

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

ORDER OF THE SUPERVISOR OF WELLS

IN THE MATTER OF

THE REQUEST OF MICHIGAN)
ENVIRONMENTAL TRUST LIMITED,)
MICHIGAN OIL AND GAS ASSOCIATION,) ORDER NO. (A) 14-9-94
ET. AL., FOR THE ADOPTION OF A)
SPECIAL SPACING ORDER FOR ANTRIM)
SHALE FORMATION GAS WELLS IN 22)
NORTHERN MICHIGAN COUNTIES)

OPINION AND ORDER

On November 14 and 15, 1994, January 17 and 18 and February 14, 1995, a contested case hearing was held before the Supervisor of Wells and the Oil And Gas Advisory Committee regarding the above-captioned matter. The hearing was held under the authority of the Supervisor of Wells Act, 1939 PA 61, as amended, MCL 319.1 et seq.; MSA 13.139(1) et seq., and the administrative rules, 1979 AC, R 299.1101 et seq.¹ The hearing was conducted in accordance with the Administrative Procedures Act, 1969 PA 306, as amended, MCL 24.201 et seq.; MSA 3.560 (101) et seq. The purpose of the hearing was to consider the request of Michigan Environmental Trust Limited, et al., for an order pertaining to the need or desirability of adopting a special spacing order for the location and spacing of wells and the development of units or pooled areas in the Antrim Shale Formation (hereafter called "Antrim") in 22 northern Michigan counties.

FINDINGS OF FACT

1. The Parties requested the hearing cover 16 counties in northern Michigan. The scope of the hearing was expanded to 22 counties by the Supervisor, and includes:

Alcona, Alpena, Antrim, Arenac, Bay, Benzie,
Charlevoix, Crawford, Grand Traverse, Iosco, Kalkaska,

¹ By signature of the Governor May 23, 1995, the Supervisor of Wells Act, 1939 PA 61, as amended, MCL 319.1 et seq.; became Part 615 Supervisor of Wells of the Natural Resources and Environmental Protection Act, Act No. 451 of the Public Acts of 1994, as amended.

Lake, Leelanau, Mason, Manistee, Missaukee, Montmorency, Ogemaw, Oscoda, Otsego, Roscommon and Wexford.

Based on the historical development of the Antrim, these counties have the highest concentration of wells and potential for development of Antrim gas.

2. For the purposes of this Order, the Antrim comprises the rock interval from the base of the Berea-Bedford sequence to the top of the Traverse Group and includes all formations correlative to that interval including the Ellsworth Shale of western Michigan.

3. The Antrim is a part of the eastern Devonian shales sequence found throughout much of the Michigan, Appalachian, and Illinois basins. It is an organically rich shale of Devonian Age. In northern Michigan, the Antrim section ranges from 300 to 770 feet in thickness at subsurface depths ranging from less than 500 feet to approximately 1,500 feet. The Antrim is characterized by matrix permeability typically lower than one millidarcy. Extensive fracturing is required to create the necessary pathways for gas migration to the well bore. Economic production of gas is contingent on encountering such fracturing. Well logs show the presence or absence of fracturing is random. One well bore may reveal virtually no natural fractures, while another well less than a mile away may show extensive fracturing throughout the Antrim. Current geological and geophysical means cannot identify fractured areas without drilling test wells. Mr. J. Michael Gatens III, a petroleum engineer for S.A. Holditch & Associates, Inc., testified the Antrim is an unconventional, complex and unique reservoir. His description of the Antrim is:

. . . a low-permeability, organic-rich matrix rock which contains gas in a sorbed state. Free gas also exists in conventional pore space within the shale matrix and in the natural fractures. The shale matrix typically has very low permeability; permeabilities have been measured on the order of 2×10^{-8} md. To achieve commercial production from these formations, natural fractures must exist (as a general rule) which allow the gas to migrate from the very low permeability matrix into the permeable

natural fracture system, which then connect to the well bore and to induced hydraulic fractures created near the well bore.

I find, as a matter of fact, the Antrim is an unconventional, complex, and unique gas reservoir.

