

REASON for deleting notification requirements for some items listed above: these are normal actions which occur in the course of routine operations.

CHAPTER XI. PLUGGING AND ABANDONMENT OF OIL AND GAS WELLS

- I-329 11-1, A, 4th para., line 3, DEFINE "severe problems" as used in this context.
- I-330 11-2, line 9, COMMENT on sentence beginning on line 9: This would create large amounts of temporary surface damage in areas surrounding old wells.
- I-331 11-2, 1st full para., line 2, ADD a phrase so that the beginning of the first sentence reads, "In actively plowed agricultural areas..."
- I-332 11-3, line 2, CHANGE to read, "...good conscience, a few old, abandoned wells may have caused serious localized environmental problems. Most wells have never caused any environmental problems."
- I-333 11-3, 2, 2nd para., line 4, DELETE phrase "Until new regulations are written" and begin sentence with, "It has been the...."
- I-334 11-4, C, line 4, DELETE "natural" so that first part of sentence reads, "A bentonite mud..." REASON: What is unnatural bentonite mud?
- I-335 11-4, C, line 7, IOGA AGREES with the recommendation.
- I-336 11-5, 2nd full para., line 2, DELETE "small" in sentence beginning on this line, REPLACE with "any".
- I-337 11-5, 3rd full para., line 5, DEFINE phrase "a small percentage" in this context.
- I-338 11-6, E, line 9, COMMENT: There is no reference in existing regulations to perforating or ripping casing. Line 12, ADD phrase so that this line reads, "...uncemented surface casing recovery inadvisable, three reasonable attempts must be made..." REASON: There must be some limit to what will be expected so that expense and effort is worthwhile, and not futile. For example, rigs commonly used to plug shallow oil wells could not be used if the proposed recommendation is adopted. There are not enough cable tool rigs in New York to plug the number of shallow wells that should be plugged if every well has to be ripped.
- I-339 11-6, 1, 1st para., line 4, DEFINE term "surface water bodies" as used in this context.

- I-328 This reasonable alternative will be considered during the rulemaking process.
- I-329 A "severe problem" would generally be defined by the operator. The problem is severe when he judges the cost and/or technical difficulty would make continued drilling inadvisable.
- I-330 The basis for this comment cannot be found in the referenced sentence.
- I-331 The casing cut-off requirement should not be restricted to actively plowed areas. Over the years, farmers commonly rotate the use of their agricultural lands.
- I-332 The Department has reliable information to support the contention that several old abandoned wells have caused serious localized environmental problems. Therefore, we do not agree with the suggested change, but do agree that a change from "many" to "some" would be appropriate.
- I-333 The introductory phrase gives a sense of history of the Department's regulatory program. This has been our practice throughout the text of the GEIS.
- I-334 The suggested change is more technically correct, but the word "natural" was added to deliberately emphasize that the use of synthetic muds would not be appropriate.
- I-335 Support for the minimum mud density and gel-shear strength requirements is noted.
- I-336 The use of the word "small" is meant to convey the idea that a smaller volume plug stands a greater chance of being contaminated and creating a poor cement plug than a larger volume one. We realize that other sized plugs could also be contaminated.
- I-337 The term "small" is used in the relative sense. The specifics would be determined by the operator before a particular cement job is undertaken. Commonly 5% bentonite is added to reduce shrinkage.
- I-338 Although no direct reference is made in the current regulations to perforating or ripping casing, the current regulations call for a well to be plugged in such a manner as to prevent migration. With uncemented casing the only way to prevent migration is to pull, rip or perforate prior to placing cement. The material in bold type is meant for consideration in future regulations. Reasonable alternative proposals will be considered during the rulemaking process. In many cases, one conscientious attempt would be sufficient.
- I-339 See response to I-153.

- I-340 11-7, 2, a, line 5, DELETE sentence beginning on this line. REASON: It is covered in the sentence immediately following. Line 7, DELETE first part of sentence and ADD phrase so that sentence reads, "The regulations and common sense prohibit operators from shutting-in wells capable of commercial production...."
- I-341 11-10, 3rd para, ADD statement at the end of this paragraph to read, "The State should make every possible effort to contact the current operator and allow him adequate time to perform the plugging operations under his own supervision."
- I-342 11-11, b, line 2, IOGA AGREES and feels it is necessary due to the possibility of future opportunities for secondary and tertiary recovery, as well as the potential for improved economics in the natural gas market which may make these projects commercially viable again.
- I-343 11-11, F, 2nd para., COMMENT: Plugging regulations should be enacted which outline a generic procedure for plugging and abandonment of wells.
- I-344 11-12, 1st full para., IOGA DISAGREES with this recommendation. REASON: It would greatly increase plugging and abandonment costs. Cementing facilities would have to be on location for a substantial period of time. Recommendation could triple plugging costs. ADD an option that would allow for an increase in the size of plugs, rather than tagging.
- I-345 11-13, line 1, DELETE sentence beginning on this line. REASON: The statement is irrelevant.
- I-346 11-13, line 11, DELETE sentence beginning on this line. REASON: It conflicts with comment on p. 11-12, 1st paragraph, line 10, concerning the DEC's feeling that more wells may be plugged under these requirements.
- I-347 11-15, 1st full para., line 2, COMMENT: Minimum gel requirements would be a new requirement and should be listed in bold-face print. IOGA AGREES with this recommendation.
- I-348 11-15, d, 2nd para., COMMENT: This may be difficult if lost circulation zone is substantial, i.e., a gravel zone.
- I-349 11-16, 1st full para., line 3, COMMENT: Sentence beginning on this line doesn't need to be in bold print.
- I-350 11-16, #2, QUESTION: How would one get casing below the shoe plug?
- I-340 The suggested changes are not appropriate to the context of this paragraph.
- I-341 It is understood that the State would make every possible effort to contact and inform the current operator of the need to plug the well.
- I-342 Support for extending the temporary shut-in regulations to all wells regardless of commercial potential is noted.
- I-343 The proposed regulations do outline generic plugging procedures for wells of different type and construction. See pages 11-22 to 11-26.
- I-344 The option of increasing the plug size rather than a mandatory tag of plug location is given, but the State still has the authority to require the location of any cement plugs be verified.
- I-345 The sentence is very relevant to the discussion concerning the proper abandonment of wells in the old oilfields in order to insure protection of potable water zones.
- I-346 The referenced sentences are not in direct conflict.
- I-347 This recommendation is in bold type on page 11-4 where it is first proposed, and again in the summary on page 11-23. It is not necessary to emphasize it repeatedly throughout discussion text. Support for the recommendation is again noted.
- I-348 Even if circulation is not possible, zone isolation can be achieved with the proper placement of cement.
- I-349 Although 15-foot cement plugs at the surface are currently required, this requirement is not clearly stated in the current regulations.
- I-350 The shoe plug referred to in this sentence is clearly not the casing shoe plug, but the cement plug just placed across the casing shoe.

