01200

ENVIRONMENTAL ASSESSMENT

MD-90-027

FOR

LEASING OF THE FEDERAL OIL AND GAS
MINERAL ESTATE ON
THE SENECA ARMY DEPOT
SAMPSON STATE PARK
AND SPLIT ESTATE PARCELS
SENECA COUNTY, NEW YORK

Prepared by
Bureau of Land Management
Milwaukee District Office
August 1992

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CHAPTER 1. PURPOSE OF AND NEED FOR ACTION

A. BACKGROUND

The primary purpose of this action is to make Federal minerals available for oil and gas leasing. Two expressions of industry interest were received for the Seneca Army Depot (SEAD) via over the counter lease offers in 1981. An over the counter offer formerly provided a means to lease low potential lands noncompetitively. These lease offers have been subsequently rejected because the area exhibits high development potential and leasing will have to proceed according to a competitive process. (See Appendix A-1 for a complete description of the Federal leasing process). Originally the scope of this environmental assessment (EA) was limited to lands within the boundaries of the SEAD. Subsequent investigations identified the existence of additional lands with Federal Mineral status, therefore the scope of this analysis will also address the following areas. This approach will enhance consideration of cumulative impacts while addressing the leasing decision for the sections of Seneca county that are characterized by federal mineral ownership.

Sampson State Park (SSP) located along the shore of Seneca Lake in Seneca County, New York was the site of the second largest naval training base in the country during World War II and an air force base during the Korean War in 1950. The Air Force left the site in 1955 and the U.S. Government, through the General Services Administration started to surplus property another five years later in 1960. All of the lands originally acquired for the naval training station (NVT) eventually became part of SSP, the SEAD and private holdings under R.J.G. Development Corporation (RJG). SSP acquisitions were completed in 1968. The Federal government reserved 100% of the mineral estate on about 1252 acres or two thirds of SSP. This EA will address about half of the property containing Federal minerals. The other half has been identified by the State of New York as property that will be used to settle a pending land claim currently being pursued by the Cayuga Indian Nation.

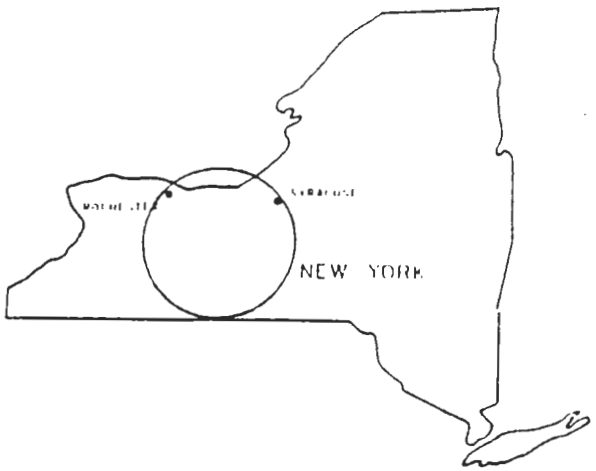
Scattered Federal Mineral Ownership (FMO) became a part of the picture when records indicated a 75% Federal mineral reservation on a parcel of land being committed to a federal drilling unit. Apparently the U.S. Government purchased farmland throughout the county sometime around 1937 and subsequently conveyed this property subject to a 3/4 interest in all of the coal, oil, gas and other minerals. These conveyances were made pursuant to authority conferred upon the Secretary of Agriculture in Section 43 of the Bankhead-Jones Farm Tenant, Act, 7 U.S.C. (1940 Ed.) 1017.

The primary purpose of this environmental assessment will be to consider the oil and gas potential and the reasonably foreseeable

development scenario in order to analyze the environmental impacts of oil and gas leasing and subsequent operations which are secured the issuance of a lease. In general, an oil and gas lease conveys the right and privilege to drill for and extract all hydrocarbons for the term of the lease (either five years for competitive or ten years for noncompetitive leases) and while oil and gas is produced in paying quantities. The typical lease operations which are likely to occur under the rights granted by an oil and gas lease may include geophysical exploration, exploratory and development drilling, production and abandonment. The Bureau of Land Management (Bureau) proposes to analyze the effects that leasing the Federal oil and gas mineral estate will have on other resources, values and land uses within and adjacent to the boundaries of the Seneca Army Depot (SEAD), a portion of Sampson State Park and scattered split estate parcels in Seneca County, New York (see Figure 1.1). The surface is owned by the U.S. Department of Defense, Department of Army, the State of New York and private land owners. In their capacity, the SEAD has authority to either grant or deny consent to issuance of Federal oil and gas leases and permits within the military installation. Department of Army oil and gas policy states that "In accordance with Department of Defense policy to promote the optimal use of its lands under the multiple-use principle, it is the policy of the Department of the Army that all lands under its control will be made available for oil and gas leasing, except at installations or civil works projects specifically excluded from such leasing upon the recommendation of the Chief of Staff or Chief of Engineers, respectively, and approval by the Secretary of the Army." The State of New York and private surface owners are consulted with to provide BLM with leasing recommendations and stipulations for their respective areas. This consent and consultation process is used to identify issues, resource concerns, interested parties, alternative formulation, leasing recommendations and detailed lease stipulations which will all be incorporated into this document. Figures 1.2 and 1.3-1.13 show the area affected by this environmental assessment in more detail.

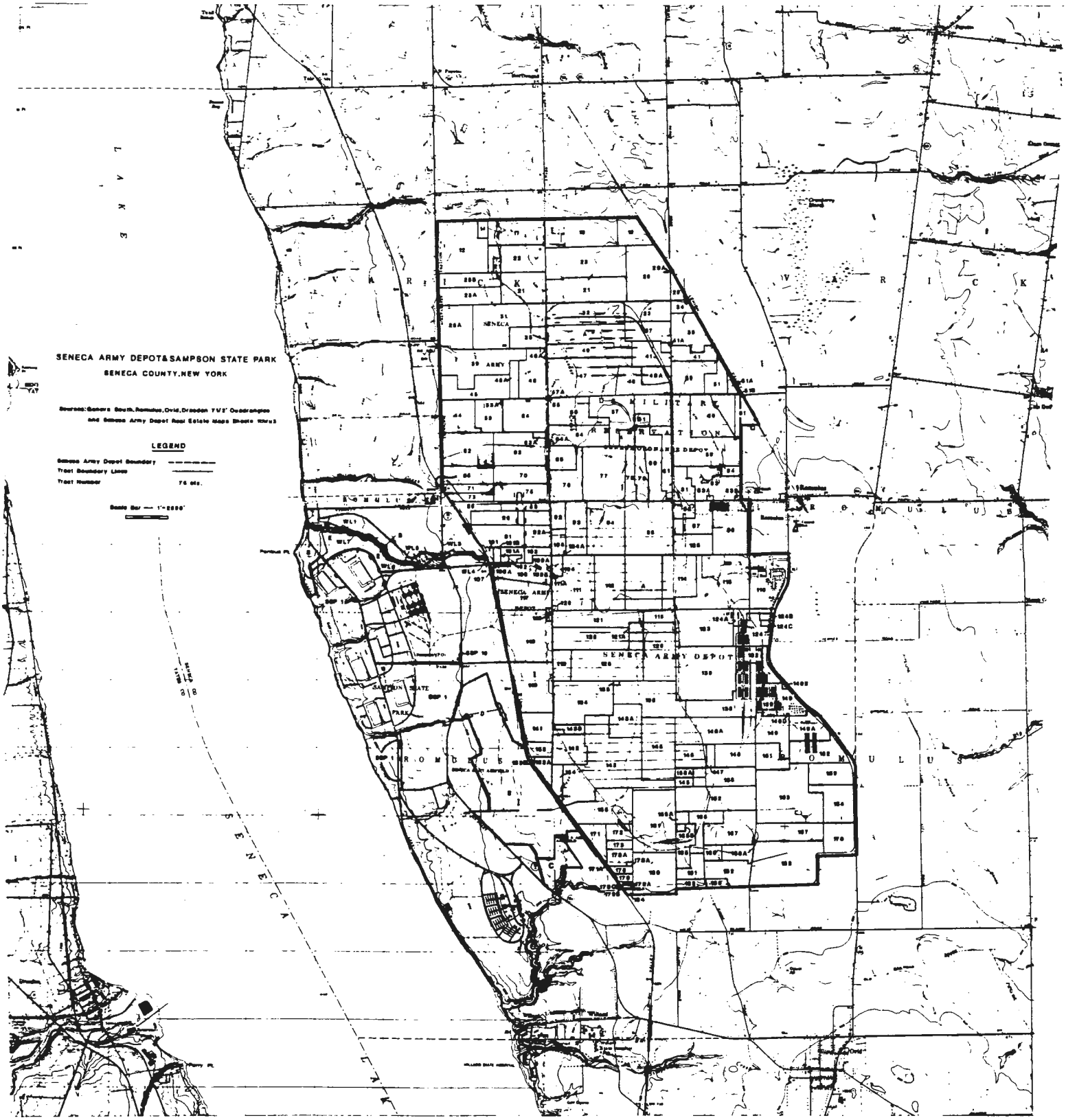
Bureau strategy regarding oil and gas leasing is directed by three policy acts affecting the management of Mineral Resources. The Mining and Minerals Policy Act of 1970, the Federal Land Policy and Management Act of 1976 and the 1980 National Materials and Minerals Policy, Research and Development Act. In summary, the Bureau is responsible for making public minerals available for orderly and efficient development under the principals of multiple use management in a manner that satisfies national and local needs and provides for economically and environmentally sound exploration, extraction, and reclamation practices. The main objective of this leasing project will be to implement this policy.

FIGURE 1.1
GENERAL LOCATION MAP



ROCHESTER
WAYNE
MONROE
90
90
SYRACUSE
AUBURN
ONONDAGA
ONTARIO
20
20
LAKE
98A
96
LAKE
SENECA
ARMY
DEPOT
CAYUGA
YATES
LIVINGSTON
SAMPSON
STATE
PARK
SENECA
CAYUGA
CORTLAND
TOMPKINS
KEUKA
LAKE
SENECA
STEUBEN
ITHACA
SCHUYLER
CHEMUNG
ELMIRA
60
MILE
RADIUS

Figure 1.2

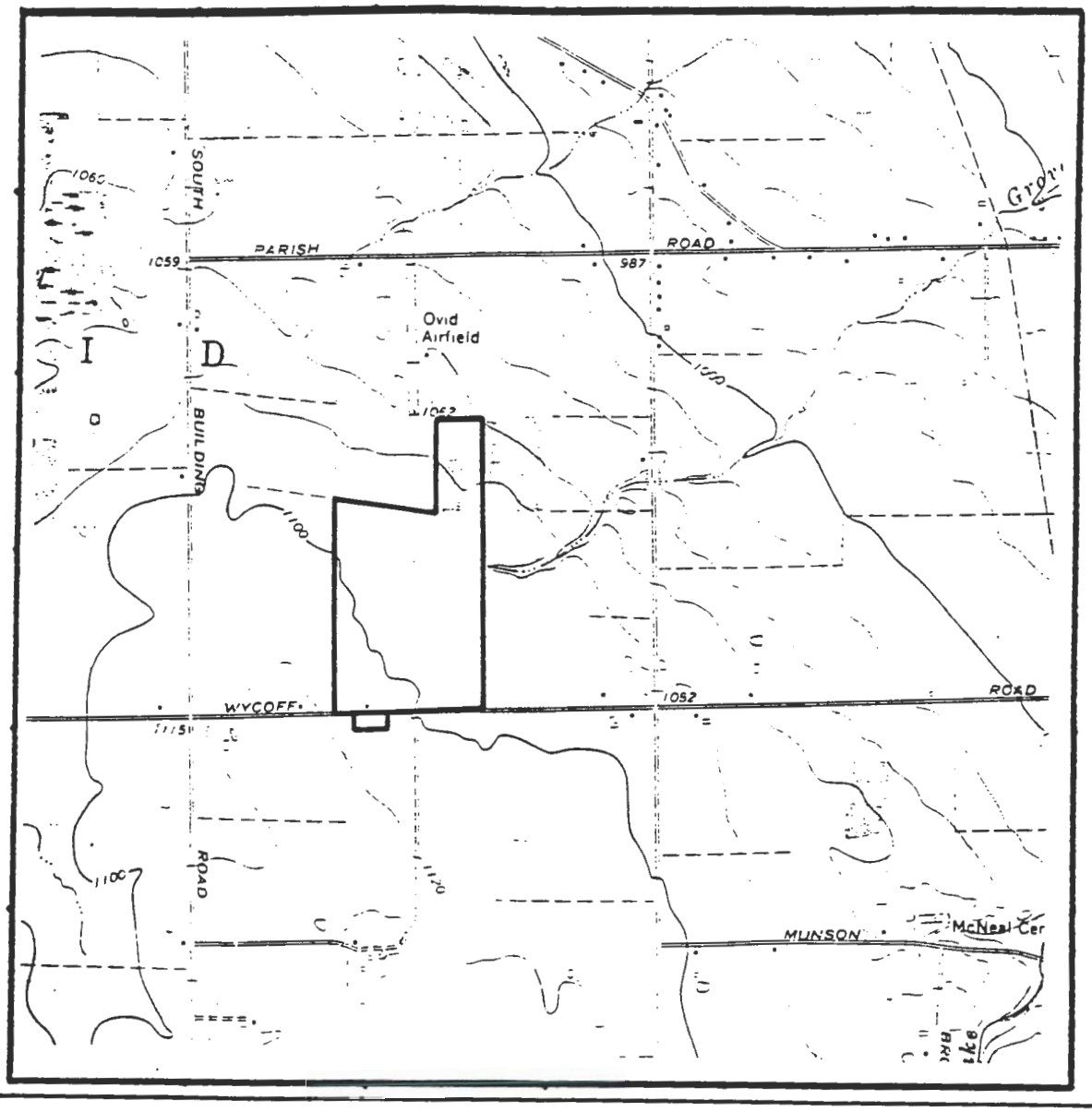

SENECA ARMY DEPOT & SAMPSON STATE PARK
SENECA COUNTY, NEW YORK
LEGEND
SENECA ARMY DEPOT
SAMPSON STATE PARK
ROMULUS
VARICK
SENECA
LAKE

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SITE PLOT

Figure 1.3

Serial Number
NYESSEN2



Township Ovid, Range _____,

Section Lots 19, 20, Subdivision _____,

_____ Meridian, County Seneca,

Name of Quad Ovid, Scale 1:24,000.

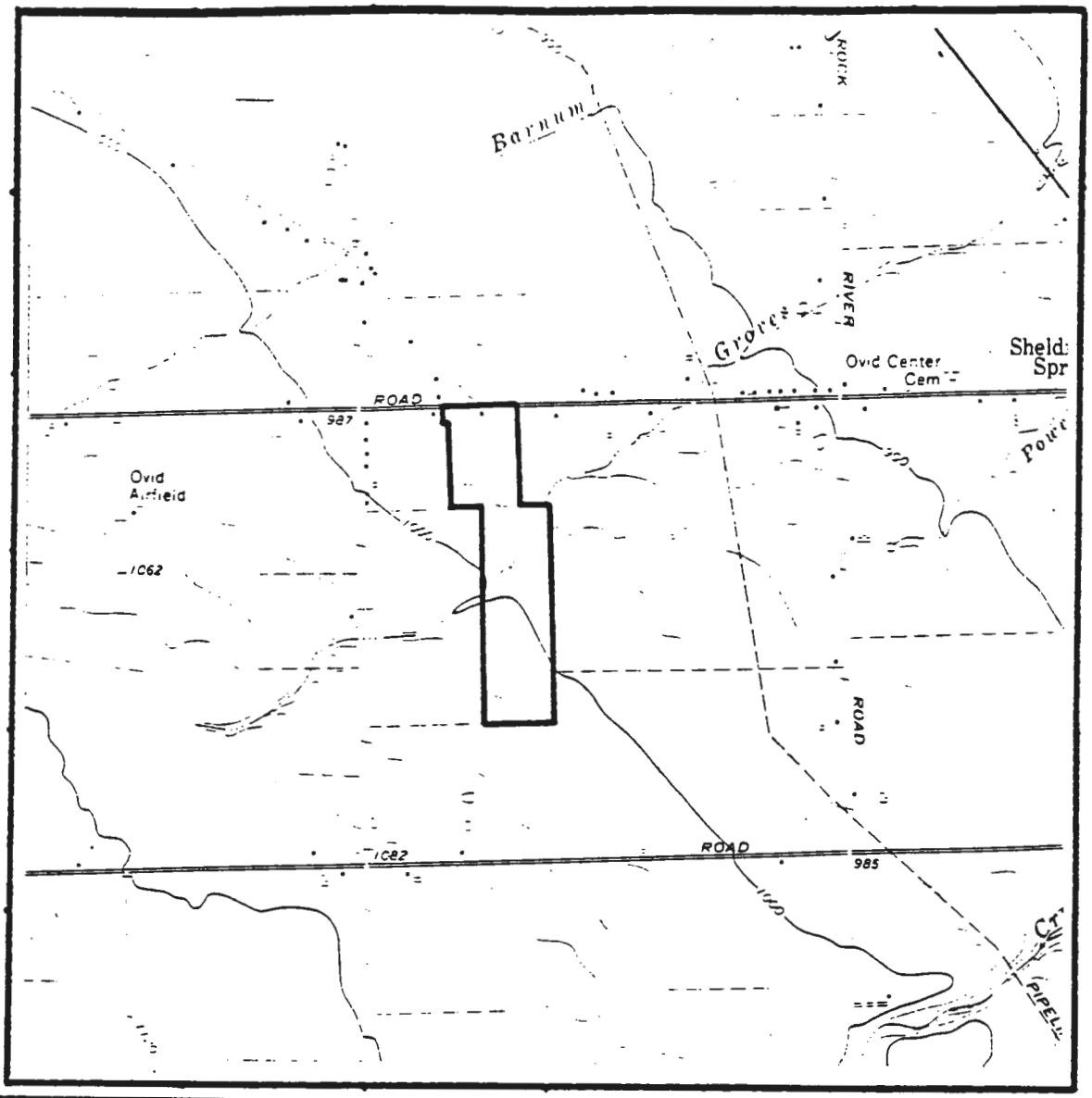
State New York Acres 100.987 ☐ LEASE AREA

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SITE PLOT

Figure 1.4

Serial Number
NYESSEN3



Township OVID, Range _____,

Section LOT 20, Subdivision _____,

_____ Meridian, County SENECA,

Name of Quad OVID, Scale 1: 24,000.