4. More than 4,000 Antrim gas wells have been drilled in the geographic area covered by this proceeding. Michigan's Antrim gas development began in 1940 with the Otsego Field in Section 34 of T30N R3W, Bagley Township, Otsego County. The Otsego Field was developed and produced under a special 160-acre spacing order. In the mid-1980s, Antrim gas began to experience significant development, due in part to the federal tax credit in Section 29 of the Internal Revenue Code. This development occurred under the existing 40-acre general rule spacing provisions. In 1992 alone, 1,189 Antrim wells were drilled. Although the federal tax credit ended in 1992, a significant number of wells continue to be permitted and drilled throughout the geographic area covered by these proceedings.

5. During the most recent years, Antrim gas wells have been characteristically, but not exclusively, developed as a group of wells or project basis rather than on an individual well basis. An Antrim gas well is rarely economical when developed individually. An Antrim project would include: 1) several Antrim gas wells; 2) a common gas gathering system; 3) a central production facility where all gas from the project wells is collected, separated, compressed, dehydrated, metered and sold, and; 4) a facility and well where all formation water from the project wells is collected and disposed.

6. Dr. Donald Inman, Deputy Director Region II, Michigan Department of Natural Resources, testified that surface resources and their associated values must be considered within the scheme of orderly development of the Antrim gas resource. He testified agricultural lands, forests, lakes, rivers, streams, wetlands and their associated fish and wildlife are important surface resources which should be considered. Over 70 percent of the land area in these counties is forested. The principal surface impacts come with the installation of wells, production facilities, flow lines, and maintenance roads. These impacts include forest fragmentation, loss of standing timber, disruption of the soil profile, reduction in forest aesthetics due to clearings, erosion and sedimentation impacting watercourses,

infringement on threatened and endangered species habitat, aesthetic and noise pollution, and disruption of wetlands and other sensitive ecosystems. I find, as a matter of fact, minimizing surface impacts to prevent surface waste is a principal factor in considering the proper spacing scheme for development of Antrim gas.

7. In developing a proper spacing scheme it is important to consider the relationship between well density and ultimate recovery of gas. Two well-qualified Antrim reservoir experts, Mr. Marvin J. Schneider, an engineer and team leader for Shell Western E&P, Inc.'s (SWEPI) Antrim gas development, and Mr. Gatens, analyzed the impact of well density on ultimate recovery. Both experts used different data bases and computer reservoir simulators to calculate ultimate gas recovery at different permeabilities and well densities. I find both Messrs. Schneider's and Gatens' evaluations to be essentially the same. Both experts opined, and I find, the closer the well spacing, the greater the gas recovery efficiency.

8. Three witnesses presented evidence regarding the impact of average project well density on the operator's economic rate of return. Mr. Gatens testified there is a substantial increase in economic benefit by decreasing well density from one well per 40 acres to one well per 80 acres. He testified the operator's economics are optimized and virtually flat within an average well density range of 80 to 160 acres per well. Mr. Schneider supports this conclusion based on his study of SWEPI's Albert/Loud project in Montmorency County. For a project of uniformly average wells, or a project of uniformly poor wells, the maximum economic indicator is achieved at an average well density of 120 acres per well. For a project of uniformly good wells, the optimum economic indicator is attained at an average well density of 160 acres per well. Mr. Sidney J. Jansma, Jr., President of Wolverine Oil and Gas Co., Inc., presented evidence demonstrating a 19.9 percent internal rate of return after taxes for a project developed on an average well density of 160 acres per well, and a 21.4 percent internal rate of return after taxes for a project developed at an average well density of 80 acres per well. I find an operator's economic rate of return is maximized and equal anywhere within the well density range between 80 and 160 acres per well.

9. Several of the parties suggested a continuation of 40-acre drilling units, or expressed a preference for 40-acre drilling units in special circumstances. The evidence shows the

development of Antrim gas on 40-acre drilling units results in excessive surface waste. The evidence also shows most Antrim wells will drain an area greater than 40 acres. The record shows well densities in Antrim development is tending toward more acres per well. This trend is attributed to the elimination of the Section 29 tax credit and the operators' increasing sophistication in developing the Antrim Shale. The trend cannot be ignored. The Supervisor rejects all proposals to continue 40-acre drilling units as operators' choice or to protect a 40-acre tract from actual or potential drainage. The Supervisor finds 40-acre drilling units cause waste and the drilling of unnecessary wells.