- I-351 11-17, Option 1. COMMENT: This is not a current regulation. IOGA DISAGREES with this option because costs would be excessive due to the need for additional equipment. Temporary surface damage would result. It is believed that there are not enough cable tool rigs in New York to make this a viable option anyway.
- I-352 11-19, b, line 1, DELETE first sentence. REASON: Operators are not required to rip or perforate any uncemented casing left in the hole.
- I-353 11-20, line 1, DEFINE "calculated excess" as used in this context. IOGA suggests 25% excess.
- I-354 11-20 c, heading of this section. DEFINE specifically what is meant by "significant brackish" water zones in this context.
- I-355 11-21, d. 2nd para., line 3, Recommendation should be an option. REASON: This may not be recommended in all cases.
- I-356 11-22, G. SUMMARY OF THE PROPOSED REGULATORY REQUIREMENTS
COMMENT: IOGA feels that all proposed changes to regulatory requirements should have been listed in a separate appendix to the GEIS. IOGA feels that the current plugging and abandonment procedures are adequate and IOGA's suggested changes would enhance the effectiveness of these regulations.

- I-351 This section is a part of the text discussion on possible options to achieve plugging objectives. It is understood that most operators will not usually choose the more expensive option, but that decision is left to the operator.
- I-352 See response to I-338 and I-351.
- I-353 Calculated excess in the context of this sentence refers to the cement amount which might fall into the annulus below the casing stub. Reasonable alternative proposals will be considered during the rulemaking process.
- I-354 In the context of this sentence the word "brackish" could be removed or replaced with the word "saline". The word "significant" should modify "water zones". The reference is to any water zone with a measurable flow.
- I-355 Reasonable alternative proposals will be considered during the rulemaking process.
- I-356 See Topical Response Number 5 on Reasons for Including Proposed Regulations in the GEIS.

CHAPTER XII. OLD OIL FIELD WATERFLOOD OPERATIONS AND ENHANCED OIL RECOVERY POTENTIAL

- I-357 GENERAL COMMENT on this section: The distinction should be made between primary oilfield recovery and waterflood recovery operations.
- I-358 12-1, A, 2nd para., line 1, CHANGE phrase "5 to 30 percent" to "5 to 60 percent".
- I-359 12-1, A, 2nd para., REFERENCE at end of paragraph (Van Tyne, Foster, 1980).
- I-360 12-1, A, 4th para., beginning on line 7, CHANGE this section to read, "...bearing zone from an aquifer (water drive) and/or; 4) the force of gravity (gravity drive). In many reservoirs, only one or two recovery mechanisms may exist."
- I-361 12-3, #6, CHANGE to read, "Original oil-in-place is the volume of the total pore volume occupied by oil at initial conditions."
- I-362 12-5, C, 1, 2nd para., line 3, ADD phrase to sentence ending on this line to read, "however, New York oil-wet sandstone can be flooded to a residual oil saturation of 30 to 60 percent."
- I-363 12-6, last para., line 4, CHANGE sentence beginning on this line to read, "Anaerobic sulphate-reducing bacteria that must be eliminated often proliferate in produced waters."
- I-364 12-7, line 2, CHANGE sentence beginning on this line to read, "Some sulphate precipitates are relatively insoluble and are..."
- I-365 12-7, line 5, CORRECT spelling to "phosphonates."
- I-366 12-7, 1st full para., line 1, CHANGE "must" to "may".
- I-367 12-7, 2nd full para., COMMENT on the use of the terms "open and closed". Open systems are those that typically do not seek to exclude contact of the injected fluid with air. Closed systems are designed to prevent contact of injected fluid with air. Supplemental freshwater is added even to closed systems for makeup. Produced fluid may be injected in either open or closed systems.
- I-368 12-7, 2nd full para., line 6, CHANGE "more" to "different".
- I-369 12-7, 3rd full para., line 3, CHANGE "production facilities" to "water handling".
- I-370 12-7, 4th full para., line 1, CHANGE "should" to "may". REASON: All these tests may not be necessary, i.e., temperature is appropriate for gas wells, but not water injection wells; radioactive tracer surveys are not commonly used in this area because if there is a tubing leak it could allow the uncontrolled
- I-357 This chapter primarily concerns waterflood enhanced oil recovery operations.
- I-358 The word "usually" prefacing the range of "5 to 30 percent" means this is an average range. Sixty percent primary recovery would be very exceptional.
- I-359 This information is general textbook knowledge and was not obtained from the given reference. However, the information in the first two sentences of the third paragraph can be found in the given reference.
- I-360 The addition of "and/or" is correct. The next sentence should be reworded as follows: "All four drive mechanisms may be present, but in most reservoirs only one or two recovery mechanisms are present or dominant."
- I-361 The text is correct as written.
- I-362 According to IOCC (1955), initial oil saturations in New York averaged around 45 percent and ranged as high as 60 percent only in the better producing areas. Flooding to a residual saturation of 30 to 60 percent would mean almost no oil was recovered.
- I-363 The suggested wording is correct. "Sulphate-based" should be changed to "sulphate-reducing".
- I-364 The suggested change is more technically correct.
- I-365 Correction noted.
- I-366 The suggested change does not significantly change the intent of the sentence. We do not mean to imply that injection fluids must always be treated, only where reservoir plugging, shale swelling, and corrosion problems are likely to occur.
- I-367 Comment noted.
- I-368 Correction noted. Change "more" to "different".
- I-369 "Production facilities" in this context includes water handling facilities.