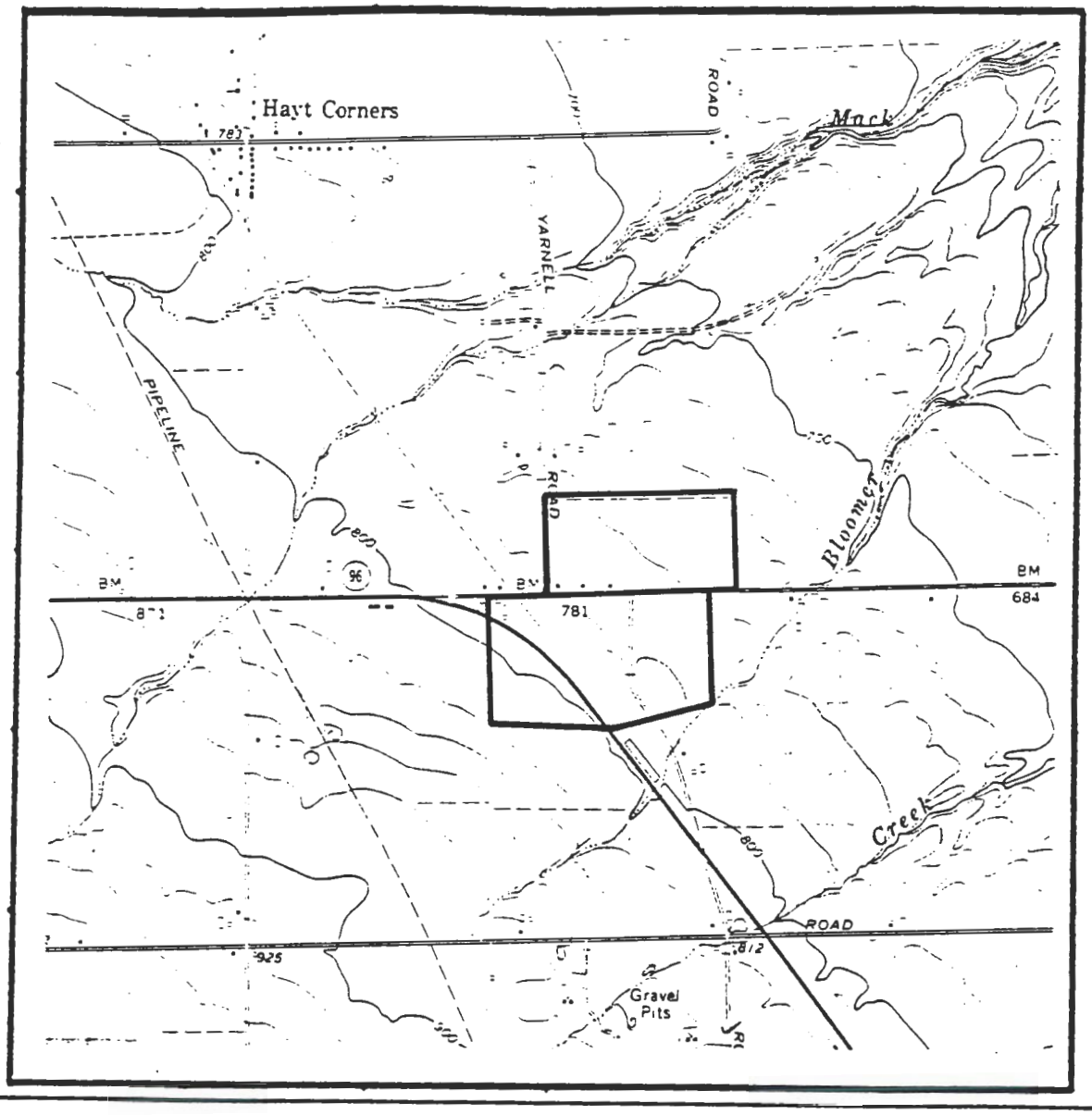
State NEW YORK Acres 64.737 ☐ LEASE AREA

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SITE PLOT

Figure 1.5

Serial Number
NYESSEN 4



Township ROMULUS, Range _____,

Section LOTS 98, 5, Subdivision _____,

_____ Meridian, County SENECA,

Name of Quad OVID, Scale 1: 24,000.

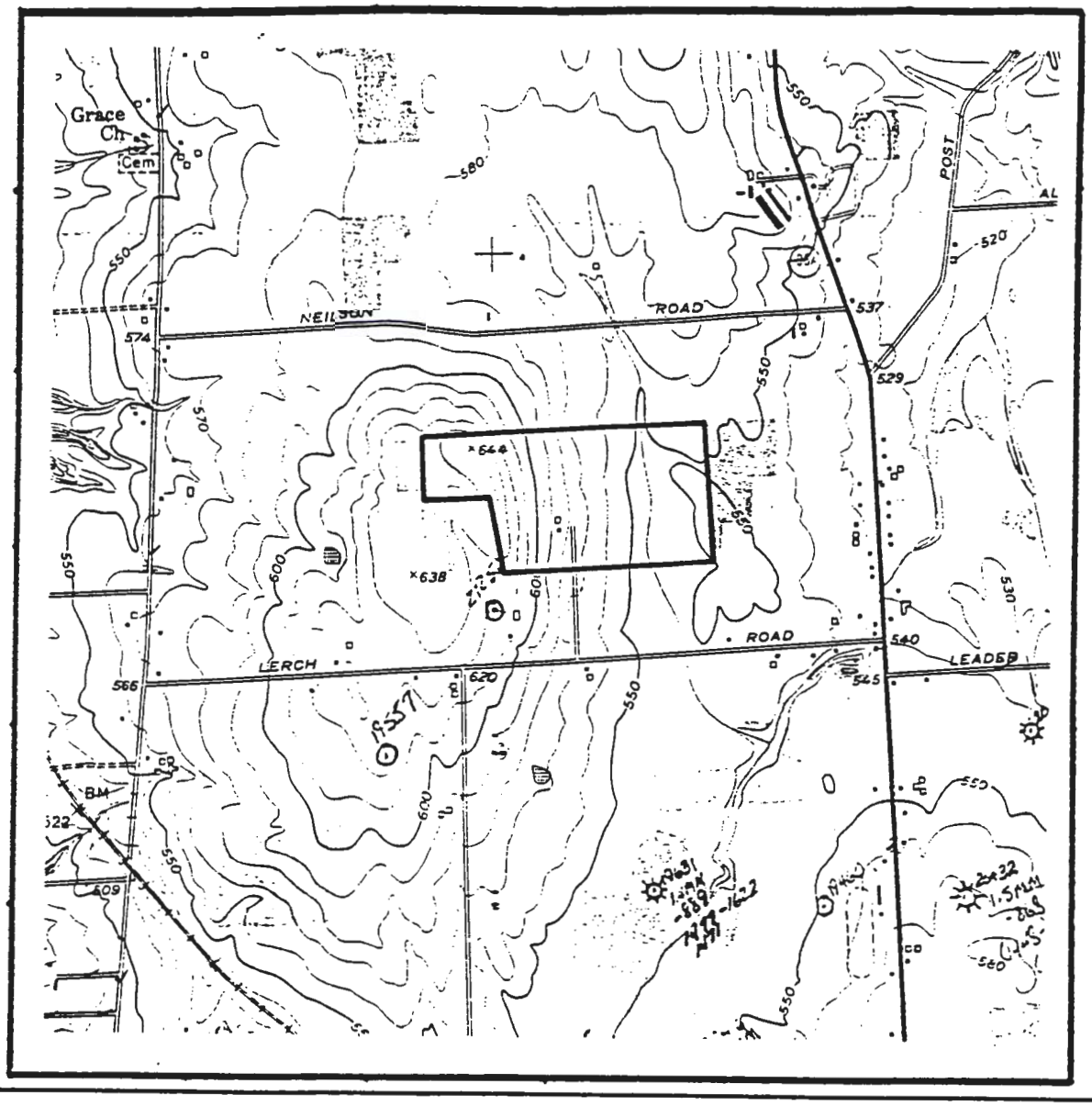
State NEW YORK Acres 127.738 ☐ LEASE AREA

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SITE PLOT

Figure 1.6

Serial Number
NYESSEN 5



Township FAYETTE, Range _____,

Section LOT 31, Subdivision _____,

_____ Meridian, County SENECA,

Name of Quad GENEVA SOUTH, Scale 1:24,000.

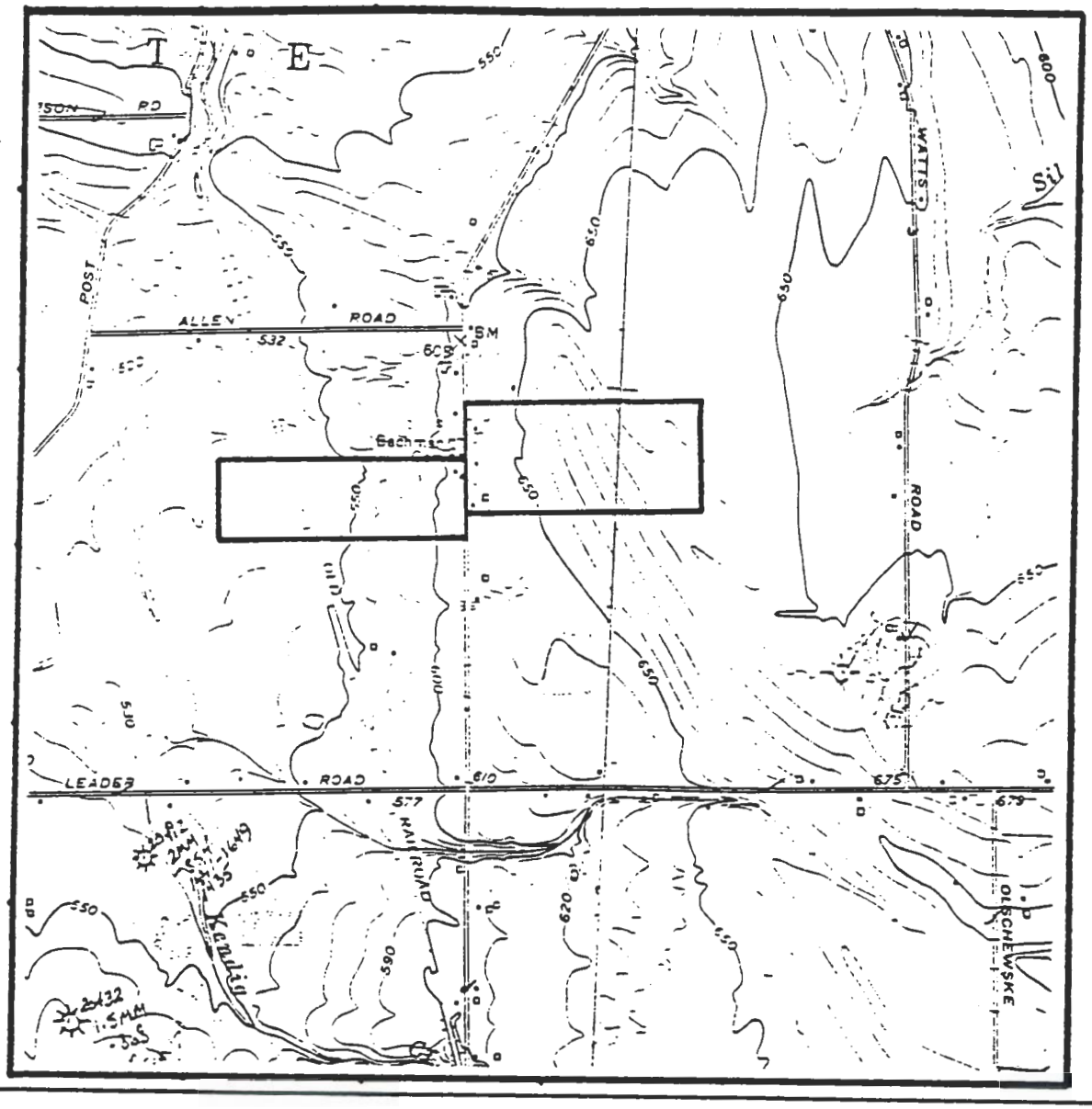
State NEW YORK Acres 101.67 ☐ LEASE AREA

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SITE PLOT

Figure 1.7

Serial Number
NYESSEN6



Township FAYETTE, Range _____,

Section LOTS 32, 33, Subdivision PARCEL A, B,

_____ Meridian, County SENECA,

Name of Quad GENEVA SOUTH & ROMULUS, Scale 1:24,000.

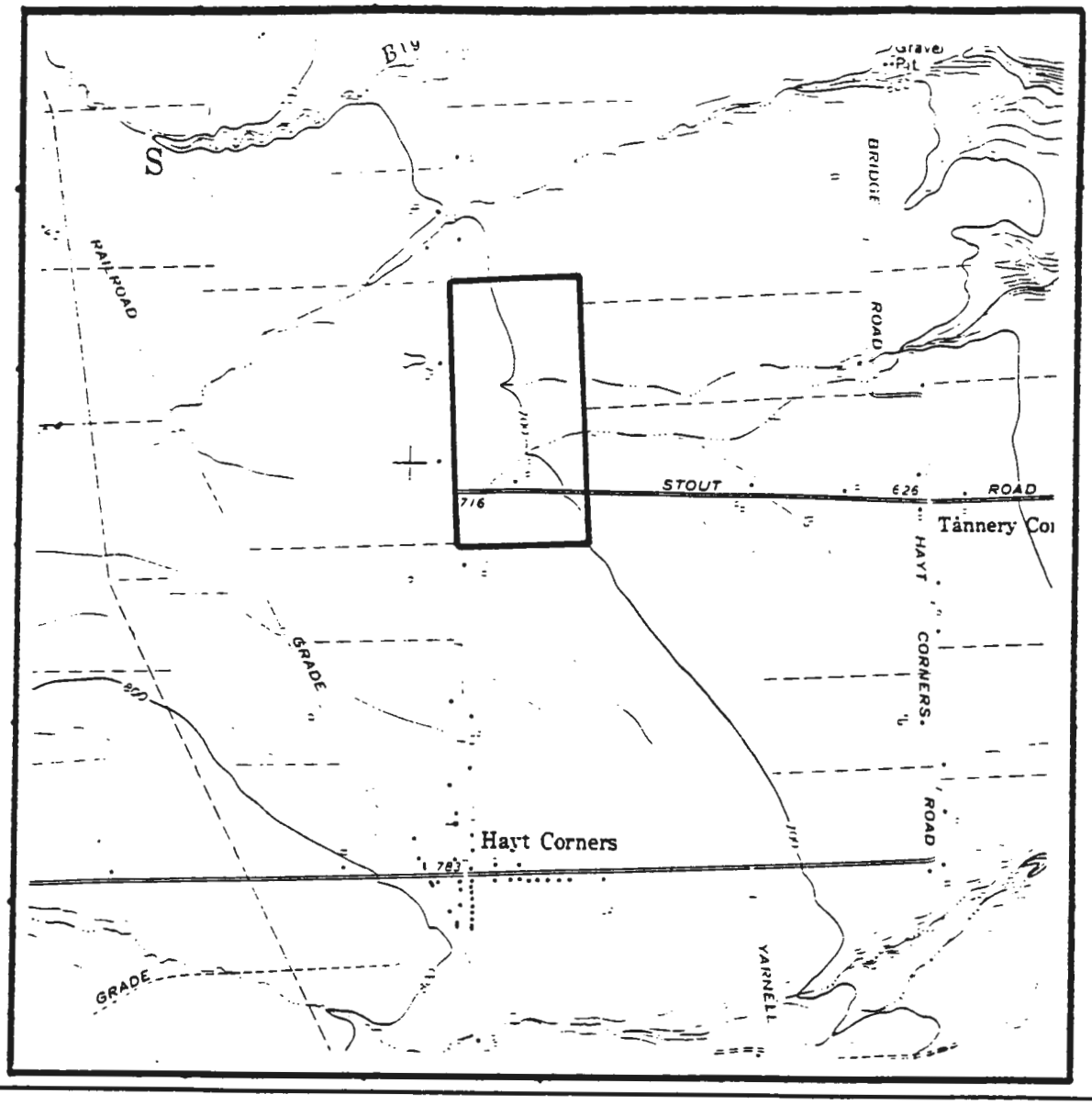
State NEW YORK Acres 120.902 ☐ LEASE AREA

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SITE PLOT

Figure 1.8

Serial Number
NYESSEN 7



Township ROMULUS, Range _____,

Section LOTS 85, 91, Subdivision _____,

_____ Meridian, County SENECA,

Name of Quad OVID, Scale 1:24,000.