10. Several Parties supported 160-acre drilling units. The well could be located anywhere within the 160-acre unit but must be at least 330 feet from the unit line. Infill wells would be allowed, but could be located no closer than 990 feet from any other well on the drilling unit. At face value this proposal would seem to provide for one well per 160 acres, but because of the geological nature of the Antrim and using conventional drilling techniques, infill drilling would in fact move towards densities of one well per 80 acres. Spacing at 160 acres per well would provide for more room and flexibility in using lateral drain hole technology. However, to date the use of this technology has been limited. Mr. Gatens testified that in comparing the ultimate recovery of 80-acre spacing to 160-acre spacing, the loss of ultimate recovery of gas in a section of land for a good well (one having 12 millidarcies of effective permeability) would be 1.6 billion cubic feet (BCF); for an average well (one having between 6 and 9 millidarcies of effective permeability) would be 2.2 BCF and 2.8 BCF respectively; and for a poor well, (one having less than 6 millidarcies) would be 2.4 BCF. Mr. Jansma testified that when comparing 80-acre spacing to 160-acre spacing, the increased surface use caused by 80-acre average well density is offset by the fact that 80-acre average well density should result in 16.5 years of production as compared to 23.5 years of production for 160-acre average well density. I find 160-acre spacing would result in significant loss of important natural gas resources and, therefore, would result in underground waste.

11. Mr. Gatens testified if the reservoir rock has poor producing qualities, then 80-acre drilling units are best from a recovery efficiency view point. However, for the 25 percent of the wells which have better reservoir quality, Mr. Gatens favors a drilling unit of 160 acres. Considering only economics and

drainage efficiency, he would choose 120-acre drilling units if forced to make a choice. Given the technical evidence, the optimal spacing will usually fall within a range of 80 to 160 acres per well. Drilling units of 120 acres built on 40-acre quarter-quarter section blocks will not be adopted because this would result in drilling units that would radically deviate from the square or rectangular shaped units common to oil and gas spacing. As a matter of historical application in the development of oil and gas, drilling units built from square 40-acre blocks which can abut one another and can form quadrate units is a fair and equitable approach. I find, using contiguous 40-acre building blocks to form large pooled areas allows for drill location flexibility, lesser well densities, and better use of well completion technology such as lateral drain holes.

12. Several Parties support 80-acre drilling units. Mr. Gatens testified although there was some loss of ultimate recoverable gas at 80 acre spacing as compared to 40-acre spacing, ". . . in terms of recovery efficiency, it is generally between 80 and 120 acres and in fact, in terms of recovery efficiency at comparable high economic performance, 80 acres is generally superior for the cases we investigated." The fact that 80-acre spacing would significantly reduce surface waste as compared to 40-acre spacing is uncontested.

There is a conceptual problem, from a purely underground perspective, with a rectangular 80-acre drilling unit. However, the concept of an 80-acre rectangular drilling unit has enjoyed a long and fruitful history under Special Order 1-73, and is entirely workable for Antrim gas development. In fact, there is a distinct advantage to rectangular drilling units in the northern Antrim play. The flexibility offered in electing a stand-up or lay-down 80-acre drilling unit allows the operator of a project to configure the drilling units to accommodate many of the optimal surface locations that would otherwise be prohibited by the interior hard lines created under rigid 40-acre drilling units. I find, in most cases, 80 acres is the maximum area which may be efficiently and economically drained by one Antrim gas well. I find, 80-acre spacing for development of Antrim Gas will minimize both surface and underground waste.

13. Testimony was consistent that 330 feet should be the set back distance of the bottom hole location of any Antrim gas well or extent of any lateral well drain hole. I find, the bottom hole location of any Antrim gas well bore, or the location

of the end point of any lateral drain hole, should be no closer than 330 feet to a unit line to protect correlative rights.

14. The use of lateral drain hole technology for the development of Antrim gas is limited. Mr. Tinker of SWEPI suggested the Supervisor be consistent with a previous order, Order No. 10-12-87, providing the completion of lateral drain holes does not require a permit. That order also grants an unlimited number of lateral drain holes; under the facts and circumstances of this case, that grant is too broad. The potential for multiple drain holes from one well will increase over time and there is a need to provide reasonable controls to assure the protection of correlative rights and to minimize well communication. I find two (2) lateral drain holes within the Antrim may be completed from any one well bore without a permit or a hearing provided the end point of the drain hole is no closer than 330 feet of the drilling unit line as shown on a well bore survey identifying the course and end point of the drain, and the operator obtains a Change of Well Status approval from the Supervisor. Additional drain holes may be allowed only after a hearing before the Supervisor.