- loss of radioactive material; annuli are not closed so annular pressure checks are not needed; caliper logging to ensure tubing integrity is not done because the water-in-annulus test is routinely performed as part of the federal UIC program.
- I-371 12-6, 1st full para., COMMENT: Numbers quoted throughout this paragraph may not be typical for Allegany County and the numbers may vary from well to well.
- I-372 12-9, 1st full para., COMMENT: The reserve information needs to be updated. Also, if reserve figures are included in the GEIS, they will have to be updated each year. Line 10 should be DELETED as the figure cited is taken from a study done more than 10 years ago and includes all recovery methods, not just enhanced.
- I-373 12-9, a, 2nd para., line 2, CHANGE sentence beginning on this line to read, "The accepted practice was to create an 8 inch hole through the unconsolidated surface deposits."
- I-374 12-10, 2nd full para., line 4, DELETE sentence beginning on line 4 and REPLACE with "Stimulation methods have changed over the years in the oil and gas fields. However, nitroglycerin may be a more effective stimulation technique in certain shallow reservoirs. The transition from nitroglycerin to other stimulation techniques evolved from individual review of reservoir information and necessary fracture increases."
- I-375 12-12, 1st full para., line 3, CHANGE paragraph starting with sentence beginning on this line to read, "In New York State, water is typically produced with the oil and the water cut (percentage) typically increases throughout the life of the well. When production is no longer economical, the well is plugged and abandoned. Many of the wells in the old oilfields were not plugged by modern standards." DELETE last sentence unless data can be provided to demonstrate this claim.
- I-376 12-12, 2nd para., COMMENT: Although it is stated that the DEC is aware of problems, no problems are cited in this paragraph. QUESTION: What strategies are the DEC considering and to what end?
- I-377 12-12, b, 2nd para., COMMENT: The information in this paragraph may be more appropriately given on p. 12-9 under Historical Waterflood Operations because it is not currently relevant.
- I-378 12-12, b, 3rd para., line 4, COMMENT: Conversion of production wells to injection wells is not common in this area.
- I-379 12-13, 3rd para., line 5, DELETE phrase, "As DMN met initial staffing requirements" and START sentence with "In 1982, ..." REASON: phrase is not relevant now.
- I-370 Correction noted; change "should" to "may". Note: The reason stated by the commentator for not using radioactive tracer surveys is incorrect.
- I-371 "Typical" in the context of this sentence refers to an example of a good waterflooding prospect. It is understood that these parameters vary from well to well.
- I-372 Updated reserve figures are published each year in the Division's annual report. In line 9, "To date" should be changed to "In 1980" and "has been" should be changed to "was". That waterflooding was responsible for production of 14 percent of the original oil in place was taken directly from page 49 of VanTyne and Foster (1980).
- I-373 Change ". . . drive a 10 inch hole . . ." to ". . . drill a 10 inch hole . . ." This comes directly from Interstate Oil Compact Commission (1955), page 4, and this reference should be added to the text.
- I-374 The sentence is correct as written. The preceding sentence in the text states that nitroglycerin might be more effective in certain instances.
- I-375 The suggested text change does not significantly add to the reader's understanding of waterflood production. Proposed waterflood projects have been rejected by both the State and the EPA because of numerous improperly plugged wells on adjacent leases. The fact that improperly plugged wells exist was proven by re-entering some of the old wells.
- I-376 The types of problems that can occur are described in section 4.D. of the GEIS. Although that chapter is historical in nature and the problems have lessened in severity and frequency, there is always a chance for adverse environmental impacts when outdated drilling and completion methods are used. The GEIS and the proposed regulations are part of DEC's strategy to better assure environmental protection in the oil fields. The DEC is also working on a supplemental enforcement strategy to address problems specific to the old oil fields.
- I-377 Comment noted.
- I-378 This is a description of the types of activities waterflood operators may undertake regardless of how common they are. The practice of converting producers to injectors is described by VanTyne and Foster (1980) as one that does occur in New York. In addition, a waterflood project recently approved by DEC staff includes plans to convert several production wells to injection wells.
- I-379 The suggested change does not significantly alter the intent of this sentence. It was the increased staffing levels that enabled the Division of Mineral Resources to implement and enforce more effective casing and cementing guidelines.

I-380 12-13, 4th para, line 1, CHANGE "water" to "surface".

I-381 12-14, 1st full para., line 5, DELETE the following phrase appearing on this line, "of southwestern New York is a sporadic". REASON: This is not specific to southwestern New York.

I-382 12-14, 1st full para., lines 6 & 7, DELETE two sentences beginning on these lines and REPLACE with, "These zones may be highly fractured and permeable, or exist as caverns."

I-383 12-14, 2nd para., line 2, DELETE phrase "approximately 70 percent" and REPLACE with "some".

I-384 12-15, 2nd full para., line 4, DELETE sentence beginning on this line. REASON: It is incorrect.

I-385 12-15, 3rd full para., line 1, CHANGE to read, "The production and injection strings are usually..."

I-386 12-15, 4th full para., line 4, DELETE "minimizing formation damage."

I-387 12-16, 1st full para., line 3, CHANGE "rubbers" where it appears twice in this line and REPLACE with "elements"

I-388 12-16, 1st full para., line 7, CHANGE "1,500 to 3,500" to "400 to 4,000"

I-389 12-16, 2nd full para., line 2, CHANGE "rubber" to "element" and "pea gravel" to "filler material". Line 5, CHANGE "pea gravel" to "filler materials". ADD sentence at the end of this paragraph to read, "The above procedures also apply if the formation is not notched."

I-390 12-16, 4th full para., line 4, CHANGE "1-inch macaroni string" to "smaller diameter string" COMMENT: Tubing repair not usually part of completion phase. ADD language to clarify this.

I-391 12-16, 5th full para., line 3 to end of paragraph on 12-17, CHANGE to read, "If the well is to be pumped, downhole pump equipment is installed. The tubing-to-borehole annulus remains open from total depth to surface where it may be connected to a gas line." DELETE last sentence in this paragraph on page 12-17. REASON: This is not the only acceptable method. Wells that do not have cement around the surface pipe routinely pass UIC mechanical integrity tests.

I-392 12-17, 1st full para., DELETE this paragraph. REASON: New York State oil operators do not intentionally cement production tubing into their wells or they would be impossible to produce.

I-380 Change "water" to "surface".

I-381 This is a discussion of casing and cementing practices in New York oil fields, and the old oil fields in New York are in the southwestern part of New York. The thief zones are not specific to southwestern New York, but the old oil fields are.

I-382 The text is correct as written, and gives a better explanation of why lost circulation zones are a problem.

I-383 This information was obtained from an informal survey of DMN field staff which was made prior to implementation of statewide casing and cementing guidelines in April 1986.

I-384 This sentence should be reworded as follows: "The plug, displacement water and applied pump pressure can be used to prevent cement backflow."

I-385 Correction noted. Change ". . . production and injection string . . ." to ". . . production or injection string . . ."

I-386 Add the following sentence: "However, some operators, particularly those with close well spacing and potential channeling problems, prefer nitro-stimulation with its high velocity detonation and 360° radius of fracturing."

I-387 Correction noted.

I-388 See response to I-276. This sentence should be prefaced by "Average".

I-389 Descriptive field terms were used in the text to better illustrate these procedures to the public. The suggested addition is correct.