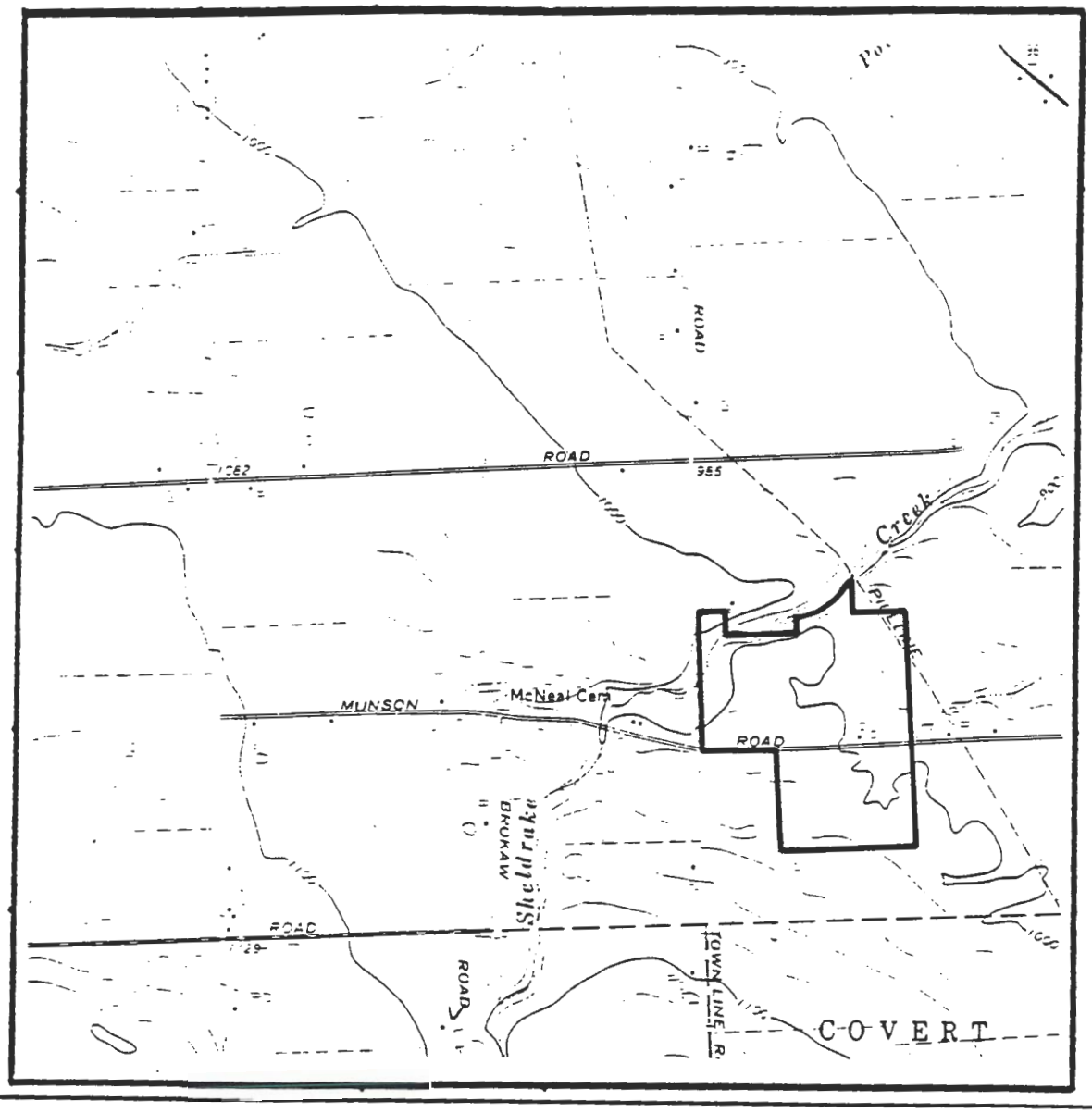
State NEW YORK Acres 99.969 ☐ LEASE AREA

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SITE PLOT

Figure 1.9

Serial Number
NYESSEN8



Township OVID, Range _____,

Section LOT 31, Subdivision _____,

_____ Meridian, County SENECA,

Name of Quad OVID, Scale 1:24,000.

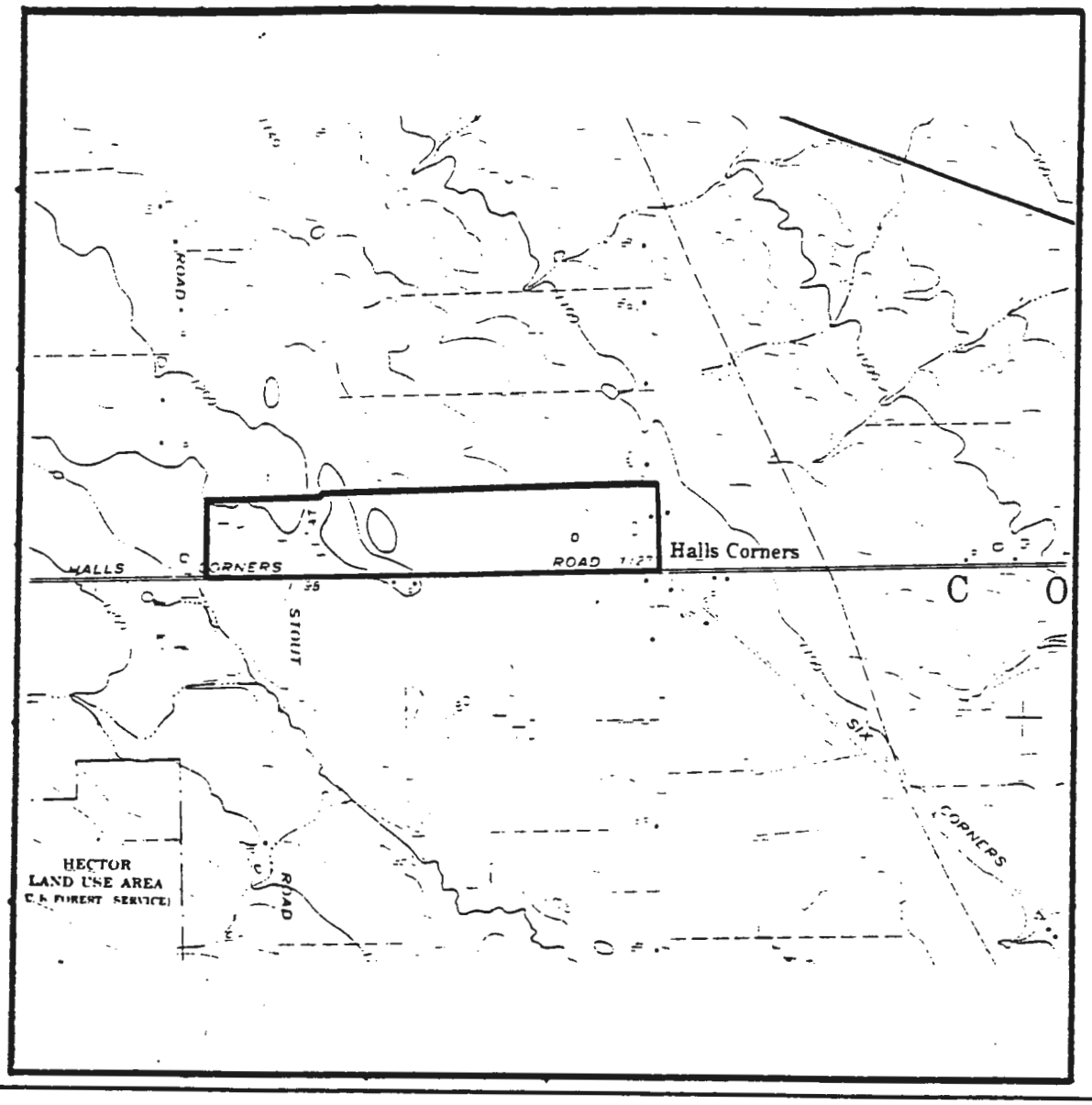
State NEW YORK Acres 114.207 ☐ LEASE AREA

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SITE PLOT

Figure 1.10

Serial Number
NYESEN9



Township COVERT, Range _____,

Section LOT 60, Subdivision _____,

_____ Meridian, County SENECA,

Name of Quad TRUMANSBURG, Scale 1: 24,000.

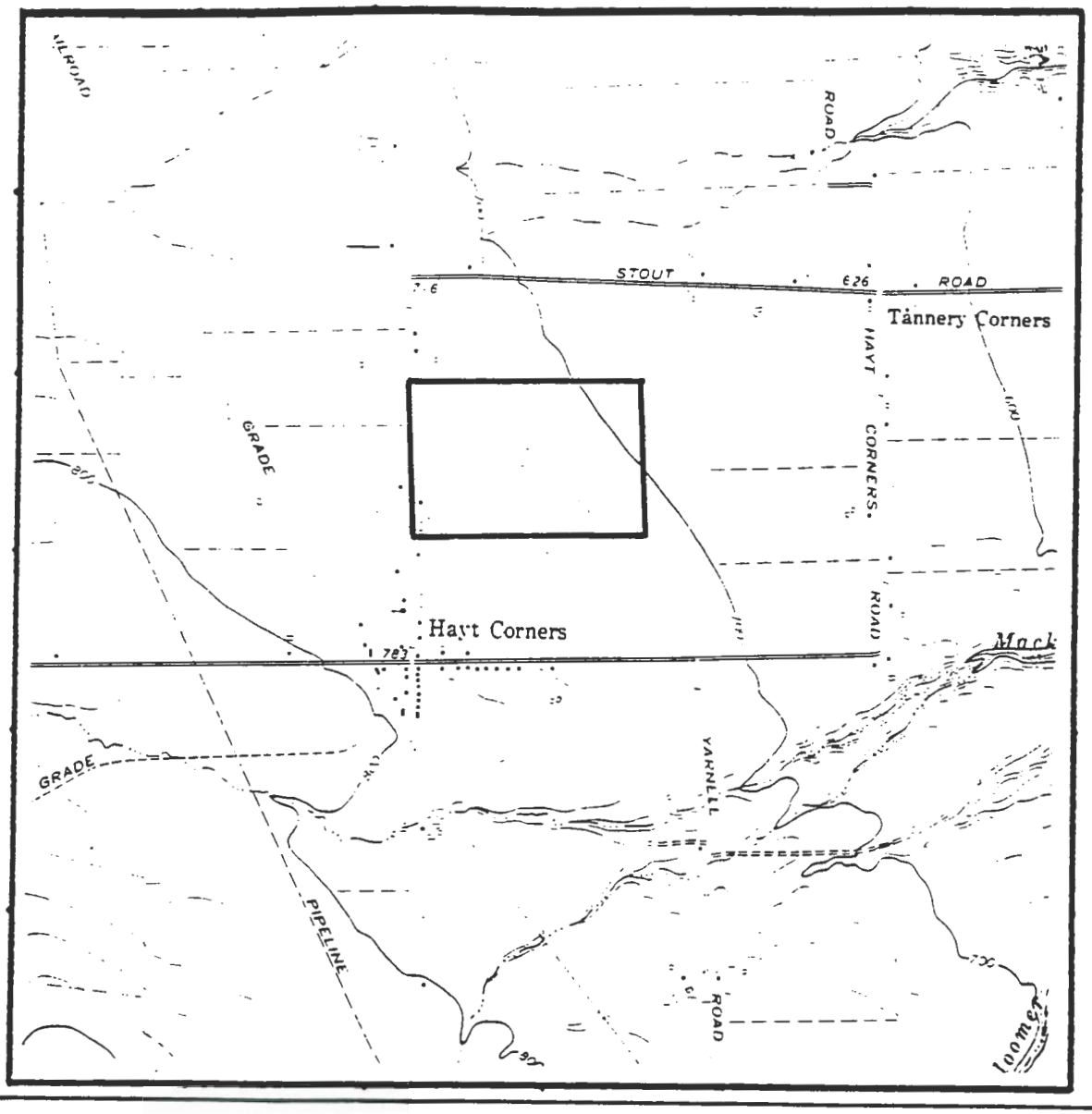
State NEW YORK Acres 104.001 ☐ LEASE AREA

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SITE PLOT

Figure 1.11

Serial Number
NYESSEN10



Township ROMULUS, Range _____,

Section LOT 91, Subdivision _____,

_____ Meridian, County SENECA,

Name of Quad OVID, Scale 1:24,000.

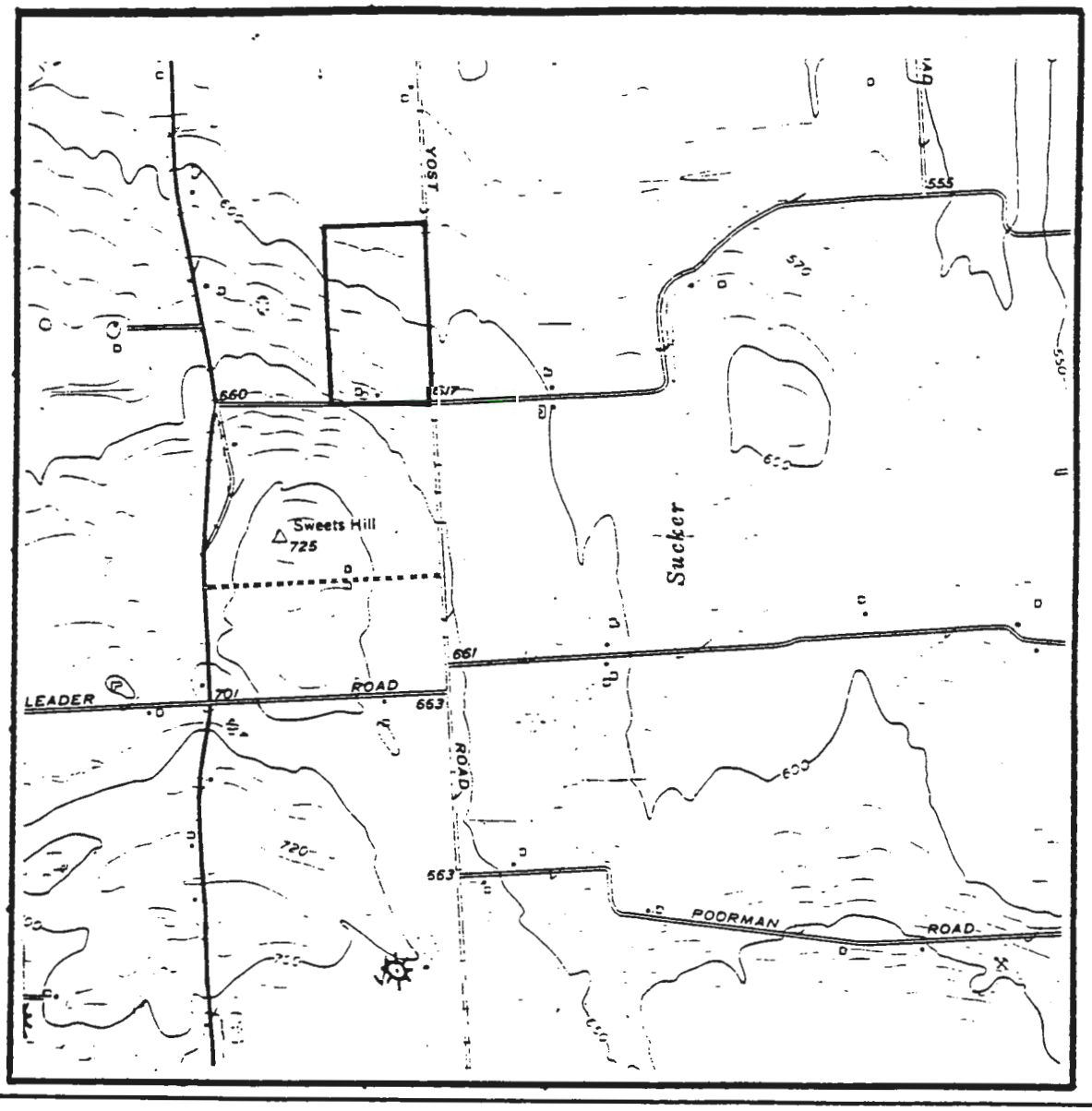
State NEW YORK Acres 95.900 ☐ LEASE AREA

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SITE PLOT

Figure 1.12

Serial Number
NYESSEN II



Township FAYETTE, Range _____,

Section LOT 34, Subdivision _____,

_____ Meridian, County SENECA,

Name of Quad ROMULUS, Scale 1: 24,000.