15. As discussed in Findings of Fact 5, Antrim gas is usually developed on a project basis rather than on a well-by-well basis. A typical Antrim project involves combining multiple tracts of land by private agreement into large development areas. These Antrim projects range in size from 400 to 9,000 acres. Many projects are between 1,200 and 2,400 acres. Antrim projects are assembled, in part, based on the landowners, lessors, and lessees agreeing to sign a private agreement. Such an agreement essentially establishes the Antrim project area. As a result, the geographic descriptions of many Antrim projects are highly irregular. The operator develops an Antrim project by applying for drilling permits on 40-acre drilling units (pursuant to existing spacing) located within the Antrim project area. Neither the agreement nor the geographic description of the Antrim project is reviewed or approved. Not every 40-acre drilling unit inside an Antrim project is actually drilled. Production is shared with owners of undrilled lands inside the Antrim project. The net result of such an Antrim project is a lower well density (a more recent density near 100 acres per well) than would be developed strictly on a 40-acre drilling unit basis. It is recent common practice of the Geological Survey Division to review applications of proposed wells in an Antrim project on a group basis rather than on a well-by-well basis. The operator's plan normally includes the proposed location of

wells, access roads, flow lines, and associated processing equipment. I find the continued practice of reviewing Antrim gas well applications on a project basis, rather than on a well-by-well basis, will minimize surface impacts thereby minimizing surface waste. I find, as a matter of fact, because of the uniqueness of the Antrim and the manner in which it is developed, a large development area which is approved by the Supervisor can be considered a "pool" as defined in Act No. 61.

16. Among the proposals presented to the Supervisor is the concept of the "Antrim Developed Area" (ADA). An ADA would consist of an area of contiguous quarter-quarter sections of land which have been voluntarily or compulsorily pooled. Presuming 80-acre spacing is adopted, an operator could exclude lands within the ADA boundary ("islands") if the excluded lands are comprised of two or more contiguous quarter-quarter sections. Proponents of the ADA suggest that the Supervisor could certify an ADA upon the submission of documentation showing the outer boundary of the ADA, showing that the interests within the ADA were voluntarily or compulsorily pooled (except excluded "islands" as previously noted), and showing that the well density within the ADA is at most one well per 80 acres. If certified, then setbacks resulting from individual drilling units within the ADA (except "islands") would be automatically abrogated. The operator would be permitted to drill additional wells at any location within the ADA no closer than 330 feet from an ADA boundary or no closer than 1,200 feet between wells, until the average density reached one well per 80 acres. There were various suggestions, ranging from 990 to 1,320 feet, relating to the minimum distance that should be allowed between bottom hole locations of wells. The maximum distance possible should be adopted to minimize the potential of well communication. Several witnesses testified that because of the unique productive characteristics of the Antrim Shale and the potential to minimize surface waste, a special regulatory approach such as the ADA must be adopted. Dr. Inman testified that to reduce surface impacts it is important to minimize the overall well density and ensure orderly development. He supports the concept of developing project areas. Dr. Inman further supports the elimination of project area interior setbacks which result from individual drilling requirements of each drilling unit. He testified the elimination of interior setbacks would provide for even greater flexibility in locating wells, thus significantly reducing surface impacts. I find, as a matter of fact, developing Antrim gas as a group of wells or a project basis provides for limiting well density and minimizing the number of associated surface

facilities, thus minimizing surface waste. However, the ADA proposal is rejected for the following reasons. First, the ADA 1,200 foot minimum distance between wells requirement could result in wells being too clustered or concentrated and increases the potential for well communication. Second, the ADA proposal has the potential to exclude blocks of land 80 acres in size resulting in the creation of "islands" which may not be economical to produce by themselves. As the ADA is developed and produced, the potential for draining gas from under these "islands" increases significantly. This result diminishes the protection of correlative rights.