I-390 Correction noted. Change "1-inch macaroni string" to "tubing of smaller diameter". Description of this common remedial recompletion technique is appropriate in this section.

I-391 Again, descriptive field terms were used in the text to better illustrate procedures to the public. The text would be more technically correct by replacing the word "connects" with "may be connected". The remainder of the paragraph is correct as written.

I-392 We know that cementing the tubing annulus will result in gas interference and locking of the pump, but it has been reported to DMN staff that some operators do this. It certainly is not a common practice in recent years. It apparently has occurred in the rare circumstance where sufficient waterflood pressure caused some wells to flow.

I-393	12-17, 2nd full para., line 2, CHANGE to read, "by a single well pumping unit, or by jacks connected to a central power unit."	I-393	Descriptive field terms were used to better illustrate the equipment to the public.
I-394	12-18, line 8, DELETE phrase, "as verified by percolation test." REASON: Percolation tests are inappropriate for artificial liners. How could a percolation test be done on a pit that's being used?	I-394	The test should be performed before the pit is used.
I-395	12-18, 3rd full para., line 5, DELETE sentence beginning on this line or provide data to substantiate claim. REASON: Conversion of producing wells to injection wells is uncommon today.	I-395	See response to I-378.
I-396	12-19, c, line 4, CHANGE to read, "...facilities has occurred among New York operators in this past."	I-396	Change the word "is" to "was."
I-397	12-19, 2nd para., line 6, CHANGE "no" to "little"; Line 7, CHANGE "however" to "can"; Line 8, CHANGE to read, "water source wells can produce..."	I-397	Correction noted.
I-398	12-19, 3rd para., line 2. CHANGE line to read, "...formation. This is a common practice in New York's oil fields."	I-398	Only three operators reported the reinjection of produced waters in the 1987 Brine Survey.
I-399	12-19, 5th para., line 4, DELETE sentences beginning on this line to top of p. 12-20, line 2. REASON: This is not done in New York.	I-399	These sentences describe common oil field water treatment methods which may or may not be used in New York.
I-400	12-20, 2nd full para., line 2, ADD phrase at sentence ending on this line to read, "...used to estimate formation fracture pressure and instantaneous shut-in pressure."	I-400	The suggested addition is not appropriate.
I-401	12-20, 3rd full para., line 4, CHANGE "pump" to "facility".	I-401	The suggested change does not alter the intent of this sentence.
I-402	12-21, 3, COMMENT on this section: IOGA does not believe it is accurate. Many of the existing waterfloods in NY contain wells within their boundaries that have been plugged using old techniques and the waterfloods have never experienced any difficulties even though water has been injected at several hundred to over a thousand pounds pressure into the reservoirs penetrated by these old wells. If old plugging methods were inadequate, difficulties in conducting more recent waterflood operations would have been encountered.	I-402	Many existing New York waterfloods do not have problems, but documentation exists that many others do or have had problems. Both statements are true.
I-403	12-21, 3, 2nd para., DELETE the last two sentences of this paragraph beginning with "Many thousands...." REASON: These wells may not be the cause due to the low fluids levels as cited earlier in the GEIS.	I-403	Low fluid entry from the production zone does not preclude the possibility of commingling and contamination when fluid from other zones can enter the wellbore and raise the fluid level.
I-404	12-23, E, 1, line 2, MOVE "xanthan biopolymers" to end of line 1 after "polysaccharides."	I-404	Correction noted.
I-405	12-25, 4, ADD reference (Van Tyne, Foster, 1980) at end of both paragraphs in this section.	I-405	Some of this information is contained in the given reference, but it was not the source.

- I-406 12-28, 3, REFERENCE (Van Tyne, Foster, 1980) at the end of both paragraphs in this section. 1st para., line 8, CAPITALIZE "Third"
- I-407 12-31, 4, REFERENCE (Van Tyne, Foster, 1980) at end of the 1st and 2nd paragraphs in this section.
- I-408 12-31, 4, 3rd para. through the end of this section. DELETE all. REASON: There is the suspicion that this was an attempt to defraud the public by raising money for a project that was unworkable and was, in fact, a scam. It is also believed that the principals behind this project were later indicted for other attempts to defraud the public and are thought to have been convicted and jailed.
- I-409 12-32, H, 12-32, line 7, CHANGE to read "...passed in 1981 should be addressed by adding specific environmental conditions to individual drilling and plugging permits until new regulations are promulgated and adopted."
- I-410 12-34, 2nd para, DELETE this paragraph. REASON: This information is not commonly available prior to drilling of the well, and is an unreasonable requirement for permitting of a waterflood. It is not necessary to know the exact geologic structure for secondary oil projects.
- I-411 12-36, 4, 3rd, line 3, DELETE "\$1,000", REPLACE with "\$500 to \$5,000 depending on the individual well".
- I-412 12-36, I, 1st para, line 6, DELETE sentence beginning on the this line. REASON: This statement is exaggerated. Where is evidence of proven health problems?
- I-413 12-36, I, 2nd para., line 1, ADD phrase so that this line reads, "Contamination problems, of which there are few recorded,"
- I-414 12-37, #1, COMMENT: Elsewhere in the GEIS, it has been stated that low fluid levels associated with these wells will prevent them from being sources of contamination.
- I-415 12-37, #2, COMMENT: Many injection wells do not have cemented surface casing and they routinely pass mechanical integrity tests under the federal UIC program which is intended to demonstrate the integrity of the surface casing.
- I-416 12-37,#3, COMMENT: Most operators are conscientious businessmen and maintain their equipment to avoid environmental degradation and the fines associated with such damage.
- I-417 12-37, #4,5, & 6, COMMENT: This is allowed under SPDES permits.
- I-418 12-37,#6, COMMENT: It has not been demonstrated that infiltration into groundwaters will occur.
- I-419 12-37, 1st full para., first two sentence and last sentence in
- I-406 Add the reference (VanTyne and Foster, 1980). Correction noted.
- I-407 Add the reference (VanTyne and Foster, 1980).
- I-408 Whether or not the behavior of these operators was fraudulent has no bearing on the fact that the State had no regulations to prohibit this sort of scheme.
- I-409 The sentence is correct as written.
- I-410 This information is not usually available before drilling the first well, but waterflooding is usually initiated after several years of primary recovery, data gathering and interpretation.
- I-411 Correction noted.
- I-412 The sentence would be more correct if the term health hazard was used instead of health problems. Health problems associated with the BTX components of oil have been documented in other states but not New York. The nuisance, inconvenience, and hazard caused by localized pollution in New York are well documented.
- I-413 The suggested wording is unnecessary.
- I-414 The GEIS is being misquoted. The flooding of these improperly plugged wells by subsurface water zones can raise the fluid level and result in contamination of freshwater zones even from depleted low pressure formations. This scenario is described on page 10-8, where the text states that this situation is "unlikely", not that it cannot occur.
- I-415 Many New York wells have not passed the mechanical integrity tests.
- I-416 We agree with this comment.
- I-417 There are many more points of discharge than there are SPDES permits.
- I-418 Infiltration into unconfined aquifers from surface brine pits has been demonstrated many times.

this paragraph. DELETE or provide substantiation for these claims.

