problem with that is that the influenza virus is a problematic virus in the sense that it seems to be able to lie dormant in either pigs or in man for years or months and then suddenly it undergoes what we call mutation, that is, it changes its essential characteristic and once it changes its characteristic it may break out. I would only add one other thing and that is that the people from the U.S. Public Health Service must have been -- perhaps wrongly, but must have been very very worried about the last potential swine flu epidemic because they made us all go and get vaccinated, you know. As it turned out they may well have unnecessarily reacted,

but there were some very much more knowledgeable people than me who made those decisions to go ahead and spend that kind of money and that kind of effort on it. And so they viewed that as a real hazard and I bring it up because I think it should be brought up.

MR. GREENBERG: Any other questions from the Agency?

(No response.)

MR. GREENBERG: Any other questions?

(No response.)

MR. GREENBERG: Thank you, Dr. Tinker. Mr. Esterby.

MR. ESTERBY: I have one question of the gentleman over here but I don't remember what his name is.

MR. GREENBERG: Doctor Bane.

MR. ESTERBY: No.

MR. DEFIEUX: Rick Defieux.

MR. ESTERBY: You are the head of a company or an Agency or what position do you have?

MR. DEFIEUX: I work for a company called Environmental Research and Technology.

MR. ESTERBY: How much money does this company you represent get for putting out this? You wrote up this EIS, is that right?

MR. DEFIEUX: I didn't personally.

MR. ESTERBY: No, but I mean, the company that you or whatever Agency --

MR. DEFIEUX: We assisted the MPCA.

MR. ESTERBY: You assisted it?

MR. DEFIEUX: Yes.

MR. ESTERBY: How much money did you get for your portion of this input?

MR. MOILANEN: I am really -- I don't know that that's really a relevant question and I am going to object to that question. I think --

MR. GREENBERG: I agree that it's not a relevant question, but it must be a matter of public record and would be available.

MR. MOILANEN: If you would like a copy of the contract between the Agency and ERG I would be glad to supply you a copy of the contract and you can get a hold of me, but I would rather keep it out of this record.

MR. GREENBERG: Any other questions or comments?

(No response.)

MR. GREENBERG: I have printed on the Board my name and address to which comments, if any, should be addressed within 20 days of the conclusion of this record.

Dr. Alexander.

MR. ALEXANDER: Information received postmarked when?

MR. GREENBERG: Received in my hands, that would be July 25th, 1979 at the close of the normal business day, which is 4:30 P.M. That's not when I stop working, that's

the close of the normal business day.

Before we adjourn let me ask one more time, are there any questions or comments?

(No response.)

MR. GREENBERG: Let me say in all honesty that I have conducted a number of these Hearings and this has been, I believe, in terms of the give and take, the presentation by the public has been, in my opinion, outstanding and I think has added immensely to the record and to the knowledge of the PCA in this matter. As Mr. Moilanen indicated this is exactly what the process is designed to do. Some questions were raised about aspects of the process. I think Ms. Cain indicated correctly that in some instances your best method of changing, adding to, or detracting from the process is through the Legislative process. There is an additional system which is by petitioning it to have rules changed. The PCA goes through many rules Hearings and anyone who has reviewed the rules that are geared to this process may suggest changes for those rules which are then brought to public Hearing after another process which I am sure you are all interested in. You may indeed effect the method and the methodology of the preparation of Environmental Impact Statements. Let me again remind you that the materials must be received by me within 20 days in order to be

considered as part of this record. That's of this record. I have no doubt that comments received by the Pollution Control Agency subsequent to that 20 days may be considered, but I assure you that the degree of consideration would be minimal given the fact that by Statute and Rule they are required to complete the Final EIS within 30 days after the close of the record. The record closes 20 days after this. So you have got 50 days that the staff has to consider this.

Last time. Any other questions or comments?

(No response.)

MR. GREENBERG: Seeing none I declare this meeting adjourned.

* * *

REPORTER'S CERTIFICATE

I, Kirby A. Kennedy, do hereby certify that I recorded in stenotype the Hearing on the foregoing matter on the 5th day of July, 1979, at Rochester, Minnesota;

That I was then and there a notary public in and for the County of Washington, State of Minnesota.

I further certify that thereafter and on that same date I transcribed into typewriting under my direction the foregoing transcript of said recorded Hearing, which transcript consists of the 121 typewritten pages.

I further certify that said interview is true and correct to the best of my ability.

Kirby A. Kennedy, Court Reporter