17. I find the ADA concept meets the intent of a "uniform spacing plan" (USP) as provided in Act No. 61 and provides for maximizing gas recovery and minimizing surface and underground waste. I find it is reasonably necessary to provide flexibility in the locating of Antrim gas wells in the 22 counties because topographical and other surface conditions make drilling at a regular location unduly burdensome and imminently threatening to water and other natural resources. I find, to prevent waste, an operator should have the flexibility, other than the more rigid 80-acre drilling units, to develop a USP based on the following criteria:

- A. That it is developed using contiguous (common side) 40-acre building blocks.
- B. That it consists of voluntarily or compulsorily pooled tracts all under the operator's control;
- C. That the distance between bottom hole location of wells is no less than 1,320 feet;
- D. That it ensures well density within the USP is no less than 80 acres per one well, and;
- E. That it has bottom hole location of wells located no closer than 330 feet to the USP boundary.

I find that the elimination of USP interior setbacks resulting from individual drilling unit requirements would

provide for greater flexibility in locating wells, thus significantly reducing surface and underground waste.

18. Various proposals were made for exempting from the authority of this Order those lands previously developed on 40-acre drilling units. I find drilling units for wells which received a permit prior to the effective date of this Order are exempt. All drilling permits issued for 40-acre drilling units before the effective date of this Order may continue as established drilling units. Such wells may be drilled and the drilling unit shall be the 40 acres as identified by the drilling permit application.

Well permit applications filed prior to the effective date of this Order (hereafter referred to as "pending applications") may very well fit into the established spacing or USP established in this Order. I find the end result of any permit issued from a pending application must ultimately comply with spacing and other requirements of this Order. I find an operator who has a pending application may:

1. Withdraw the application;
2. Amend the application to comply with the spacing and other provisions of this Order, or;
3. Elect to allow the pending application to be processed as submitted (hereafter referred to as an "Item 3 Well").

Pursuant to existing requirements and procedures, any well permit issued is automatically terminated one year after issuance if the well is not drilled; the Supervisor after reviewing well data and classifying a well as a gas well may transfer the regulation of gas production from a gas well to the Michigan Public Service Commission (MPSC); the Supervisor may allow a permittee to test gas wells before being transferred to the MPSC; and wells that are dry or have not produced in 12 consecutive months must be plugged. Pursuant to the statute, the Supervisor may issue "Certificates of Clearance" and declare gas produced in violation of the statute, rules, or orders as "illegal gas." There must be administrative safeguards for an "Item 3 Well" to ensure compliance with existing statute and rule requirements and timely compliance with this Order. I find that:

- A. An "Item 3 Well" permit is automatically terminated if not drilled within one (1) year of the date of issuance.
- B. An "Item 3 Well" which has not complied with the spacing and other provisions of this order within 24 months of reaching total depth shall be plugged unless the Supervisor grants temporary abandonment status.
- C. A Permittee shall not produce, transport, or sell gas from an "Item 3 Well" without a Certificate of Clearance issued by the Supervisor. Any gas produced without a Certificate of Clearance is declared illegal gas.
- D. The Supervisor will not transfer regulation of gas production of an "Item 3 Well" to the MPSC until the well is in compliance with the spacing and other provisions established by this Order.
- E. "Item 3 Wells" shall be allowed a one-time production test of up to 30 consecutive days.

19. Certain Parties requested the Supervisor "announce" in this Order the appropriate compensation for the risk of a dry hole to be applied in connection with future Antrim gas well compulsory pooling proceedings. This suggestion must be rejected because every compulsory pooling proceeding is factually specific and the appropriate compensation for the risk of a dry hole is determined upon the facts of each case.

CONCLUSIONS OF LAW

1. Section 13 of Act No. 61 states, in part, as follows:

The drilling of unnecessary wells is hereby declared waste as such wells create fire and other hazards conducive to waste, and

unnecessarily increase the production cost of oil and gas to the operator, and thus also unnecessarily increase the cost of the products to the ultimate consumer.

To prevent the drilling of unnecessary wells the supervisor . . . may fix a drilling unit for each pool. A drilling unit, as contemplated herein, means the maximum area which may be efficiently and economically drained by 1 well and such unit shall constitute a developed area as long as a well is located thereon which is capable of producing the economically recoverable oil or gas thereunder. MCL 319.13.