I-420 12-37, 2nd full para., line 2, CITE specific source of this claim. ADD information on how long it took until the stream recovered from a spill of this size.

I-421 12-38, 1st full para., line 2, DELETE sentence beginning on this line. REASON: The source of the pollution is unverified. It may not have been a result of oil operations.

I-422 12-38, 2nd full para, COMMENT: We don't believe that crude oil in water poses an inhalation or absorption threat. General conclusions should not be drawn from one sample.

I-423 12-38, 3rd full para., line 3, QUESTION: What "other impacts" are being referred to? No documentation has been provided to demonstrate that "other" impacts have occurred, and we do not believe they have.

I-424 12-39, #2, COMMENT: Duration of land use is no longer than that of gas or primary production wells.

I-425 12-39, #3, COMMENT: These facilities produce no greater emissions than those of other production operations. Most of these projects are run on electricity.

I-426 12-39, #4, COMMENT: Pollution potential is not increased due to new well construction standards and the plugging of old wells.

I-427 12-39, 1st full para., line 1, CHANGE "infill" to "additional project".

I-428 12-39, 1st full para., line 2, DELETE phrase beginning with "...building injection and chemical processing plants..." REASON: The land use is minimal - no more than a housing site.

I-429 12-39, 2nd full para., line 3, DELETE phrase beginning with "...from chemical mixing stations for chemical processes." REASON: The increased air emissions related to chemical mixing for waterflood operations is equivalent to mixing a gallon of paint in a 20 acre field.

I-430 12-39, 3rd full para., DELETE "injected nitrogen", REPLACE with "gas". REASON: The chance for this happening under the UIC program is extremely remote.

I-431 12-40, #1, COMMENT: Additional requirements under the SEQR for secondary waterflood operations should consist only of an erosion and sedimentation control plan and a federal UIC permit. These are the only considerations peculiar to waterflood developments that would not also apply to primary oil wells or gas wells.

I-419 Reproduction of all of the documented cases of pollution is not possible in this text. Many IOGA members were present at the presentation given by DMN staff at the Oil, Gas and Solution Mining Board meeting in May 1986. Field investigations determined that of the 125 complaints received by DMN during 1985 and the first quarter of 1986, 62.4 percent were found to be related to oil and gas activities.

I-420 The cited reference is given in the bibliography.

I-421 In the referenced case, while it was not proven that the adjacent operator was entirely responsible, such overwhelming evidence of environmental pollution was found that the operator agreed to replace the polluted water supply.

I-422 Usually benzene poisoning from inhalation or skin absorption occurs in an industrial setting. This paragraph does not state that crude oil in water wells poses an inhalation or absorption threat. Internal consumption from drinking water can also pose a threat. EPA's toxicity tests were certainly not based on one sample.

I-423 The other potential impacts referred to are detailed in the remainder of the paragraph.

I-424 Waterflooding extends the economic life of many oil fields.

I-425 Comment noted. The use of electrical power to operate these facilities will certainly decrease the emission of pollutants from the project area.

I-426 The use of better well construction standards and the proper plugging of old wells do mitigate the increased potential for pollution from these operations. In fact, well construction and plugging standards are purposely designed to mitigate any potentially adverse impacts.

I-427 The suggested change does not appreciably change the intent of this sentence.

I-428 The land use impacts of waterflooding operations are being compared to those of other oil and gas production facilities, not those of housing construction.

I-429 We agree that the air emissions from each of these individual activities are minimal, and that they do not all occur at each waterflood project, but taken collectively they can result in a measurable increase over the air emissions from standard oil and gas operations.

I-430 The UIC program does not ban the use of nitrogen for enhanced oil recovery.

I-431 The EPA UIC regulations do not address surface environmental concerns as required under New York State SEQR regulations. See response to I-22.

I-432 12-40, #2, COMMENT: With the exception of effective relative and absolute permeability, reservoir temperatures, fluid properties, and aerial extent of reservoir, all other items in this paragraph are already required by the UIC permitting process. These parameters may be impossible to ascertain until some wells are drilled, and the necessity to report on them is arguable.

I-433 12-40, #3. COMMENT: Regulations concerning conversion of wells for enhanced recovery purposes are already addressed under the federal UIC regulations, and duplication of requirements by the State should be avoided.

I-434 12-40, #4. COMMENT: Waterflood spacing should be at the discretion of the operator. REASON: The operator will have more expertise than the DEC, and due to the large sums of money necessary for waterflood development, the operator will have the greatest motivation to ensure correct spacing.

I-435 12-40, #5. COMMENT: This is not peculiar to waterflood operations.

I-436 12-40, #7, line 1, ADD phrase at end of the first sentence to read, "in the confining zone." REASON: This coincides with UIC regulation. Submittal of ISIP and step rate pressure tests should be allowed as they are under the federal UIC program.

I-437 12-40, #8, COMMENT: Produced fluids from waterflood operations will be more dilute than those from primary production operations and therefore should be subject to less stringent regulation, not more stringent.

I-438 12-40, #10, COMMENT: The requirement is not peculiar to secondary recovery.

I-439 12-42, K, line 6, DELETE "Farmersville Pool" REASON: Such a project would be totally uneconomic as the Farmersville Pool has never produced more than a few barrels of oil.

I-440 12-42, K, line 6, COMMENT: Waterflooding in the Bass Island trend is questionable.

I-441 12-43, line 8, DELETE sentence beginning on this line. REASON: Thermal methods are highly unlikely due to the characteristics of the oil and the formation.

I-442 12-43, L. GENERAL COMMENT on this section. The GEIS should be an informative document stating facts to be used as reference for administering the current DEC permitting regulatory program. It should not be a forum for subjective criticism.

I-443 12-43, L, 2nd para., last line. DELETE sentence beginning on this line through top of p. 12-44. REASON: Few, if any, waterfloods have had environmentally unacceptable impacts.

I-432 See responses to I-22 and I-410.

I-433 See responses to I-22, I-192, and I-224.

I-434 We agree with this comment, but see response to I-127.