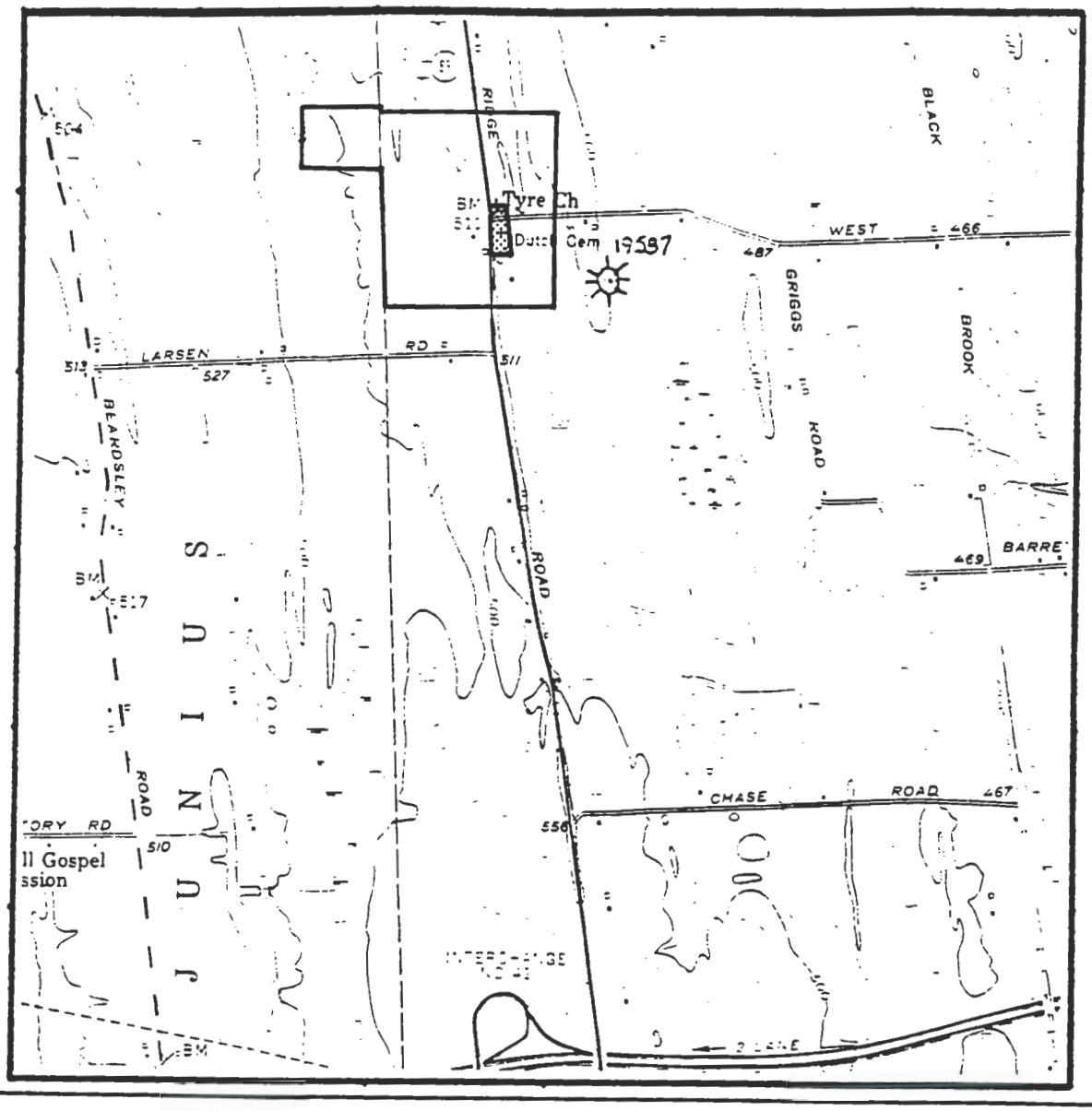
State NEW YORK Acres 54.3 ☐ LEASE AREA

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SITE PLOT

Figure 1.13

Serial Number
NYESSEN12



Township TYRE, JUNIUS, Range _____,

Section LOT 20, 19, Subdivision _____,

_____ Meridian, County SENECA,

Name of Quad SENECA FALLS, Scale 1:24,000.

State NEW YORK Acres 100.3 ☐ LEASE AREA

B. DECISION NEEDED

The Bureau is in a position to make a decision whether or not to lease the Federal minerals and under what conditions if leasing is the preferred option. The contractual controls existing in the lease (the standard terms, regulations, non discretionary statutes such as the Endangered Species Act and formal operational orders) provide substantial latitude within which the Bureau may require modification of the siting, design and timing of operations on leaseholds and interim and final reclamation measures. If resource conflicts are not resolved under standard lease terms and operating rules, special stipulations may be used to modify operations, restrict use or deny lease operations on portions of the lease. Federal minerals may be closed to leasing by both discretionary and nondiscretionary closures. Nondiscretionary closures affect those lands that are specifically precluded from fluid mineral leasing by law, regulation and Executive Order, such as National Parks or Wilderness Areas. This condition is not present on the SEAD, SSP or the scattered parcels of split estate land affected by this EA. A discretionary closure is an option if the Bureau determines that oil and gas leasing, even with the most restrictive stipulations (including No Surface Occupancy for the entire leasehold), would not adequately protect other resources or land uses. This environmental assessment will identify the specific resource values present within the lease area along with resource/hydrocarbon development issues plus the mitigation (stipulations) needed to reduce or eliminate these issues. The guidelines for granting future lease stipulation waivers, exceptions and modifications will also be established in this document. Under the National Environmental Policy Act, the Bureau is charged with determining if oil and gas leasing and subsequent lease operations might have significant effects on the environment. If the Bureau decides that effects would be significant, an Environmental Impact Statement will be prepared but if the effects are not significant a Finding of No Significant Impact and a Decision Record will be prepared and signed.

C. ISSUES AND CONCERNS

The Bureau has maintained extensive contact with several state agencies, the SEAD, the Finger Lakes Region of the New York State Office of Parks, Recreation and Historic Preservation and the affected land owners, in an attempt to identify the major issues affecting the previously described leasing decisions. These issues and concerns are as follows:

1. <u>Impacts on surface uses</u>
   -A large segment of the SEAD is set aside for the storage of ammunition and only ammunition related facilities can be constructed within an area commonly referred to as a

"quantity-safety distance".

-The installation airfield, U.S. Coast Guard Loran "C" Site, proposed sanitary landfill site, administration and housing areas plus troop training sites are uses that directly conflict with gas development.

-The existing recreational facilities and use areas at Sampson State Park plus future proposals are not totally compatible with gas development activities.

-The existing homes and associated structures and uses on private property plus future uses and building sites are not totally compatible with gas development activities.

2. Interference with solid waste management units and restricted areas could release contaminants to the environment.
-The basic mission of SEAD, that of receiving, storing, maintaining, and disposing of ammunition, predicates the presence of a significant quantity of hazardous materials that must not be disturbed.

-Other restricted sites that should not be disturbed include underground waste oil tanks, sewage sludge piles and treatment plants, old pits and landfills.

3. Water quality concerns.
-Adverse impacts associated with the occupancy and modification of floodplains, wetlands and areas adjacent to Seneca Lake and streams of statewide importance.

-Increased erosion if steep slopes and unstable soils are occupied or modified.

4. Disturbance of wildlife habitat areas.
-Natural habitats scattered throughout the installation and two large ponds located in the northeastern portion have been identified by the SEAD as areas to preserve.

5. Visual and noise impacts to home owners and users of Sampson State Park.

6. SEAD concerns regarding safety, security and potential economic benefits.

D. FEDERAL PERMITS, AUTHORITY AND ADDITIONAL ENVIRONMENTAL REVIEW

Federal mineral ownership is leased through the BLM under the provisions of the Mineral Leasing Act of 1947 for Acquired Lands, 30 U.S.C. 351 et seq. (1982) and the Mineral Leasing Act of 1920,

30 U.S.C. 181 et seq. (1982).

Subsequent activity on a Federal lease must be permitted with either an Application for Permit to Drill (APD) to drill, deepen or plug back a well or a Sundry Notice (SN) for changes and additional operations once a well is completed. This EA provides the basis for the Bureau's decision to approve an APD or SN, although further environmental review will occur when specific proposals are received. The APD includes a detailed drilling program and a plan for surface use and rehabilitation. A Sundry Notice would include a description of the proposed action and rehabilitation if surface disturbance occurs. The Bureau will provide the Surface Management Agency (SMA)/Surface Owner (SO) with a copy of the APD\SN for review and conduct a joint Bureau-SMA/SO-operator inspection of the proposed well site, anticipated production facilities and access roads. The Bureau will prepare an environmental analysis based on the SMA's/SO's and the Bureau's own review of the APD\SN, the results of the joint pre-drilling inspection and the clearances for threatened and endangered species and cultural resources obtained from the U.S. Fish and Wildlife Service and the State Historic Preservation Officer, respectively. The environmental analyses would identify surface use mitigation measures, referred to as conditions of approval, that are specific to the APD/SN. This APD process would also serve as the time to decide if lease stipulation exceptions, modifications and waivers are appropriate. If (1) the concerns leading to the development of lease stipulations could be avoided and/or mitigated to an acceptable level, or (2) if the resources of concern are not present the stipulation could be excepted, modified or waived without public notice other than that required for the APD process unless a stipulation involves an issue of major concern to the public. Appendix A-4 describes the entire APD process.

CHAPTER 2. ALTERNATIVES

A. INTRODUCTION

This chapter presents the alternatives considered by the Bureau of Land Management and a summary of the impacts of these alternatives. Alternative development for oil and gas environmental assessments are normally based on the degree of constraint used to mitigate resource conflicts. Federal lease operations are generally limited by one or more of the following category of restriction:

Standard Lease Terms and Conditions: These are the terms included on the Bureau Oil and Gas Lease (Form 3100-11), specifically sections 6, 7, and 9 which concern protection of surface resources and uses. The Bureau, at a minimum under the standard lease terms, can require relocation of proposed operations by 200 meters (660 feet) and can prohibit new surface disturbance for a period of 60 days. These terms are not intended to limit the authority of the Bureau to prescribe "reasonable", but more stringent protection measures or additional conditions if new or previously unrecognized resource values are present and require mitigation from oil and gas impacts, nor are they intended to expand the constraints established by special lease stipulations.

Special Stipulations: These are provisions that modify the standard lease rights. Special stipulations usually affect a lease by limiting surface occupancy completely (No Surface Occupancy), restricting surface use during specified time periods (Timing Limitation), or by applying special operational constraints (Controlled Surface Use). In addition, special administration stipulations are used when another agency or organization is involved and their concerns are not properly addressed by the formats discussed above. There is also provision for stipulation waivers, exceptions and modifications (WEMs). Waivers permanently exempt a stipulation from the lease, exceptions are case-by-case exemptions from a lease stipulation and modifications represent a change to the stipulations of a lease, either temporarily or for the term of the lease. A modification may, therefore, include an exemption from or alteration to a stipulated requirement.

Lease Notice: These are attached to the lease and provide more detailed information concerning limitations that already exist in law, lease terms, regulations or operational orders. A Lease Notice also addresses special items the lessee should consider when planning operations, but does not impose new or additional restrictions.

Conditions of Approval: These are conditions or provisions (requirements) under which an Application for Permit to Drill

(APD) or proposed production facilities are approved. Conditions of Approval are used to guide how a particular drilling operation is conducted and are attached to the approved APD or proposal for production facilities.

The remainder of this chapter is divided into three parts: (B) existing management and Surface Management Agency stipulations which are common to all the oil and gas development alternatives (C) the alternatives considered in detail during the environmental assessment and (D) a summary of the impacts of these alternatives.

B. ALTERNATIVES ELIMINATED FROM DETAILED STUDY

An alternative to analyze the leasing or no leasing option on the portion of SSP identified as property subject to Native American land claims was considered. The uncertainty involved in this issue and the possibility that land claims would not include property in SSP, at some time in the future, are the main reasons why oil and gas leasing decisions were not analyzed at this time.

Several private land owners voiced opposition to oil and gas leasing or development on their property. An alternative to address no leasing on portions of the proposed lease area was evaluated. This alternative was not carried forward for the following reasons.

- Half of the land owners opposed to leasing and development are owners of low potential tracts that are not expected to experience pressure to permit drilling activity.
- Bureau policy to make unleased lands available for leasing.
- The size of the split estate parcels provides ample space to move drilling sites to satisfy land owner conflicts.
- The isolated nature of these parcels provides plenty of off lease drilling sites if the subject land owners are not willing to lease their percentage of the mineral estate.

A final alternative to evaluate allowing more surface occupancy on SSP was also considered but eliminated from further analyses for the following reasons.

- All of the sites that would have been considered under this alternative are developed recreation sites or scheduled for recreation development/activities under a five to ten year plan.

- Sections of SSP that would have been considered under this alternative have moderate potential but are not likely to be drilled according to the reasonably foreseeable drilling scenario.

- If drilling on SSP property becomes desirable, based on the one test well that is expected, No Surface Occupancy areas can be drained by off site wells or directional drilling.

C. EXISTING MANAGEMENT COMMON TO ALL ALTERNATIVES EXCEPT THE NO LEASING ALTERNATIVE.

All Federal leases are subject to the following regulations and program requirements.

Regulations

- 43 CFR 3100 - Oil and Gas Leasing
- 43 CFR 3160 - Federal Onshore Oil and Gas Operations
- Onshore Order #1 - Approval of Operations on Onshore Federal and Indian Oil and Gas Leases
- Onshore Order #2 - Drilling Operations
- Onshore Order #3 - Site Security
- Onshore Order #4 - Measurement of Oil
- Onshore Order #5 - Measurement of Gas
- Onshore Order #6 (draft) - Hydrogen Sulfide Operations
- Notice to Lessees 2B - Disposal of Produced Water
- Notice to Lessees 3A - Reporting of Undesirable Events
- Notice to Lessees 4A - Royalty or Compensation for Oil and Gas Lost
- Federal Underground Injection Control Program (UIC) - Disposal of Produced Water and Secondary/Enhanced Oil Recovery Injection Wells
- Spill Prevention Control and Countermeasure Plan (SPCCP).

Appendix B-1 describes these regulations in greater detail and Appendix B-5 includes a set of conditions of approval (COA) used in the Milwaukee District Office for an approved drilling permit. These COA's are modified to fit specific permit conditions, although the standard text is derived from the regulations listed above.

Laws

Federal leasing and subsequent oil and gas activities are also subject to the provisions of various Federal laws and Executive Orders which include, but are not limited to:

- National Historic Preservation Act of 1966
- Endangered Species Act of 1973

- Sections 402 and 404 of the Clean Water Act
- Sections 311 of the Federal Water Pollution Control Act Amendments of 1976
- Executive Order 11990 Wetland Protection
- Executive Order 11988 Floodplain Management

State Rules

State regulations also apply on Federal Leases. State requirements include, but are not limited to, drilling permits, well spacing orders, drilling, casing, plugging and abandonment requirements, sedimentation and erosion control plans, State Pollutant Discharge Elimination System (SPDES) permits, Oil Spill Prevention, Control, and Compensation Program (OSPCC Program) and social and ecological preservation (ie. Cultural Resources, Wetlands, Floodplains) requirements. The State has also established set back restrictions to mitigate adverse impacts to public safety and natural resources. The State Department of Environmental Conservation is currently in the process of completing a Generic Environmental Impact Statement (GEIS) on their program for regulating the oil, gas, underground gas storage, and solution mining industries. Rules and Regulations 6 NYCRR 550 through 559 require well drilling, casing, stimulating, completing, producing and plugging techniques designed to prevent pollution, waste, escape, migration and commingling of oil, gas, brine and fresh water. The following measures are part of the State permitting process that would affect the siting of gas wells associated with Federal leases.

Well locations must be at least:

- 100 feet from a private dwelling
- 75 feet from the traveled part of a public road
- 150 feet from a public building or area

In addition, all drilling permits in the State are accompanied by an environmental assessment form that is used to determine the need for more detailed analysis by the State Department of Environmental Conservation (DEC). Drilling permits that exhibit the following conditions would trigger further review. These studies would be initiated to weight potential site selection concerns and would result in either additional permits, approvals of proposed well sites with or without mitigation measures or movement of proposed sites to avoid impacts.

- Within 2,000 feet of a municipal water supply well
- Within State Parklands
- Within Agricultural Districts if more that two and one-half acres will be altered including the access road
- When other DEC permits are required

D. ALTERNATIVES CONSIDERED

Alternative A (The Proposed Action Alternative)

Lease with existing regulations and Surface Management Agency Stipulations.

This alternative would include all of the terms of the Bureau oil and gas lease form 3100-11, Federal Onshore Oil and Gas Leasing and Operating Regulations 43 CFR 3100 and 3160, Onshore Orders, Notice to Lessees, Federal environmental laws and executive orders, State regulations and stipulations provided by the SEAD and the New York State Office of Parks, Recreation and Historic Preservation. The design features that would be part of the proposed action are described below.

The leases would include specific requirements under the Wetland and Floodplain Executive Orders. If any activity is proposed within or likely to affect a wetland or floodplain, the Bureau would evaluate alternate sites. If no alternative sites are available, the activity would be subject to additional impact reduction measures designed to limit the time and extent of development and to reduce pollution potential.

Additional statutory requirements under the Historic Preservation Act and the Endangered Species Act would be part of the proposed action. These requirements would require a cultural resource survey at the time of an Application for Permit to Drill (APD) or Notice of Staking (NOS). After the completion of the survey, the New York Historic Preservation Office (NYHPO) would be afforded an opportunity to review and comment on the Bureau's proposed action, pursuant to 36 CFR 800. If necessary, the Advisory Council on Historic Preservation would also be afforded an opportunity to review and comment on both the Bureau's proposed action and NYHPO's comments. Appropriate mitigation measures for protection of the cultural resource would be developed as Conditions of Approval on the APD. If cultural and historical resources are discovered during surface disturbing activities, the lessee/operator is required to notify the Bureau and cease any operation that would affect the resources. An inventory for threatened or endangered species (T&E) may also be required if new information indicates that listed or proposed T&E species may be affected by proposed oil and gas operations. The need for mitigation or movement to avoid conflicts with a T&E species would be based on consultation between the Bureau of Land Management, the New York Department of Environmental Conservation, the lessee and the U.S. Fish and Wildlife Service.

When the Bureau receives an APD for an area that may contain prime or unique soils (P&U), the Bureau will contact the SCS and request a Farmland Conversion Impact Rating (Form AD-1006) which will indicate if P&U soils are present. If P&U soil is present,

the Bureau will make a determination as to whether the proposed conversion is consistent with the Farmland Protection Policy Act.