2. Subject to limited exceptions, the drilling unit size for Antrim gas wells in the 22 counties subject to this proceeding is set at 40-acre quarter-quarter sections of land under Rule 1979 AC, R 299.1201. Based upon the Findings of Fact, I conclude, as a Matter of Law, that 40-acre drilling units for Antrim gas wells create waste in the drilling of unnecessary wells and in excessive surface disturbance.

3. I conclude, as a Matter of Law, in most cases the maximum area which may be efficiently and economically drained by one Antrim gas well is 80 acres.

4. I conclude, as a Matter of Law, an area developed under a Uniform Spacing Plan (USP) can be considered a "pool" pursuant to Act No. 61. "Pool" means an underground reservoir containing a common accumulation of oil or gas or both. MCL 319.2(d).

5. Section 6(a) of Act No. 61 directs the Supervisor of Wells to prevent the waste prohibited by Act No. 61. To accomplish this purpose, the Supervisor is empowered to:

make and enforce rules . . . issue orders and instructions necessary to enforce such rules and to do whatever may be necessary with respect to the subject matter stated herein to carry out the purposes of this act, whether or not indicated, specified, or

enumerated in this or any other section hereof. MCL 319.6(a).

6. Section 6(j) of Act No. 61 empowers the Supervisor to fix the spacing of wells. MCL 319.(6)(j).

7. I conclude, as a Matter of Law, Antrim gas developed pursuant to a "Uniform Spacing Plan" prevents economic, surface, and underground waste.

8. Section 13 of Act No. 61 authorizes the Supervisor to approve exceptions to a uniform spacing pattern as may be reasonably necessary, and after notice and hearing, where topographical or other conditions make drilling at a regular location unduly burdensome or imminently threatening to water or other natural resources. Based on the Findings of Fact, I conclude it is reasonably necessary to provide exceptions to a uniform spacing pattern. I conclude, USPs as provided in this Order, are reasonably necessary. I conclude the elimination of "hard lines" within an area under an approved USP will prevent surface waste by allowing the operator more flexibility in avoiding environmentally sensitive surface features.

9. Section 13 of Act No. 61 provides in part:

The pooling of properties or parts thereof shall be permitted, and, if not agreed upon, the supervisor . . . may require such pooling in any case when and to the extent that the smallness or shape of a separately owned tract or tracts would, under the enforcement of a uniform spacing plan or proration or drilling unit, otherwise deprive or tend to deprive the owner of such tract of the opportunity to recover or receive his just and equitable share of the oil and gas and gas energy in the pool. MCL 319.13.

I conclude, as a Matter of Law, an operator having unleased mineral interests within a proposed USP may utilize the provisions of section 13 of Act No. 61 to require pooling of these interests.

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10. Section 14 of Act No. 61 provides: "The supervisor shall have authority to issue certificates of clearance or tenders whenever the same may be required to effectuate the purposes of this act." MCL 319.14.

11. Section 15 of Act No. 61 provides:

It shall be unlawful for any person to sell, purchase, acquire, transport, refine, process or otherwise handle or dispose of any illegal oil or gas in whole or in part, or any illegal product of oil or gas. A penalty or forfeiture shall not be imposed on account of any such act until certificates of clearance or tenders have been required by the supervisor as provided in section 14. MCL 319.15.

12. Section 6(o) of Act No. 61 authorizes the Supervisor to make rules for the classification of wells as oil or gas wells. MCL 319.6(o).

DETERMINATION AND ORDER

WHEREFORE, based on the Findings of Fact and Conclusions of Law, the Supervisor of Wells finds a special spacing order is necessary to prevent waste.

NOW THEREFORE IT IS ORDERED:

1. This Order applies to the following counties: Alcona, Alpena, Antrim, Arenac, Bay, Benzie, Charlevoix, Crawford, Grand Traverse, Iosco, Kalkaska, Lake, Leelanau, Mason, Manistee, Missaukee, Montmorency, Ogemaw, Oscoda, Otsego, Roscommon, and Wexford.

2. After the effective date of this Order, the following spacing options are in effect:

A. The drilling unit established shall be on eighty (80) acres, more or less, formed by combining blocks of two governmental surveyed quarter-

quarter sections of land with one common boundary of approximately 1,320 feet, with allowances being made for the differences in the size and shape of sections as indicated by official governmental survey plats. The bottom hole location of the well bore shall not be closer than 330 feet from the drilling unit line. A declaration of the unit must be indicated on the application for a drilling permit. An operator may designate whether these 80-acre units will be stand up or lay down.