I-435 Comment noted.

I-436 Correction noted. Add the phrase "in the confining zone."

I-437 This requirement is not more stringent than that required for undiluted brine.

I-438 Comment noted.

I-439 Comment noted.

I-440 Comment noted.

I-441 Comment noted.

I-442 Section L primarily is a summary of practices used in the old waterflooded oil fields that are in violation of current state and federal laws. The main conclusion of this section is that these practices must be eliminated. This conclusion is not subjective but based on facts gathered by DMN staff and detailed in the GEIS.

I-443 Documentation of adverse environmental impacts caused by waterflood operations exists in the Department's files.

- I-444 12-44, 1st full para., line 3, DELETE sentence beginning on this line. REASON: The statement conflicts with EPA program mandates.
- I-445 12-44, 3rd full para., line 2, (REFER TO P. 10-8)
- I-446 12-44, 4th full para., line 1, COMMENT on "surface discharge". This is a viable, economical alternative. The State's attitude towards surface discharge of brines into streams and rivers is hypocritical. The state encourages operators to transport their water to other states in order for it to be processed properly for stream disposal, but there is not one single commercial surface discharge facility located in the State of New York for the processing of production brines.
- I-447 12-44, 4th full para., line 4, COMMENT on sentence beginning on this line: It is inappropriate to include integrity of cement casing and injection strings of wells among the items needing additional regulations, as this is already assured by the existing UIC regulations, and the implication is that the UIC program is inadequate.
- I-448 GENERAL COMMENT ON SECTION 12: Preparation of an erosion and sedimentation control plan and submittal of a federal UIC permit should be the only supplements to the GEIS required for a site-specific environmental impact statement for a proposed waterflood project.
- CHAPTER XIII. SOLUTION SALT MINING
- I-449 13-3, 1st para., line 4, CHANGE "10" to "18" and "another 40" to to "many more".
- CHAPTER XIV. UNDERGROUND GAS STORAGE
- I-450 14-2, B, 1, 3rd para., line 2, ADD phrase so that line reads "...reservoir usually consists of obtaining shut-in well head pressures..."
- I-451 14-6, 1st full para., line 2, QUESTION: How would DEC address potential earthquake dangers? COMMENT: No contingency for earthquakes should be necessary as it is too costly to mitigate, and it is unlikely that an earthquake will occur. Most of the fields would be developed in areas not known to be earthquake prone, anyway, since it is not in the best interests of storage field operators to develop a field that has earthquake potential.
- I-452 14-7, #4, CLARIFY what information may be required.
- I-453 14-7, 1st full para., line 1, QUESTION: Does dark print indicate regulation already in existence?
- I-444 See responses to I-22, I-192, and I-224.
- I-445 See responses to I-403 and I-414.
- I-446 The fact that there are no brine treatment facilities located in New York is the result of decisions made by private industry based on economics, not State regulations. The Division of Mineral Resources does not regulate the siting or operation of brine treatment facilities.
- I-447 See responses to I-22, I-192, and I-224.
- I-448 See response to I-431.
- I-449 Correction noted. Change "10" to "18" and "another 40" to "many more."
- I-450 Correction noted. The suggested change is more technically correct.
- I-451 Comment noted. The DEC is proposing that the operator assess the potential earthquake danger in the environmental assessment required for a new project. In most areas of the State, this would consist of a statement that there is no potential earthquake danger based on a review of pertinent literature on the subject for the project area. We concur with the commentator's conclusion that it would not be in the best interests of the storage operator (or the public) to locate a storage field in an area that has high earthquake potential.
- I-452 The Department would require whatever other site-specific information might be necessary to adequately evaluate suitability of an underground reservoir for gas storage.
- I-453 There is no dark print in the line referred to by the commentator. The bold type at the end of the paragraph describes an amendment to the Oil, Gas and Solution Mining Law that has not yet been incorporated into regulations.

- I-454 | 14-8, 1st full para., line 11, COMMENT: This is not a proposed recommendation. It is already in effect in permit conditions.
- I-455 | 14-10, 2nd para., line 6, QUESTION: Does this constitute the definition of a "major" project?
- I-456 | 14-10, 4th para., AGREE with recommendation. It is already being requested in permit application.
- I-457 | 14-11, #8, CLARIFY what other data may be required.
- I-458 | 14-11, 1st para., line 5, COMMENT: State geologist may review data, but it hoped that information submitted by the company investing its money, and which is more familiar with technical information than State Geologist, will be considered the more credible reference in cases of disagreement.
- I-459 | 14-11, 1st para., line 8, Line 9, DEFINE "major" in this context.
- I-460 | 14-12, #6, CLARIFY what other information may be required.
- I-461 | 14-14, D. GENERAL COMMENT on this section. DELETE all references to access roads in Section D. The creation of access roads in other industries is not regulated.
- I-462 | 14-15, 2nd full para., DELETE this paragraph. REASON: Why does DEC need list of a mud ingredients? It is the company's responsibility to properly dispose of wastes. Disposal now is regulated by the state Division of Hazardous and Solid Waste.
- I-463 | 14-17, 1st full para., line 4, DISAGREE with recommendation. Reclamation is accomplished by operator agreement with landowner.
- I-464 | 14-22, 1st & 2nd full para., DELETE these two paragraphs. REASON: In a \$90 million project, about one-half million dollars in well equipment may be visible, plus the compressor. All lines are buried, and they will not have visual impact. Compressor stations are no more unsightly than other business buildings in New York, i.e., garages. The State's property rights should be the same as any other landowner.
- I-465 | 14-22, 4th para., DELETE last paragraph. REASON: This falls under EPA jurisdiction.
- I-466 | 14-23, 1, a, line 3, CHANGE "0.43 to 0.52" to ".3 to .7".
- I-467 | 14-25, 2nd full para., DELETE this paragraph. REASON: The unused capacity listed is the gas which may have been withdrawn during the heating season by the storage corporation. It is not unused capacity. The GEIS should compare the maximum amount of gas in storage to the stated total capacity in order to arrive at unused capacity. On an annual basis, the volume used as of December 31 is approximately 60 days into a 150 day withdrawal season, and it would not be unlikely if the percentage was 40% of the storage season as compared with 21.5 percent shown in table on page 14-
- I-454 | All standard permit conditions must be formalized into regulation.
- I-455 | This is a proposed clarification for the term "modification of storage .pa capacity" as used in the law [ECL 23-1301.5(b)]. For discussion of the definition of "major" with reference to underground gas storage, see responses to I-22 and I-23.
- I-456 | Support for this recommendation is noted.
- I-457 | See response to I-452.
- I-458 | Under current law [ECL 23-1301.1], the State Geologist must approve the suitability of a reservoir for gas storage before a permit can be granted.
- I-459 | See responses to I-22 and I-23.
- I-460 | The reference is to site-specific information that may be necessary to adequately evaluate suitability of a well for injection and/or withdrawal of natural gas or LPG.
- I-461 | See Topical Response Number 4 on Access Roads as Part of Project.
- I-462 | The Division of Solid and Hazardous Waste has deferred to the Division of Mineral Resources with regard to drilling waste. Thus, it is our responsibility to assure that this material is non-hazardous and disposed of properly.
- I-463 | Reclamation for waste rock disposal on-site can be required as mitigation under SEQR.
- I-464 | A large project is likely to trigger SEQR thresholds. Addressing visual and noise impacts (which we agree should be minimal) is part of the required environmental assessment under SEQR which is already law.
- I-465 | Underground gas storage and LPG are not regulated by the EPA.
- I-466 | Most gas reservoirs are normally pressured; 0.43 to 0.52 psi/ft. of depth is the average range of normal hydrostatically pressured reservoirs nationwide. As stated in the GEIS, most New York producing formations are under pressured. According to DEC records, the initial pressure gradient range of the 21 New York gas storage fields was .23 to .52 psi/ft. of depth and the average for these gas storage fields was .39 psi/ft. of depth.
- I-467 | Correction noted. Beginning with the 1987 gas storage report, the DMN staff have calculated unused storage capacity by subtracting the maximum storage volume from the total storage capacity.