The majority of the proposed lease area is located within the boundaries of a military installation, therefore actual drill sites would be restricted to the areas that have been identified by the SEAD. Figure 2.1 shows the area that could be occupied to physically drill and complete gas wells. The areas that are not available for drill sites on Figure 2.1 and listed below are designed to eliminate conflicts with the mission of the SEAD.

1. Ammunition storage igloos and the quantity safety distances prescribed by the Department of Defense. Increased production, testing or storage of ammunition or explosives may further restrict the areas available for gas drill sites. An exception to this condition could occur if explosives are moved on a reimbursable basis, if the SEAD approves. Directional drilling to recover hydrocarbons from these restricted areas must be at least 238 vertical feet below the bottom of an occupied ammunition storage igloo.

2. A 500 foot area lateral clearance and inhabited buildings sites at the airfield.

3. Within the boundaries of the areas used for base operations, administration functions, housing facilities and troop training activities.

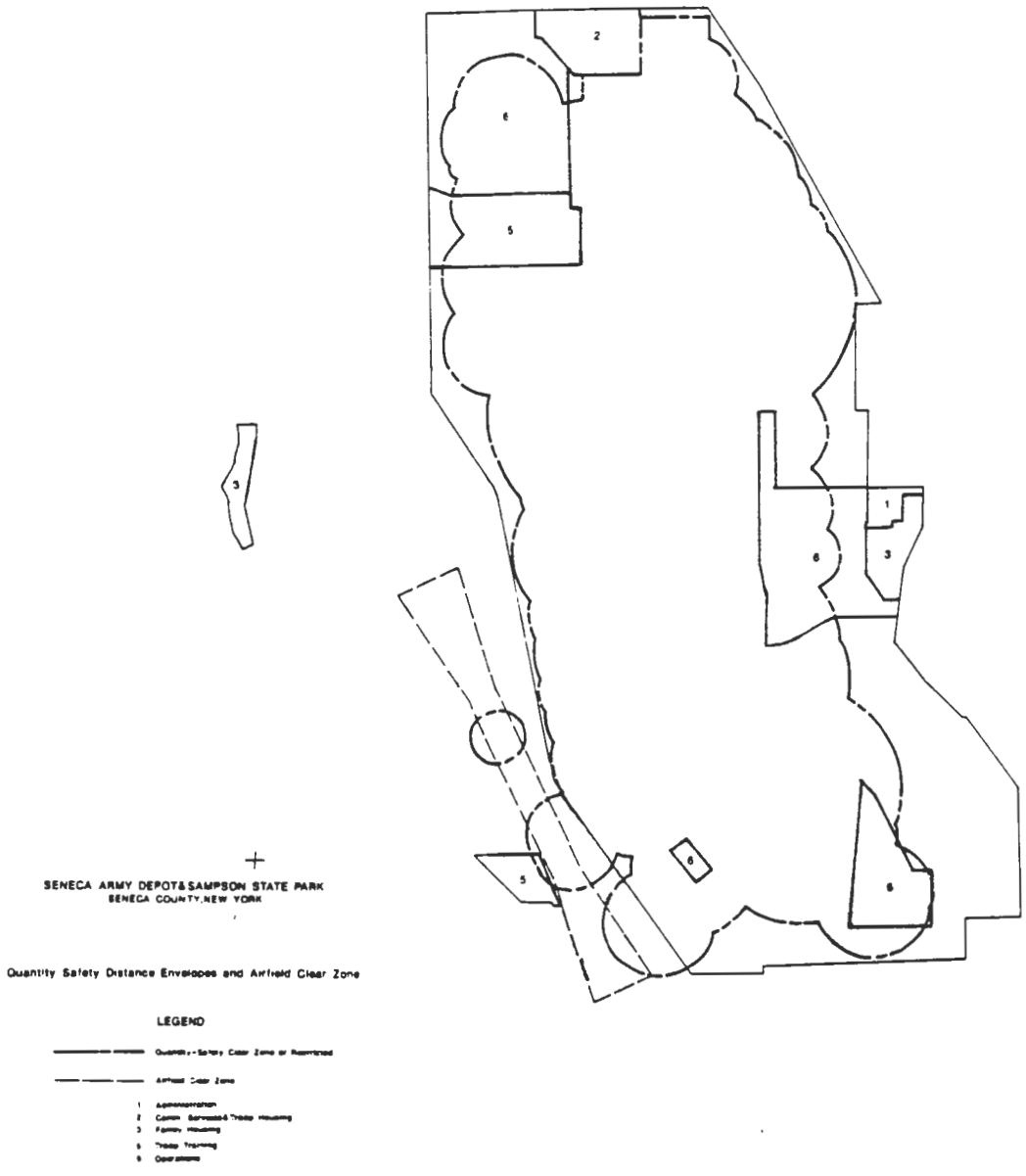
The restrictions above would limit actual drill sites, however associated construction activities for gas production, gathering and distribution lines plus access roads could occur within portions of the areas listed above. These activities plus the location of drill sites would also be restricted on the SEAD, with the use of No Surface Occupancy (NSO) stipulations for the following areas. The areas affected by NSO restrictions are shown on Figure 2.2.

1. U.S. Coast Guard Loran "C" Site.
2. Storm drainage and utility area.
3. Wetlands.
4. Solid waste management units including but not limited to, ammunition storage igloos plus explosive and toxic chemical agent contaminated lands. Directional drilling to recover hydrocarbons from contaminated lands must be at least 50 feet below the explosives contaminated land surface.

The result of combining the specific drill site restrictions and these comprehensive NSO restrictions is shown on Figure 2.3. A total of 1,148 acres on the SEAD is available for drill site locations.

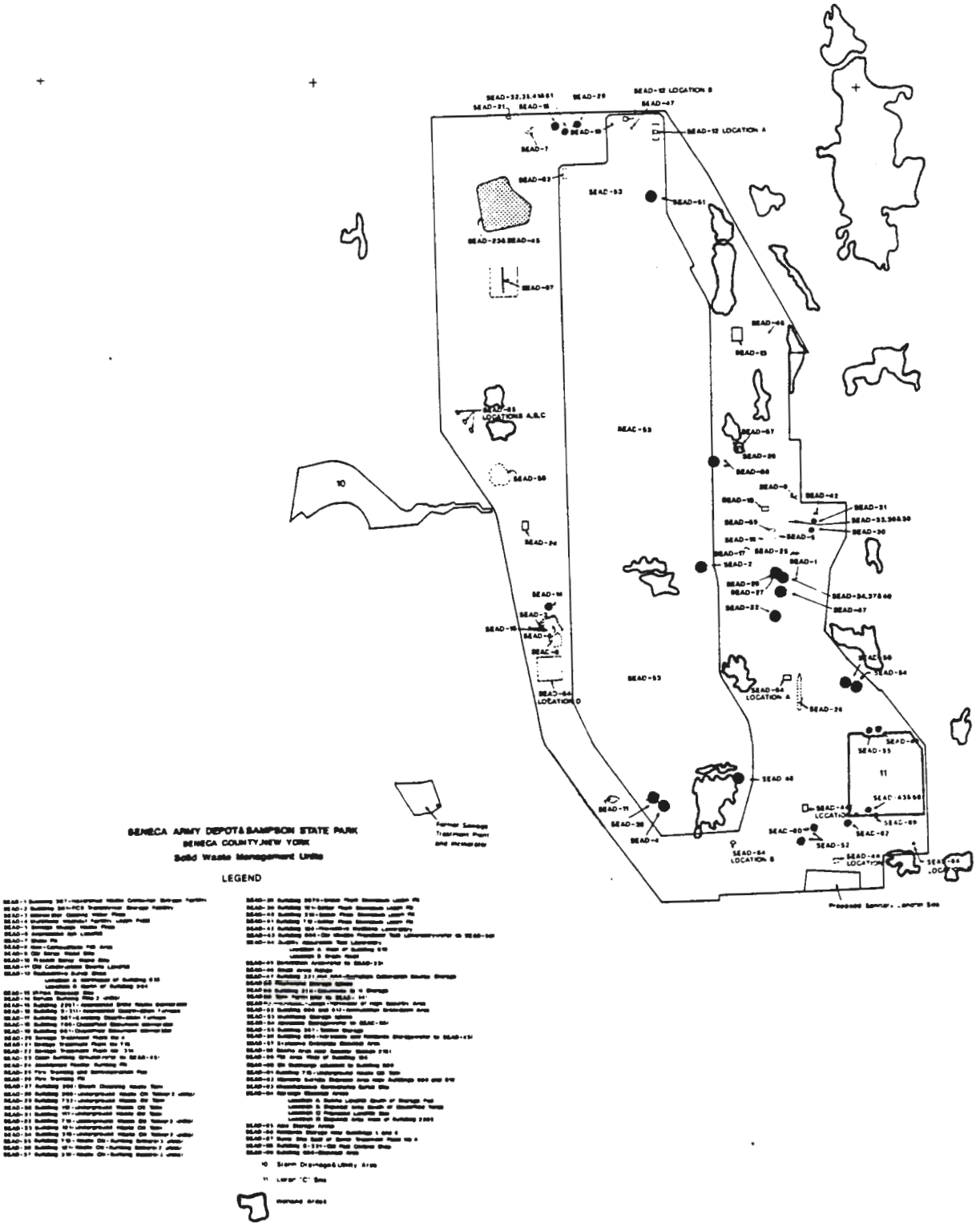
No Drilling Areas

Figure 2.1



No Surface Occupancy Areas

Figure 2.2



The portion of the proposed lease area managed by the New York State Office of Parks, Recreation and Historic Preservation would also be subject to conditions that would limit surface occupancy to the area shown on Figure 2.4., a total of 57 acres. The areas that are not available for surface occupancy on Figure 2.4 are designed to eliminate conflicts with, users of Sampson State Park, developed recreation and administration sites and future plans for additional development of recreation sites. A single Surface occupancy corridor would be allowed to construct gas production, gathering and distribution lines plus access roads. The location of this corridor would have to be approved prior to the commencement of drilling activity.

The restrictions on private property under this alternative would involve thorough review according to the, Wetland and Floodplain Executive Orders, Historic Preservation Act, Endangered Species Act and for Prime and Unique Soils. Surface occupancy restrictions based on the State of New York requirements listed in Section B of this chapter would also apply under this alternative.

A complete set of Lease notices and stipulations that would be used to implement this alternative are found in **Appendix B-11.**

Alternative B

This alternative would be identical to Alternative A with the addition of the following design features and modifications to the proposed action.

The leases would include 200 foot buffers adjacent to all streams and ponds. The buffer width is based on recommendations by the State of New York and the U.S. Fish and Wildlife Service for vegetation strips between earthmoving activities and oil and gas developments from streams, plus an attempt to preclude oil and gas reserve pit development within stream deposits. This would eliminate all surface disturbance activities within this zone except perpendicular pipeline or road crossings. These crossings could be permitted with the written approval of the Bureau and the affected surface management agency or surface owner, if a proposal meets the site specific standards developed by the affected party. This buffer could also be modified on gentle slopes along streams if the site is not characterized by shallow groundwater or well drained stream deposits, or when an existing road is used. Any modifications would have to be permitted by the Bureau and affected surface owner.

A 200 foot buffer along all roads would be included to reduce conflicts with road users. This would preclude all surface disturbance except for modifications if a proposed action does not compromise public safety, and visual/audible buffers. Any modifications would have to be permitted by the Bureau and the

affected surface owner. Perpendicular pipeline or road crossings, the use of existing roads for access, and existing roads or utility corridors for pipeline routes could be permitted with the written approval of the Bureau and the affected surface owner or agency, if the proposal meets the site specific standards developed by the subject owner.

The leases would include no surface occupancy restrictions on slopes that are ≥21% and on, or within 200 feet of wetlands. These restrictions would reduce erosion hazards and the possibility of water quality contamination events. Perpendicular pipeline and road crossings could be permitted across sections of Riverine wetland and the 200 foot buffer could be modified if operations are proposed on gentle slopes, and the site is not characterized by shallow groundwater or well drained stream deposits. Any modifications would have to be permitted by the Bureau and the affected surface owner or agency. Exceptions would also be granted under both restrictions for the use of existing roads for access and pipeline corridors.

A final restriction would be a no surface occupancy restriction within 200 feet of all occupied dwellings and proposed homesites. No exceptions would be allowed for this restriction unless an existing or proposed homesite is permanently abandoned, or if an existing road is used for access or for a pipeline corridors.

Additional Lease stipulations that would be used to implement this alternative are found in **Appendix B-40.**

Alternative C (The No Action Alternative)
Under this alternative, no Federal leases would be issued within the project area.

In line with Department of the Army oil and gas leasing policy the SEAD has already consented to making lands available for leasing subject to surface use and development restrictions. These restrictions do not actually eliminate any lands from leasing. The New York State Office of Parks, Recreation and Historic Preservation has also agreed to make lands available for leasing contingent upon surface restrictions. Several surface owners affected by the split estate parcels are not in favor of leasing or development on their property. Even if the reasons for restricting occupancy on the split estate parcels are valid, leasing could still occur since these tracts could all be developed by drilling potential wells from sites off of the Federal leases.

The subject property is not affected by any non-discretionary closures therefore this alternative will only be an option if the Bureau determines that the adverse effects of oil and gas leasing outweigh the benefits and no leasing is clearly justified in the national interest.

E. COMPARISON OF ALTERNATIVES

The following table compares the degree of impact that could result to each of the environmental resources addressed in this EA under each alternative. This qualitative summary is supported by the analysis of potential impacts, which is described in Chapter 4 and summarized in Section F (Table 4.2) of Chapter 4.

Table 2.1
COMPARISON OF ALTERNATIVE SUMMARY

Resources	Impacts by Alternative		
	A. STL,SEAD & SSP Proposals	B. STL, SEAD & SSP Proposals & Additions	C. No Lease
B. Land Use: (Issue 1 & 4)	Low	Low	None
C. Geology/Minerals:	Low	Low	High
D. Critical Elements:			
Soil/Slopes (Issue 2)	Moderate	Low	None
Prime Farmland	Low	Low	None
Cultural/Historical	Low	Low	None
Native American Concerns	None	None	None
Water Resources (Issue 2)	Moderate	Low	None
Floodplains (Issue 2)	Low	Low	None
Wetlands (Issue 2)	Moderate	Low	None
Air Quality	Low	Low	None
Hazardous & Solid Waste	Low	Low	Low
Threatened/Endangered Species (Issue 3)	Low	Low	None
E. Other Elements:			
Wildlife (Issue 3)	Low	Low	None
Visual Resources (Issue 4)	Low	Low	None
Noise (Issue 4)	Low	Low	None

CHAPTER 3 AFFECTED ENVIRONMENT

A. INTRODUCTION

This chapter summarizes the environmental resources and land uses around and close to the project area. The resources described are related to the issues which would be affected by implementing one of the previously discussed alternatives. The project area contains no Federal or State designated wilderness areas, wild and scenic rivers or Areas of Critical Environmental Concern (ACECs) and it is not within a coastal management zone.

The information on the resources and land uses of Seneca Army Depot (SEAD) is summarized from the following reports prepared for the SEAD by Lyon Associates, Inc., Baltimore, Maryland and by the SEAD staff.

- Phase I Analysis of Existing Facilities/Environmental Assessment Report, 1984
- Phase II Analytical/Environmental Assessment Report, 1985
- Land Management Plan, 1988

The information on the resources and land uses of Sampson State Park (SSP) is summarized from a Comprehensive Study Process Report for Sampson State Park prepared by Cornell University, Ithaca, New York in 1974 and personal communication with individuals from the State of New York Office of Parks, Recreation and Historic Preservation.