- B. For the purpose of providing greater flexibility in locating wells to minimize surface waste and drilling of unnecessary wells, an operator may develop a uniform spacing plan (USP) approved by the Supervisor or unitize pursuant to the Michigan unitization law.
3. A USP may be approved and considered a pool if:
- A. The proposed USP is formed by combining blocks of governmental surveyed quarter-quarter sections of land with one common boundary of approximately 1,320 feet with allowances being made for the differences in the size and shape of sections as indicated by official governmental survey plats.
 - B. The operator files a certified statement that all oil and gas mineral ownership within the proposed USP boundary is owned or leased by the operator.

4. The following requirements apply to drilling permits and the location of wells within an approved USP:

- A. The operator of the USP is the only person eligible for a permit to drill and operate an Antrim gas well within the USP.
- B. The course or endpoint of a well bore or lateral drain hole within the Antrim shall be no closer than 330 feet of a USP boundary.
- C. The distance between bottom hole locations for standard vertical or conventional directional drilled wells within a USP shall be no less than 1,320 feet. Lateral drain holes drilled for completion purposes in conjunction with these wells are excluded from this requirement.
- D. The number of wells within the USP shall be limited to the total number of acres in the USP divided by 80.
- E. The operator shall develop a USP as a project consisting of several wells. A project plan shall be submitted with the permit applications. The project plan shall show, at a minimum, the proposed location of the wells, flow lines, access roads, and associated primary processing facilities. Areas where access roads and flow lines cross surface water, and regulated wetlands shall be identified.
- F. Changes to a USP boundary shall require written approval by the Supervisor.

- G. An operator having unleased mineral interests within a proposed USP may utilize the compulsory pooling provisions in Section 13 of Act No. 61 by petitioning for a hearing.
- H. Once a USP is approved, all interior hardline drilling unit boundaries are abrogated.

5. Two (2) lateral drain holes within the Antrim may be completed from any well bore without permit or hearing provided the drain hole does not extend closer than 330 feet of the drilling unit or USP boundary. Such drain holes must receive "change of well status" approval prior to beginning lateral drain hole operations. A survey identifying the course and end point of the drain hole accompanied by all wireline, strata evaluation, and other logs shall be filed with the Supervisor within 60 days of completion of a lateral drain hole. In accordance with existing rule, a well shall not be produced until these records have been filed with the Supervisor.

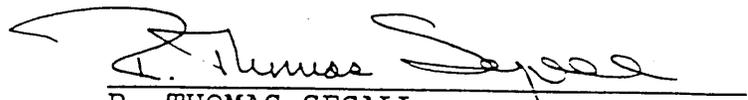
6. All drilling permits issued for units established before the effective date of this Order may continue as established. Such wells may be drilled and the drilling unit shall be appropriately identified by the drilling permit application. Drilling units established by other previous orders shall continue pursuant to those orders. However, any of these pre-permitted or established drilling units that are incorporated into an approved USP shall be included in calculating the well density limitation set by paragraph 4(D) previously noted.

7. An operator who has an Antrim well permit application pending at the effective date of this Order may elect to:

- A. Withdraw the application;
- B. Amend the application to comply with spacing and other provisions of this Order, or;
- C. Allow the pending application to be processed as an "Item 3 Well" as detailed in section 18 of the Findings of Fact. An "Item 3 Well" permit is automatically terminated if not drilled within 12 months of the date of issuance. An "Item 3 Well" which has not complied with the spacing and other provisions of this order within 24 months of reaching total depth shall be plugged unless the Supervisor grants temporary abandonment status. A Permittee shall not produce, transport, or sell gas from an "Item 3 Well" without a Certificate of Clearance issued by the Supervisor. Any gas produced without a Certificate of Clearance is declared illegal gas. The Supervisor will not transfer regulation of gas production of an "Item 3 Well" to the MPSC until the well is in compliance with the spacing and other provisions established by this Order. An "Item 3 Well" shall be allowed a one-time production test of up to 30 consecutive days.

8. Exceptions to the spacing and location requirements of this Order may be granted after notice and hearing.

DATE: 6/20/95


R. THOMAS SEGALL
ASSISTANT SUPERVISOR OF WELLS