I-468 14-25, The capacity of storage fields is given in two numbers - working gas and cushion gas.

I-469 14-27, 2nd para., ADD line at the end of the paragraph to read, "Most reservoirs do not approach a straight line function. They show a hysteresis curve. On the withdrawal side of the storage field, the curve has a tendency to dip below the straight line, and on the injection side it has a tendency to go above the straight line, while the end points may be exactly on the straight line. This is due to an effect called "coning," which requires a higher pressure to get gas in the ground in a short period of time, i.e., 150 day withdrawal and 200 day injection."

I-470 14-28, 1st full para., line 6 through 14-30, line 4. DELETE this entire section. REASON: The Internal Revenue Service, as well as industry representatives, are presently working on the legitimacy of this type of calculation. The calculation should be eliminated as there is no need to calculate gas loss. It is an expense item for the operator and affects bottom line tax considerations. The calculation is too simplistic an approach to a very complex issue.

I-471 14-32, 1st full para., line 3, REMOVE bold print. This is an existing regulation. Storage operators already file form 85-15-2 on March 1 of each year for the preceding year.

I-472 14-32, 1st full para., d. DELETE d. REASON: It is too vague.

I-473 14-32, 3rd full para., line 2, QUESTION: What other regulations is the DEC working on and what mitigation techniques are being considered? Mitigation techniques after abandonment would encompass the actual production of all gas stored as though it was a producing reservoir over the approximately 20 year life of the reservoir.

I-474 14-33, J, 2nd para., DELETE phrase, "the proper clean-up and restoration of disturbed surface areas". REASON: The State only becomes involved if the site is left environmentally unsafe. The landowner has the option to sue operator if he does not live up to lease obligations. Actual reclamation could occur 20-30 years after discontinuing operations of the storage field.

I-475 14-35, 3, line 5, AGREE with information requested in a through d. DELETE e. REASON: This is too vague.

I-476 14-36, line 4, DELETE reference to earthquake.

I-477 14-36, 1st full para., line 10, DELETE phrase so that sentence beginning on this line reads, "Filling the cavity void may be warranted."

I-478 14-36, 4, through end of section on 14-37, DELETE reference to access roads for reasons cited earlier in these comments. DELETE c - it is too vague.

I-468 For the State's purposes, the total capacity of a storage reservoir is the sum of working gas, cushion gas and unused storage capacity. This definition agrees with that given by Ikoku (1980).

I-469 The graph shown on page 14-27 is meant to illustrate the ideal relationship between gas production and reservoir pressure. We agree that in actual storage fields, the curve would deviate from the straight line as described by the commentator.

I-470 The suggested deletion is unnecessary. As pointed out in the text of the GEIS, the "calculations are not intended to pinpoint the gas losses from the reservoir but rather to qualify the storage project in terms of efficiency and environmental safety."

I-471 As stated in the text, the law [ECL 23-1301.4] requires that an annual storage report, form (85-15-2), be submitted by December 31 of each year. We are proposing that the regulation promulgated under this law allow the operator until March 31 to assemble the data. Under current regulation (6NYCRR Part 551.2(b)), a production report is required by March 31 of each year. Storage report form (85-15-2), which is more appropriate for gas storage operations, will be required in lieu of the production report form (85-15-4).

I-472 This is a standard provision in most rules and regulations to cover any unforeseen circumstances, and allow for the submission of data pertinent to a specific project which might not be included in the listing of standard data requirements.

I-473 Specific examples are detailed in the text (a through c) on pages 14-21 and 14-33. The pertinence of the comment to the cited text is not clear.

I-474 Well site restoration is required for all wells under DEC regulatory authority. 6NYCRR Part 555.5(5)(d) does allow a waiver of this requirement if it has been demonstrated to the Department that no hazard will result, and the landowner has signed an appropriate release.

I-475 See response to I-472. Support for the requirement that gas storage operators submit an operational report summary upon termination of storage operations is noted.

I-476 See response to I-451.

I-477 This listing of materials that might be appropriate to fill the cavity void is not all inclusive, and it is provided for public information.

I-478 See Topical Response Number 4 on Access Roads as Part of Project, and response I-472.

I-479 GENERAL COMMENT ON THIS SECTION: Discussions are underway to encourage regulations that would protect the storage operators from other operators drilling into the storage horizon.

CHAPTER XV - INTERAGENCY COORDINATION: BRINE DISPOSAL, UNDERGROUND INJECTION AND OIL SPILL RESPONSE

I-480 GENERAL COMMENT: Provisions should be made by other Divisions to give all permitting authority for oil and gas operations to Mineral Resources, i.e., one-stop shopping.

I-481 15-2, C. COMMENT: There should be a Organization Table showing how all agencies relate to each other and each agency's function.

I-482 Table 15.1, COMMENT: The symbols are difficult to read in the copies of the GEIS and may not be easily understand by the public.

I-483 15-5, 3rd full para., IOGA AGREES with this recommendation.

I-484 15-6, 2, 2nd para., DELETE this paragraph. REASON: It does not belong in the GEIS.