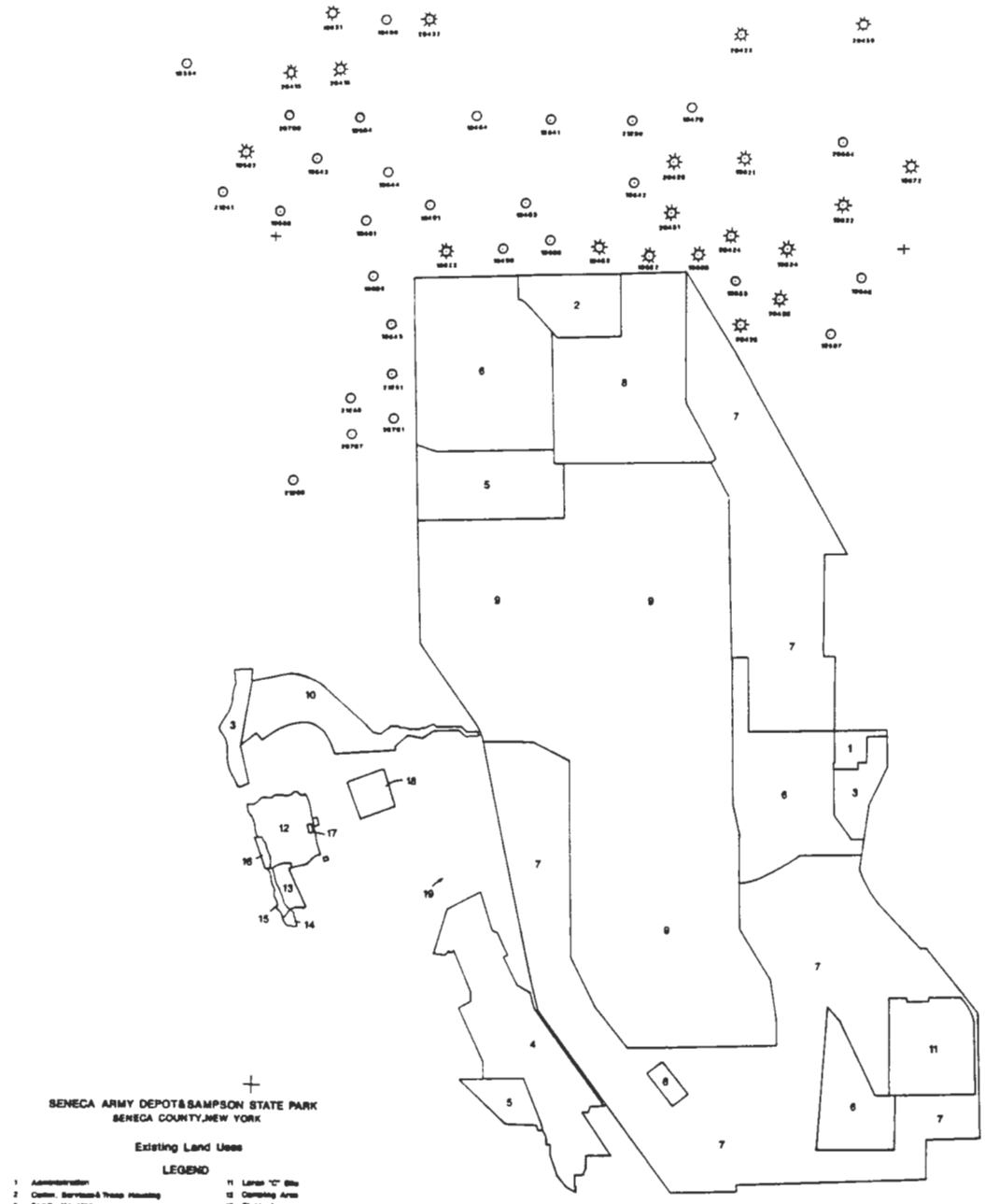
Three distinct land use types are found within the project area including the 10,587 acre Seneca Army Depot, a 680 acre portion of Sampson State Park and scattered parcels of agricultural land ranging from 40 to 130 acres in Covert, Fayette, Junius, Ovid, Romulus and Tyre Townships. All of these parcels are located in Seneca County, New York. This area is generally referred to as the Finger Lakes Region near the center of New York State. The rolling farmland is divided by seven deep glacial lakes and Seneca County is located between the two largest Finger Lakes, Cayuga and Seneca. Population densities in the immediate vicinity are quite low although larger cities like Rochester, Syracuse and Ithaca are within a sixty mile radius of the project area.

B. LAND USE (Issues 1, 2, and 6)

SENECA ARMY DEPOT (SEAD)

The SEAD has been in existence since 1941 when the War Department decided to start a munitions project in Central New York. The primary mission of the installation was to receive, store, maintain, and supply ammunition. Between the end of World War II and the present the SEAD mission has expanded and a substantial number of facilities have been constructed in support of these missions and the needs of base personnel. The existing land use patterns at the depot are shown on Figure 3.1. Safety and security are very high priority issues on this base as is the case on all military installations.

Figure 3.1


SENECA ARMY DEPOT & SAMPSON STATE PARK
SENECA COUNTY, NEW YORK
Existing Land Uses
LEGEND

The historic development of the installation and man-made boundaries have served to divide SEAD into three major land areas.

Main Post Represents nearly 93% of the land base and includes:

- ammunition storage and exclusion storage areas
- operational facilities for the maintenance and demilitarization of ammunition
- North Post Cantonment Area (administration, family housing, community services and warehouse storage)
- South Post Cantonment Area (troop housing, troop support, and community services)
- open storage (managed woodland and natural habitat areas)
- Loran C Coast Guard Radar Station
- troop training areas

Airfield Situated on a 500 acre parcel off the southwestern corner of the Main Post. Troop training activities also take place within the boundaries of the airfield.

Lake Housing Area Provides family housing quarters on 69 acres of depot property adjacent to Seneca Lake.

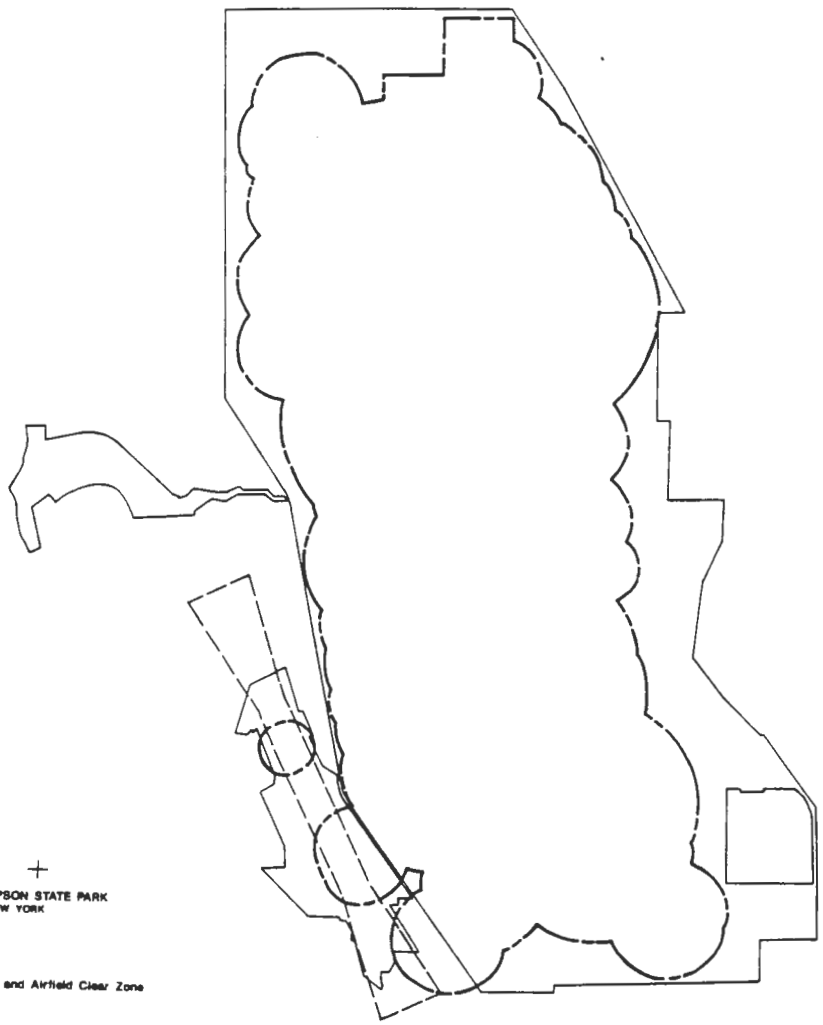
The principal factor influencing land use and oil and gas development on the depot is the quantity safety distance envelope which surrounds the facilities dedicated to the handling, maintenance, storage, and demilitarization of ammunition and related material. Quantity safety distances are measured from the perimeter of the ammunition storage areas and range from 1,370 to 3,990 feet as directed by regulation. Only ammunition related facilities can be constructed within the envelope described by the quantity safety distances. (See Figure 3.2)

The SEAD has identified other uses that are incompatible with oil and gas development. Figure 3.1 shows where these additional installation uses are located.

The basic mission of SEAD, that of receiving, storing, maintaining, and disposing of ammunition, predicates the presence of a significant quantity of hazardous materials which are discussed in more detail in the Hazardous Substances and Solid Waste Management section of this chapter.

Resource management programs represent a necessary part of the operations at the depot. Fish, wildlife and forestry programs are active on the depot and include projects for disease control, tree maintenance, vegetative plantings, habitat improvement and development. More information on these resources is located in the fish and wildlife section of this chapter.

Figure 3.2



SENECA ARMY DEPOT & SAMPSON STATE PARK
SENECA COUNTY, NEW YORK

Quantity Safety Distance Envelopes and Airfield Clear Zone

LEGEND

SAMPSON STATE PARK (SSP)

Sampson State Park (SSP) located along the eastern shore of Seneca Lake was the site of the second largest naval training base in the country during World War II and an air force base during the Korean War in 1950. The Air Force left the site in 1955 and the U.S. Government started to surplus property another five years later in 1960. The State of New York eventually purchased most of the property for park land use.

Sampson State Park is currently an under-utilized regional park. Seneca Lake is the park's most outstanding natural feature forming the western boundary of the area along 3.7 miles of shoreline. Park facilities have been developed near the lake front and include a 128-berth marina, boat launching, tennis courts, swimming beach , recreation building, bathhouse, picnic area and tent and trailer campsites. All of these facilities are within the lease proposal area.

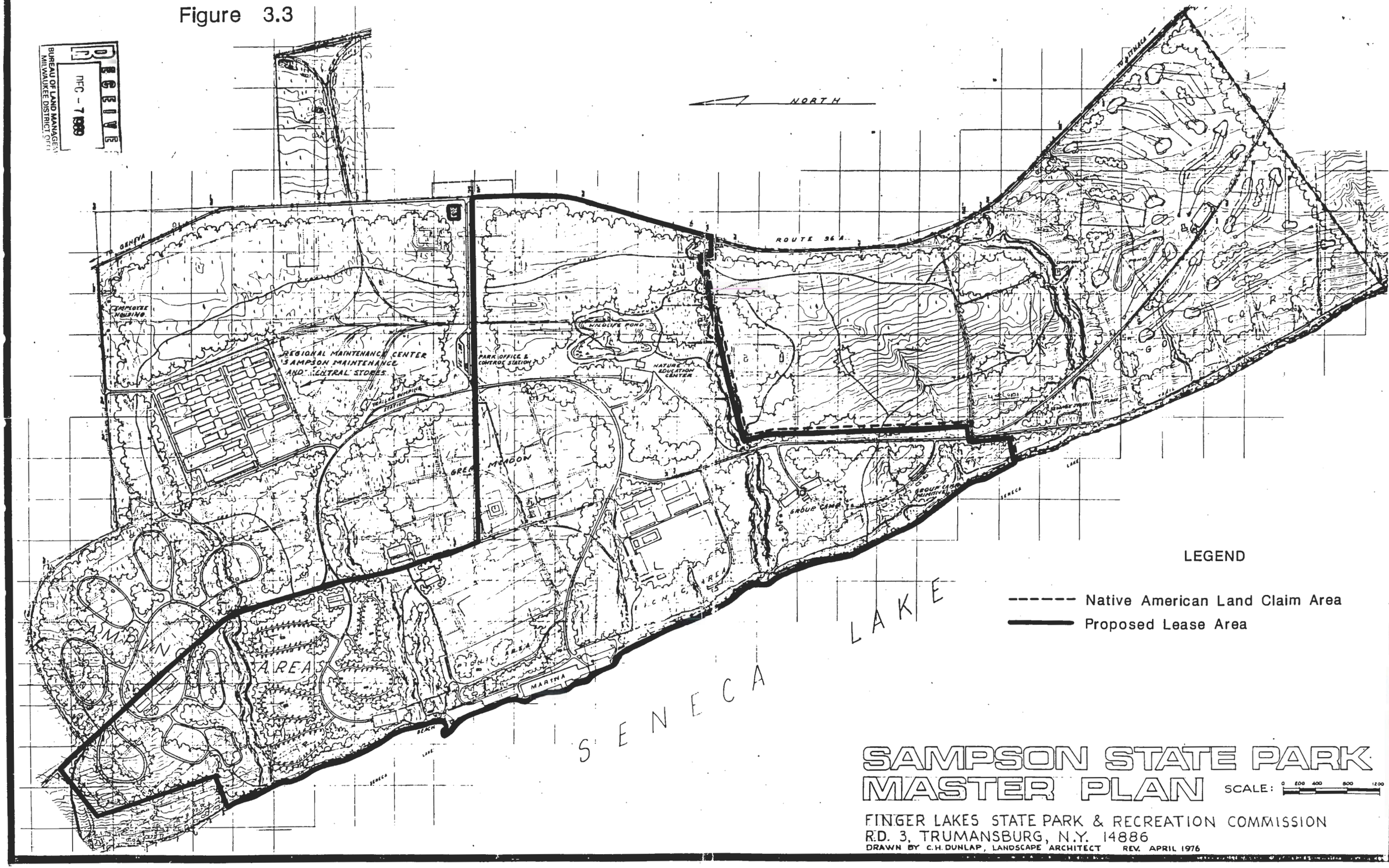
The marina area consists of docking facilities for 128 boats. Electricity and fresh water are available at all berths, and a launching ramp plus overnight parking expand the lake side facility for boaters and fisherman. Limited vehicular traffic is permitted dockside to facilitate loading and unloading. The beach area and marina occupy 2,700 feet of the 19,900 feet of Seneca Lake shoreline. A 245 site campground with electric hookups, hot showers, flush toilets, a trailer dumping station and concession stand is located adjacent to the lake north of the marina. Existing developments are shown on Figure 3.1. Future proposals are shown on the master plan prepared by the State of New York for this park. (See Figure 3.3)

Visitor use days for the last calendar year as of March 1989 were 114,800 for camping and 122,927 for other uses including swimming, boating, and picnicking. The area is also used by deer and duck hunters in the fall. Historical use patterns reflect an upward trend for Sampson State Park although use is normally higher at other parks in the Finger Lakes Region.

SPLIT ESTATE TRACTS

The primary source for data related to the surface uses of the split estate parcels has been obtained from contact with surface owners, USGS 7.5 minute topographic quadrangle maps and contact with other State and Federal resource management agencies. The dominating use on all of the tracts is farming and primary residence occupancy or solely residence occupancy. Some parcels have recently been purchased with the intent to sub-divide for residential occupancy. Most of these lands are classified as either prime or statewide/locally important farmland, therefore this land is considered valuable for the growth of food, feed, fiber, forage, oilseed, and other agricultural crops.

Figure 3.3



LEGEND

------ Native American Land Claim Area

Proposed Lease Area

SAMPSON STATE PARK MASTER PLAN

SCALE: 0 200 400 800 1200

FINGER LAKES STATE PARK & RECREATION COMMISSION
R.D. 3, TRUMANSBURG, N.Y. 14886
DRAWN BY C.H. DUNLAP, LANDSCAPE ARCHITECT REV. APRIL 1976

C. GEOLOGY/MINERALS

The Finger Lakes region of central New York is located north and west of the axis of the Appalachian basin. Unconsolidated glacial materials that may be more than 50 feet thick on upland surfaces cover a Paleozoic (Cambrian through upper Devonian) sedimentary sequence more than 6000 feet thick. The strata strike east to west and dip south at rates generally less than 100 feet per mile (18m/km) toward the axis of the basin. Middle and upper Devonian rocks are exposed along the shores of the lakes and in a few roadcuts and stream valleys.

Natural gas reserves are present in siltstones and very fine- to fine-grained sandstones near the top of the upper Ordovician Queenston formation, which in this area consists of a deltaic to nearshore-marine sequence. The Queenston and its equivalent in Pennsylvania, the Juniata formation, represent a clastic wedge consisting of materials eroded from uplands located southeast and east of the region; the uplands formed during the middle Ordovician Taconic orogeny. The source area for the sediments is thought to have been in southeastern Pennsylvania.

Queenston deposits in the study area consist of red sands, silts, and shales of the lower delta plain, delta front, and nearshore marine environments, all deposited by low-gradient streams on the margin of an epicontinental sea. Coastline processes were probably dominated by storms, with relatively minor sediment transport by currents. The sands contain moderate to high clay fractions, a likely result of post-depositional redistribution of clay clasts present in the original sand bodies. To the north the sands give way to silts and clay representing offshore sedimentation.

In the study area, the reservoir sands are within 250 feet of the top of the 900 foot thick Queenston, about 1250 to 2800 feet below the land surface. The Queenston is capped by an unconformity with the overlying siltstones and sandstones of the Silurian Grimsby formation, which produces gas in a few of the holes in the study area. Farther west, the Queenston is predominantly shale and the Grimsby forms the prolific "White Medina" sand of the large gas fields of western New York.

The uppermost reservoir sand of the Queenston is the thickest and most porous of the 4 to 6 productive Queenston sands. It was probably subjected to the longest periods of winnowing and diagenesis during subaerial exposure, thus enhancing its reservoir characteristics. In general, the Queenston sands average 10-13% porosity, but average less than 1 millidarcy (md) permeability due to the relatively high clay content of the sands.

The trap consists of a south-dipping homocline with a

permeability barrier that appears to be roughly parallel to and north of the New York Thruway (Interstate 90). The loss in permeability is caused by an increase in the clay content of the reservoir sands to the north.

Throughout the study area, reservoir characteristics allow economic gas production only with the use of artificial fracture induction. In the early 1960s, the use of artificial fracture technology led to the rapid development of the Auburn West field east of the study area. This development was followed by the development of the Waterloo South, Fayette, and Penn Yan fields. Further exploration has shown that the Waterloo South and Fayette fields are in fact one field. The likelihood exists that all of these fields are interconnected.

Most of the Seneca County study area, which includes the, Seneca Army Depot, Seneca Army Airfield, Sampson State Park property and eleven split-estate properties, lies on the southern fringe of the Fayette-Waterloo field. The northern two-fifths of the Seneca Depot and split estate tracts 5,6, and 11 are surrounded by producing gas wells drilled since 1984.

Many of the wells in the vicinity of the properties, all drilled since 1987, are not designated commercial because their completion reports are not yet public information. (See Figure 3.1) Of the wells reported thus far, a success rate of 100% has been attained; some of these wells are within 800 feet of the Depot property.

The gas wells north of the Seneca Depot typically test 1 to 2 MMcf/d (million cubic feet of gas per day) after fracture. Depletion rates are not yet available for the area, but in the Auburn West field in adjacent Cayuga County Queenston wells appear to deplete at 30% per year for three years and then produce at relatively uniform rates for ten or more years. Recoverable reserves often are more than 100 MMcf per well, and may be much greater.

Test and production rates far in excess of the field averages have been encountered in certain wells along northeasterly trends in the region. Several wells along the northern boundary of the Seneca Army Depot have tested at rates two to three times higher than expected, and are probably tapping naturally fractured portions of the reservoir.

The mechanism responsible for the linear fracture zones is probably related to conditions present in the crystalline basement. One theory holds that long-term relaxation of Grenvillian basement thrusts along existing thrust planes could cause fractures in the overlying sedimentary rocks. Compaction effects due to sediment draping over basement irregularities is an alternate and perhaps co-operative explanation.

Such fracture zones may have been detected in bedrock beneath the glacial cover during surface mapping of the region in the late 1930s. Analysis of these historical records (Bradley, W.H. et al, 1938) indicates the possibility of the presence of one such zone between the southeastern portion of the Depot property and the village of Ovid, trending southwest to the vicinity of Willard. Confirmation of the presence of this feature near the Seneca Depot would affect the perceived potential of the property.

Thick, clean distributary channel sands may also play a role in the zones of enhanced production, but it is unlikely that these higher test rates would result from sedimentologic conditions alone.

The gas production potential of the Queenston formation in Seneca and adjoining Cayuga counties generally increases up-dip from the south to the north to the limit of permeability of the producing strata, as would be expected. This model would not account for the natural fracture zones, which enhance the potential of the tracts in their vicinity.

The gas potential of the various Federal properties in Seneca County varies markedly. Those tracts north of latitude 42.45.00 appear to have the highest potential for economic gas reserves; these include split-estate lease tracts 5, 6, 11, and 12 and the northern two-fifths of the Seneca Army Depot. Of these tracts, those along the northern boundary of the Depot appear to have the greatest potential for production due to the inferred presence of the fracture zone.

About 25 acres of Tract 5 are included in the drilling unit of an existing producing gas well located on adjacent private land (API #31-099-21250-0000). Funds accruing from the production of this well are being held in escrow until the property is leased. A gas well (shut in) has been drilled near Tract 12. Three gas wells occupying spacing units adjacent to the northern boundary of the Depot may be draining the property.

Only two holes pertinent to this study have been drilled south of latitude 42.45.00. The first tested the Queenston at a point 0.6 miles east-northeast of the southeast corner of the Depot and 1 mile west of lease tracts 7 and 10. This well, the 1 Richard B. Compton (API #31-099-20446-0000), was the discovery well of the Romulus gas field and is now shut in. It is also of interest because it may be located in the vicinity of the inferred Willard-Ovid fracture trend. Much of the data regarding this well is still considered proprietary.

The John C. Townsend unit well (API #31-099-19686-0000) is the southernmost Queenston test in the area. Drilled by Mitchell Exploration in 1985, it was located in Lodi Township about 7 1/2

miles south of the Depot. The test encountered Queenston formation sands at 3662 feet, but was abandoned as a dry hole.

Thus, the gas production potential for the southern tracts to be offered for lease is generally lower than that of the northern tracts. The lower three-fifths of the, Depot property, Seneca Army Airfield, Sampson State Park properties and tracts 7, 10, and 4 are considered to have moderate potential for gas production. Tracts 2, 3, and 8 in Ovid township and 9 in Covert township appear to have the least potential of all the lands to be offered for lease.

Queenston wells can be drilled in less than 5 days, often with air or foam for most of the hole. Wells are drilled initially on 80-or 160-acre spacings, then in fill drilling to 40 acres is done. Wells are logged and gas-bearing zones identified and fractured, usually with water gels.

Drilling in this area is relatively uncomplicated. Fresh-water zones are limited to the upper 300 to 500 feet of the hole and are confined largely to the Oriskany sandstone and the Tully, Onondaga and Helderberg limestones. Gas shows may be encountered almost anywhere in the section, but are most common in the Lockport dolomite and the Salina evaporite sections. No overpressured zones or other geologic hazards of significance are known.

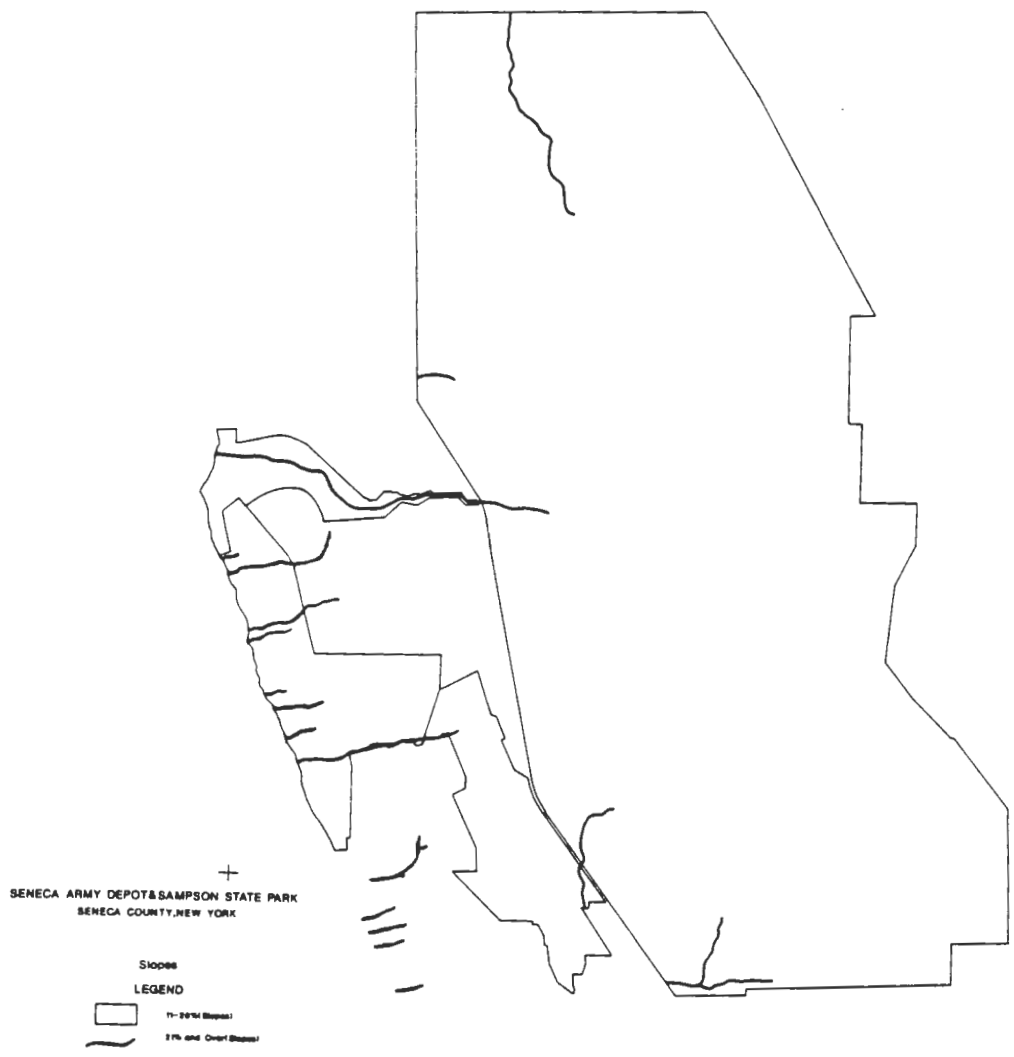
Deeper gas production possibilities are present in other parts of the State of New York in the Oswego Sandstone, the Trenton/Black River carbonates, and the Potsdam formation. These zones show no evidence of production potential in the study area.

D. CRITICAL ELEMENTS

SOILS/SLOPES/PRIME FARMLAND (Issue 3)

Soils in the area have been mapped by the Soil Conservation Service (1972) and generally grouped into areas dominated by high and medium lime soils developed in glacial till. Deep, well drained and moderately well drained silts and silt loams within the Homeoye-Lima association are found along the western boundary of the SEAD and on the land between the depot and Seneca Lake. Poorly drained silty clay loam and clay loam soils of the Darien-Angola association are predominant on the remainder of the depot and on most of the scattered tracts. The scattered tracts in Ovid Township are characterized by deep moderately well drained gravelly silt loams. These soil associations have been developed from the glacial till of underlying shale bedrock, deposited during the Wisconsin glaciation 10,000 - 15,000 years ago. Stream deposits are limited to small areas along secondary upland streams. These drainages also contain very rocky soils (Aurora and Farmington) on very steep (25-75 %) slopes. **(See Figure 3.4)**

Figure 3.4


SENECA ARMY DEPOT&SAMPSON STATE PARK
SENECA COUNTY,NEW YORK
Slopes
LEGEND

Erosion is a potential hazard because of the moderately fine texture and slow permeability, but simple erosion control measures mitigate soil loss on most of the study area except for the steep slopes along streams and the Seneca Lake shoreline. The depth to the seasonal high water table ranges from 0-20 feet and topsoil depths are usually about 8-10 inches within the study area.

According to the SCS's District Conservationist and maps of important farmland in Seneca County most of the depot property is classified as farmland of statewide importance although there is no active cropland. Prime and statewide important farmland occur within the boundaries of Sampson State Park but this land is also dedicated to other uses that do not include farming. Most of the split estate lands are classified as either prime or statewide/locally important farmland.

CULTURAL, HISTORICAL, AND PALEONTOLOGICAL RESOURCES

New York Historic Preservation Office records for Seneca County show that previous archaeological surveys have occurred in the area. A number of cultural and/or historical sites have been documented within the boundaries of the proposed lease area as a result of these surveys. Based on past surveys in the area, plus the relatively large size and character of the project area, some potential exists to discover additional archaeological and/or historical sites.

NATIVE AMERICAN RELIGIOUS CONCERNS

The Bureau of Indian Affairs recognizes eight Native American Tribes in the State of New York. All eight tribes were contacted by mail by the Milwaukee District Office of the Bureau of Land Management. The tribes were asked to identify any problems between the leasing and development of oil and gas and traditional Indian religious beliefs or practices. No comments were ever received relative to this question and no further contact has occurred.

WATER RESOURCES (Issue 3)

Ground Water Resources

The following information is extracted from the U.S. Geological Survey's Data for water wells in the study area and Basin Planning Reports ORB-3&5, 1975&1974 titled Chemical Quality of Ground Water and Ground Water Resources of the Western Oswego River Basin, New York plus New York State's Water Resources Commission Bulletin GW-26, 1951 titled The Ground Water Resources of Seneca County.

Ground water is the primary source for individual domestic and

farm use in Seneca County. Municipal water supplies in the county are obtained from the Seneca River, Barge Canal, Seneca Lake and Cayuga Lake although the community of Interlaken receives all of its water supply from ground water and Ovid, a community adjacent to the project area, depends on ground water for standby or supplemental supply. Public ground water supplies are not located within the boundaries of the SEAD. Industry and commerce in this area also utilize ground water on a limited basis in rural areas and for cooling processes. The main source of ground water is precipitation, which averages about 33 inches annually. Daily withdrawals from all the wells and springs in Seneca County do not deplete the available supply of ground water, especially in the northern part of the county.

The primary aquifers tapped within the project area are thin unconsolidated glacial tills and consolidated shale, siltstone, and sandstone bedrock members of the Middle and Upper Devonian formations. Water well records show one well being drilled 465 feet deep into the Onondaga Limestone northeast of the depot property. This well contained some Hydrogen sulfide (H_2S) and only yielded 1 gallon per minute (gpm). Wells developed into the bedrock members vary from 40 to 450 feet in depth although the majority are less than 200 feet deep and closer to 100 feet where the bedrock is likely to be more permeable. Yields in these wells are typically between 1-10 gpm and may be up to 60 gpm. In this area where the bedrock has a very low permeability, many drilled wells have been unsuccessful. The glacial till is relatively thin and compact in this part of the county. Actual ground water use and development of the till mantle is limited by very low permeability rates which yield small supplies, less than 1 gpm.. Shallow wells are usually dug to depths less than 30 feet and bedrock is often within about 4-6 feet of the surface.

Sand and gravel deposits that fill the large river valleys and carbonate rocks and shales containing soluble rocks are the most important water supplies in the county. These aquifers are located in the northern section of the county and exhibit much higher permeability rates and yields that may reach 500 gpm. Small pockets of bedrock with moderate permeability, overlain by sand and gravel and sand and gravel deposits under water table conditions occur in the southern portion of Seneca County near the community of Ovid and at the mouth of Sixteen Falls Creek, Mill Creek and Sheldrake Creek.

Data collected from precipitation, surface runoff and water wells within the area does not indicate any extensive gross pollution of ground water in the county.

Water from the devonian shale, siltstone, and sandstone units have a median dissolved solids concentration of less the 500 mg/l. These formations have calcium bicarbonate type water. Sulfate and chloride levels are below 250 mg/l, within

established limits for domestic use. Higher chloride levels have been found in deeper wells throughout the county and specifically north of Seneca and Cayuga Lakes. Ground water within the study area is generally moderately hard (61 to 120 mg/l as calcium carbonate equivalent) to very hard (greater than 180 mg/l as calcium carbonate equivalent). Poor quality water is usually encountered at a depth of 300 feet on the depot property and may be as shallow as 100-200 feet between the western boundary of the depot and Seneca Lake. Naturally occurring incidents of low levels of both H2S and natural gas (methane) have been reported in domestic water wells. The principal problems caused by H2S are the odor and increased acidity of the water which eventually causes corrosion of well casings and plumbing. Toxic and explosive concentrations of H2S and natural gas have not been reported although one well exhibited high enough H2S levels to carry the odor several hundred feet away from the well under certain conditions. Iron and manganese concentrations, high enough to stain clothing and clog plumbing have also been reported in the area.

Ground water quality from unconsolidated deposits is comparable to the chemical and physical conditions found in the bedrock aquifers except that iron levels are usually lower in unconsolidated deposits.

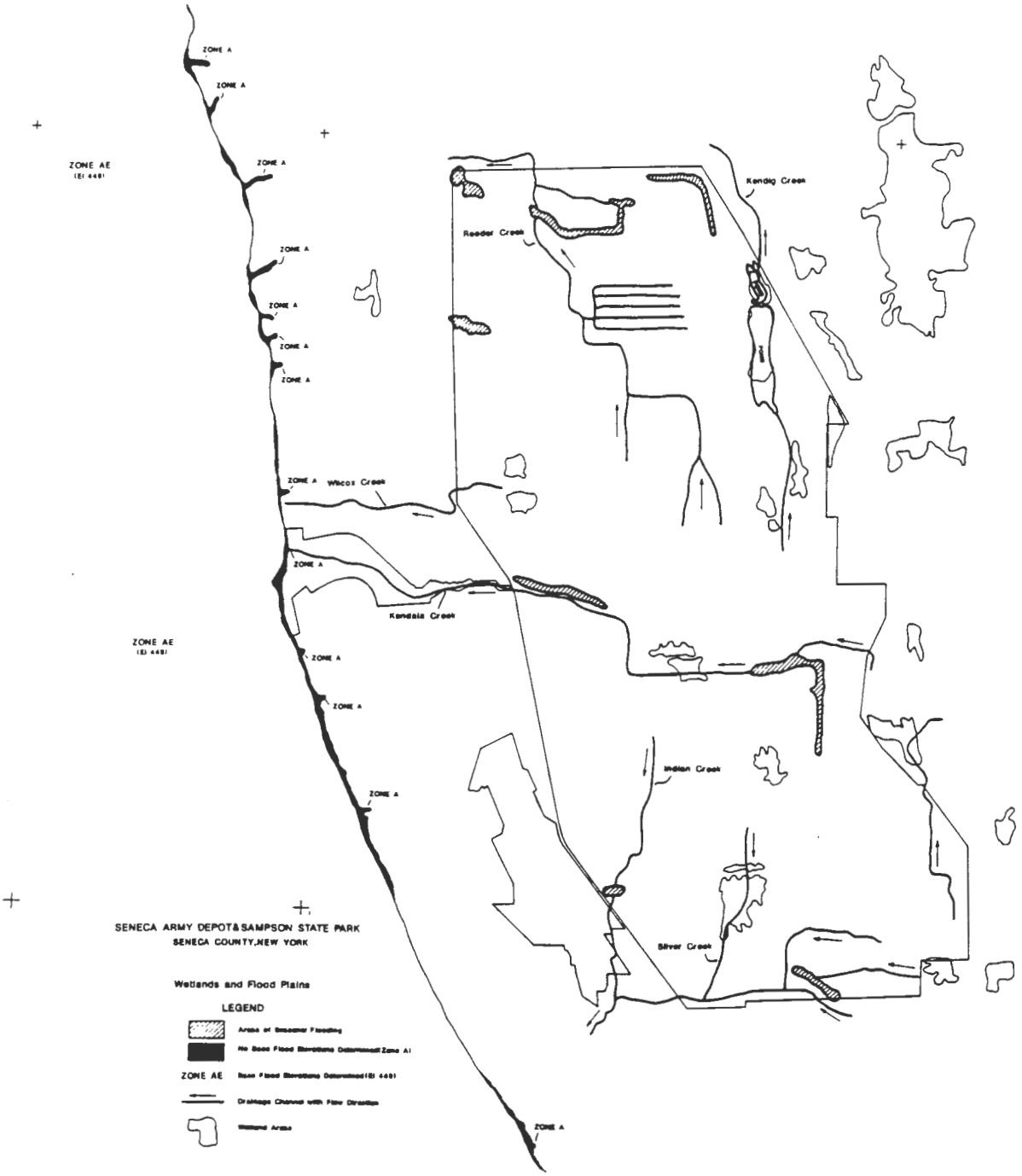
Surface Water Resources

The following information is extracted from the New York State's Water Resources Commission Bulletin 64, 1969 titled Water Resources of the Central New York Region and Water Quality Network Reports from data collection stations located on the Seneca River at Tyre and Waterloo and on Seneca Lake at Geneva and two sites at Long Point. All of these stations are in Seneca County except the sites at Long Point which are on the west side of Seneca Lake in Yates County. The last year on record is 1986 and the data at Tyre was collected continuously from 1964-1986.