I-485 15-6, d. line 3, CHANGE "will" to "may".

I-486 15-8, 2nd full para., line 8, CHANGE "an estimated 90 percent" to read "a substantial portion". REASON: The 90 percent figure is undocumented.

I-487 Tables 15.3 and 15.4 should list sources of information. QUESTION: What is the difference between the use of dashes and zeroes?

I-488 Figure 15.1. QUESTION: How is it known that particular towns accept brine? Some towns that do are not listed and some that no longer accept it are shown as towns that do.

I-489 15-13, 3, 2nd para., DELETE this paragraph. REASON: It is irrelevant to the GEIS.

I-490 15-15, 1st para., line 1, ADD phrase so that sentence reads, "...one injection well in Chautauqua County and one well in Livingston County have..."

I-491 15-15, 1st para., ADD sentence at end of paragraph to read, "Regulation under one program should be adequate. Regulation by two agencies discourages disposal well development."

I-492 15-17, 2nd full para., line 6, COMMENT on sentence beginning on this line: The MOU should be made available for industry comment before it is finalized.

I-493 15-19, 2nd para., COMMENT: IOGA believes that it is necessary

I-479 The Department supports regulatory efforts to protect gas storage operations from drilling by other operators into the storage horizon. Currently gas storage operations would be protected by permit conditions imposed on any well drilled through the storage horizon.

I-480 See response to I-21.

I-481 Table 15.1 does relate each involved agency's area of concern and level of responsibility.

I-482 Comment noted. Any individuals wishing further clarification concerning interagency coordination can contact this Department.

I-483 Support for the enactment of a State water well construction code and water well driller licensing is noted.

I-484 This paragraph is included for public information which is one of the primary responsibilities of government.

I-485 Correction noted: change the word "will" to "may".

I-486 The "90 percent" figure was given as an estimate. It was based on all DEC data available at the time: the brine haulers' reports, the 1987 brine survey, and the 1986 oil and gas production report. The Department's recent analysis of 1987 brine production volumes and disposal methods revealed that 79% of reported gas-associated and Bass Island brine was used for roadspreading in New York. A very minute amount of oilfield brine from outside the old waterflooded areas was also used for roadspreading.

I-487 The source of information is DMN's brine analysis data base. The use of dashes and zeroes is a standard laboratory practice. The dash means the parameter was not measured, and the zero means that it was measured and measurable amounts were not detected or recorded.

I-488 This information was compiled from the brine haulers' reports which are required yearly under DEC issued Part 364 permits. Figure 15.1 is for the year 1986, and the fact that the towns accepting brine change from year to year is discussed in the text.

I-489 The cited paragraph is relevant to the discussion of underground injection as a disposal technique in New York.

I-490 The Livingston County well had not received a State permit at the time the draft GEIS went to print. Since the draft GEIS was printed an additional disposal well in Wyoming County has also received all the necessary State and federal approvals.

I-491 New York State has elected not to accept primacy for UIC.

I-492 Industry has input into both the State and federal rulemaking processes. It is not appropriate to involve industry in intergovernmental negotiations. In addition, any actions affecting the regulated community are discussed with the Oil, Gas and Solution Mining Advisory Board which has industry members.

	that double bonding be eliminated. We hope discussions between DEC and EPA are successful, and that this situation is resolved quickly.	I-493	We agree, but an MOU to eliminate double bonding has not yet received approval from regional EPA legal staff.
I-494	15-25, 1st full para., line 8, DELETE phrase, "Depending on the severity of the problem" and REPLACE with "typically".	I-494	These agencies are notified in only a relatively small percentage of the spills. The decision to notify other agencies is based not on the size of the spill, but on its consequential impacts: resources endangered, threat to public health, need for evacuation, etc.
I-495	15-26, 2, 3rd para., line 4 through end of paragraph. QUESTION: Are figures given in these lines correct?	I-495	Yes, these numbers are correct.
	<u>CHAPTER XVI. SUMMARY OF ADVERSE ENVIRONMENTAL IMPACTS RESULTING FROM OIL, GAS SOLUTION MINING AND GAS STORAGE OPERATIONS</u>		
I-496	16-1, A, 2nd para., line 6, DELETE reference to access road for reasons cited earlier in these comments.	I-496	See Topical Response Number 4 on Access Roads as Part of Project.
I-497	16-2, 2nd full para., lines 1 and 2, DELETE references to visual impacts for reasons cited earlier in these comments.	I-497	See Topical Response Number 2 on Visual Resources and Assessment Requirement.
I-498	16-3, line 2, ADD language to state that vegetation loss is temporary.	I-498	This chapter summarizes adverse environmental impacts, and short term vegetation loss is not a particularly adverse impact. However, vegetation cannot be expected to return to either the access road or the portions of the well site used for production facilities, both of which might be present for over thirty years.
I-499	16-3, 3rd full para., COMMENT on this paragraph. Erosion and sedimentation are natural occurring phenomena that have happened over geologic time. Introduction of the concept that topsoil is a commonly held natural resource similar to air and water is incorrect. It should only be regulated to the extent that it prevents excessive erosion leading to resultant excessive stream sedimentation.	I-499	See Topical Response Number 7 on Soil as a Public Natural Resource.
I-500	16-3, 4th full para, line 3, COMMENT: These permit conditions are ad hoc regulation and could be applied in a discriminatory manner.	I-500	See response to I-29.
I-501	16-4, line 6, CHANGE remainder of this paragraph to read, "...the site reclamation plan is left to the provisions of the lease agreement in conjunction with the law." DELETE last sentence in this paragraph. REASON: It is untrue.	I-501	The text as written is correct. According to correspondence with Seneca County Soil and Water Conservation District (Cool, 1982, Personal Communication #14) reduced crop yields can be expected for 20 years or more because of topsoil loss.
I-502	16-4, b. COMMENT on this section: The operator is the best judge of the size of the site. The landowner is protected by the lease agreement. What constitutes productive use of land is subjective. Oil and gas operations could be considered to be a productive use of land, and not all land supporting oil and gas operations is agricultural. IOGA AGREES with the statement that 30 years is too long to wait to reclaim land.	I-502	Comment noted.
I-503	16-4, c. DELETE this section. REASON: This is not an appropriate concern of the GEIS. Brine spills would have a temporary, one year impact on an area due to the high amount of rain in New York. Brine has a high mineral content and is viewed as a positive impact by some farmers. Soil is not a natural resource protected by law.	I-503	Although the effects of some brine spills may be short-term, all environmental impacts must be addressed by the GEIS. See Topical Response Number 7 on Soil as a Public Natural Resource.