The project area is drained by several small streams which empty into the Cayuga-Seneca Canal, Seneca and Cayuga Lakes. The drainage system on the SEAD and SSP is within four watersheds including, Indian Creek, Kendaia Creek, Reeder Creek, and Kendig Creek. (See Figure 3.5) Man-made channels have been constructed to provide surface drainage for most of the depot lands. These channels are connected to the natural drainage system. Storm sewers serving the north and south containment areas drain directly into Reeder Creek and Kendaia Creek. Streams bisect or border split estate tracts #3, 4, 5, 7, 8 and 12. Typically runoff fluctuates in response to rainfall and snow melt although some of the streams within the area are perennial.

A municipal water intake for the SEAD and the community of Romulus is located at the mouth of Kendaia Creek adjacent to the

Figure 3.5


ZONE A
ZONE AE
Reeder Creek
Kendig Creek
Wilcox Creek
Kendaia Creek
Indian Creek
Silver Creek
SENECA ARMY DEPOT & SAMPSON STATE PARK
SENECA COUNTY, NEW YORK
Wetlands and Flood Plains
LEGEND
ZONE AE

SEAD lake housing area. A portion of Reeder Creek from the SEAD boundary to Seneca Lake and Seneca Lake have been identified as protected water bodies by the State of New York. (See Figure 3.6) This designation is placed on water bodies if their uses include, at a minimum trout fishing, but are also used if the water body is used for bathing or drinking. State stream protection permits are required prior to any surface disturbance activities likely to affect a protected water body. Seneca Lake is an important water supply for industry, agriculture, commercial use, municipal use, trout fishing, and other water based recreational activities.

The main land uses affecting surface water within the study area are agriculture, the SEAD and SSP. Secondary uses include non-agriculture industry and commerce which are primarily limited to the urban areas of Watkins Glen and Geneva.

Surface water is a mixture of overland flow and generally more highly mineralized ground water discharge, although either source may represent the entire flow depending on climatic conditions and stream placement. Water quality records indicate good to excellent conditions within the study area except for a tendency for water to be hard or very hard. Total dissolved solids generally fall below the 500 mg/l maximum limit recommended by the State of New York. Chloride and sulfate concentrations are also below acceptable limits. Tests taken by the Seneca County Health Department from Seneca Lake at Sampson State Park show water quality to be well above the New York State Health Department minimum standards.

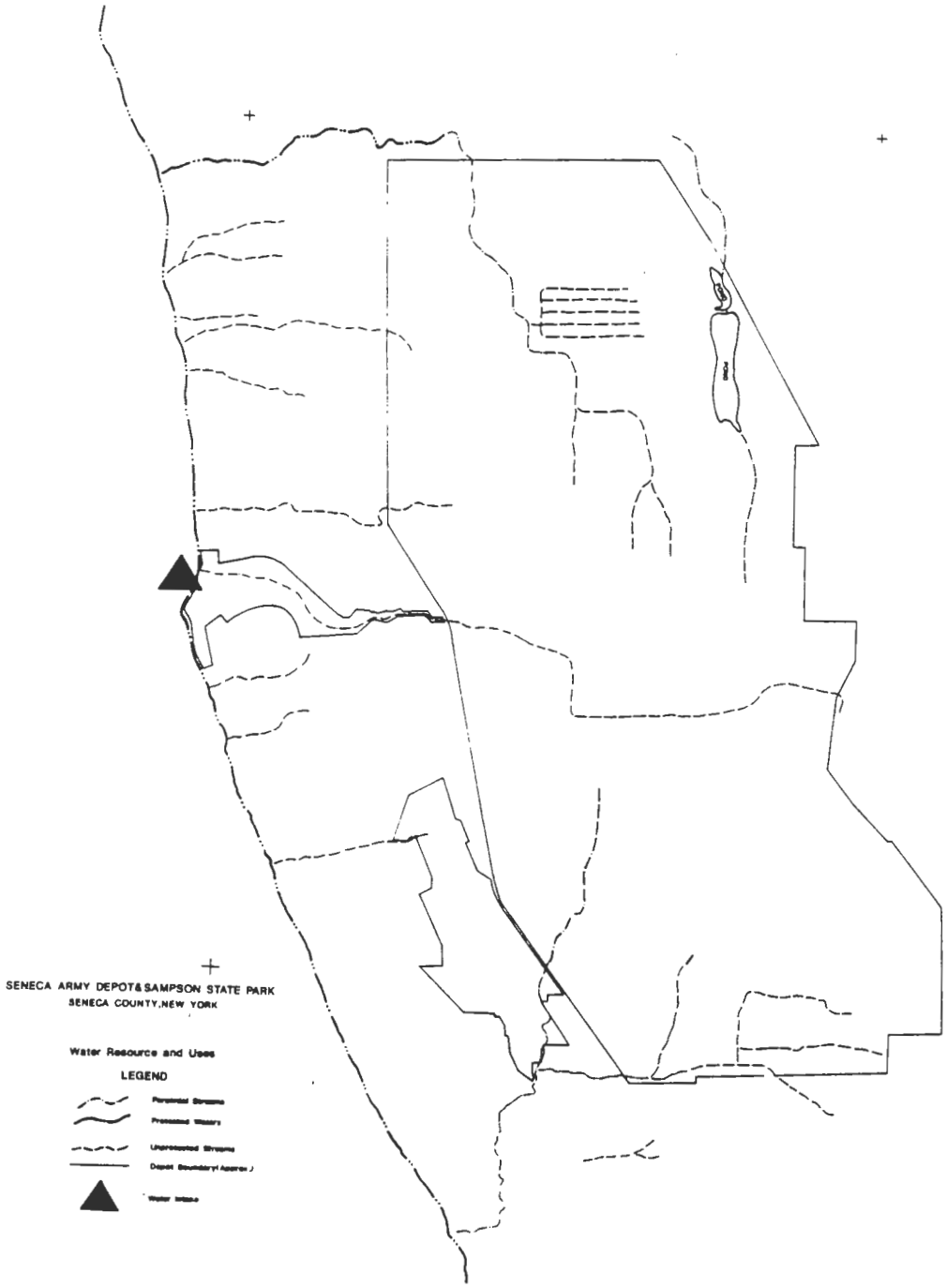
Related Water Resource Programs

The State of New York Nonpoint Source Management Program (NYNSMP) is available from the New York Department of Environmental Conservation. A part of this program is dedicated to resource extraction/exploration/development and potential impacts to surface and ground water resources. This program describes ,in great detail, state and federal regulatory procedures, authority and enforcement responsibility and recommended best management practices and measures to reduce pollutant loadings. Potential pollution sources are also examined.

Appendix C-1 outlines the State of New York Groundwater Management Program as it relates to the production of oil and natural gas and the protection of ground water resources. This program discusses potential ground and surface water impacts from resource extraction activities in more detail than the NYNSMP.

Potential pollution sources identified by these two programs include seepage loss of drilling fluids, brine disposal, abandoned wells, soil erosion, storage of produced brine and crude and spillage of oil and brine. The problems associated

Figure 3.6


SENECA ARMY DEPOT & SAMPSON STATE PARK
SENECA COUNTY, NEW YORK
Water Resource and Uses
LEGEND

with improperly abandoned oil and gas wells appear to be the most significant source of pollution. This problem does not exist around the proposed lease area. Another source of pollution that was identified as a potential problem is the illegal discharge of "brine", or oilfield produced water. Current State policy allows for three legal methods of brine disposal.

1. Injection wells that must meet Federal Underground Injection Control requirements and State Pollutant Discharge Elimination System permit requirements, if for commercial injection wells.

2. Road spreading for dust control if approved by a local municipality, subject to State transporter permit requirements.

3. Discharge through existing sewage treatment facilities if water standards can be met.

The State has recently completed a Generic Environmental Impact Statement (GEIS) that also addresses potential impacts from the Oil, Gas and Solution Mining programs. The only other impact to ground and surface water that was evaluated in the GEIS was cases of gas in water, although reported problems by state inspectors almost always turns out to be a matter of naturally occurring natural gas.

FLOODPLAINS (Issue 3)

Floodplains are found along the shoreline of Seneca Lake, the mouth of tributaries draining into Seneca Lake, and adjacent to intermittent and perennial drainages. (See Figure 3.5) Federal emergency management flood hazard mapping is available for the project area, and 100 year floodplains are identified on the SEAD, SSP and split estate tract #6. Additional areas subject to flooding have been mapped on the SEAD, based on historical records. Base flood elevations are available for the 100-year floodplain of Seneca Lake (449 Feet). All of the other areas identified as flood hazard areas that are inundated by 100-year floods and the sites recognized as historically flooded on the SEAD are not tied to official flood base elevations established by the Federal Emergency Management Agency.

WETLANDS (Issue 3)

The SEAD natural habitats map and State Department of Environmental Conservation habitat inventory maps identify wetland habitats, including riverine, lacustrine and palustrine marsh and bog systems. The fishing ponds developed by the SEAD represent about 43 acres of lacustrine wetland. Palustrine and riverine wetlands are scattered throughout the SEAD. (See Figure

3.5) Riverine wetland systems bisect SSP and palustrine wetland areas are located on split estate tract #s 6, 8, 9, 11 and 12. Several split estate tracts are also bisected by streams that could be classified as riverine wetland systems.

AIR QUALITY

The project area is within the Genesee-Finger Lakes Air Quality Control Region. Air quality is good in the area since large cities and related industry do not directly affect the immediate area. The New York State Air Quality Report for 1988 indicates that the ambient air quality is in compliance with New York State/Federal Ambient Air Quality Standards, with the exception of ozone levels. Even with ozone levels, only one out of two monitoring sites recorded concentrations above the standard and this standard was only exceeded during 8 out of 8,339 observations or on 2 days when a one hour average exceeded the standard of .12 parts per million (ppm).

An official violation of the ozone standard occurs when the number of days with a one hour average greater than .12 ppm exceeds an expected average of one per calendar year during the last three years. This expected average after the data collected during 1988 equals 1.1 days per year.

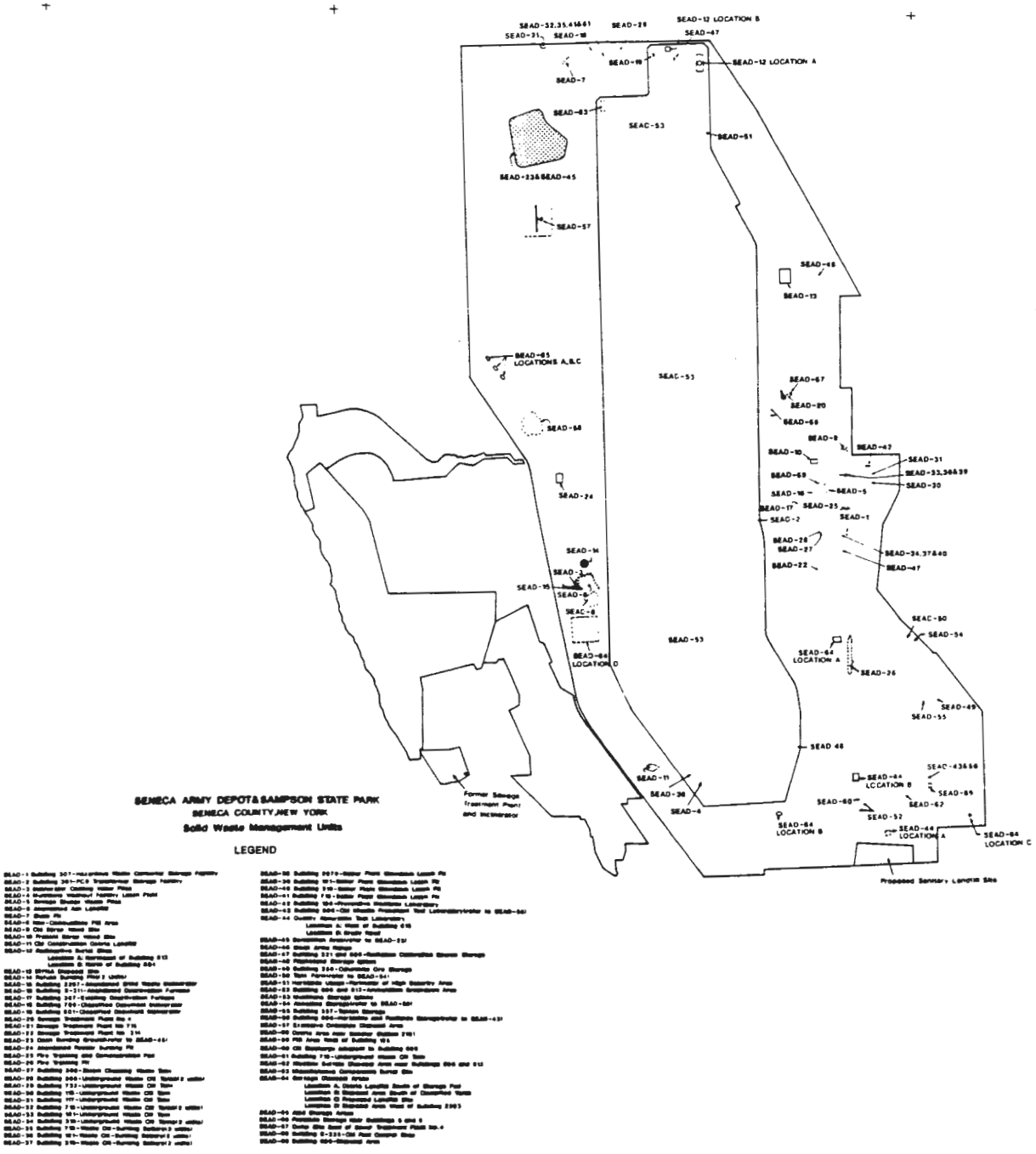
HAZARDOUS AND SOLID WASTE SITES (Issue 2 & 3)

A significant quantity of hazardous materials are present within the confines of the SEAD to support the basic mission to receive, store, maintain and dispose of ammunition. Other hazardous substances generated or stored by the installation include radioactive substances, used solvents, polychlorinated biphenyl (PCB), petrochemicals, and chrome ore. (See Figure 3.7) Some of the existing storage, demolition and disposal sites are potential EPA Superfund sites and at least one superfund site is currently being investigated to determine the extent of contamination and necessary remediation. These hazardous materials constitute a significant potential environmental impacts to air, soils, surface and ground water. SEAD is classified as a Hazardous Waste Treatment, Storage, and Disposal Facility (TSDF), permitted by the EPA to treat and dispose munitions within the confines of the installation. Disposal of all other hazardous substances are performed by private contractors off site.

Disposal of SEAD solid wastes are currently handled by an off-site facility, although long range plans at the SEAD include a sanitary landfill. (See Figure 3.7)

An EPA Superfund site is also under investigation in SSP, although the location of this site does not conflict with the proposed lease area. (See Figure 3.7)

Figure 3.7



SENECA ARMY DEPOT & SAMPSON STATE PARK
SENECA COUNTY, NEW YORK
Solid Waste Management Units

LEGEND

THREATENED AND ENDANGERED SPECIES

The U.S. Fish and Wildlife Service (USFWS) and the State of New York Department of Environmental Conservation (NYDEC) have determined that no Federally or State listed or proposed endangered or threatened species are known to exist in the project area.

D. OTHER IMPORTANT ELEMENTS

FISH AND WILDLIFE (Issue 4)

The Depot's master plan has identified woodland and pond environments, plus special management zones as areas to protect when siting new facilities. (See Figure 3.5)

State wildlife management agencies have used the depot property since the 1950s to study deer herds and conduct other wildlife management research. The fenced property that restricts most wildlife with the exception of birds and waterfowl creates a large scale laboratory condition for the study of wildlife. A unique herd of approximately 100 white deer inhabit the depot. These white deer are not albinos in the true sense, but are thought to have derived their white color through genetic mutation.

VISUAL RESOURCES (Issue 5)

The key factors offering the most outstanding views on or from the proposed lease area are the Seneca Lake shoreline and the steep ravines adjacent to streams draining into Seneca Lake. Country settings on the SEAD are often interrupted by installation facilities, roads and operations, although some remote areas offer continuous views of existing landscapes. Park type views and open meadows in SSP are also interrupted by old military buildings and road systems. Again SSP also offers remote settings, although the Seneca Lake shore is unquestionably the feature that enhances the scenic value of SSP. Rural views of rolling farmland and\or woodland are found on all of the split estate tracts, but these views may also be interrupted by linear road features.

NOISE

There are no known field measurements of outdoor noise levels in the project area. However, in field measurements of outdoor noise levels in wooded rural-residential areas in northeast Wisconsin, the Wisconsin Department of Natural Resources found background noise levels ranging from between 30 decibels, A-weighted scale (dBA), at night and 40 dBA during the day in the winter and between 38 dBA at night and 46 dBA during the day in

the summer. The term dBA, is a measurement of noise levels (decibels) with special equipment that selectively filters sound similar to the human ear. Noise levels in the project area appear similar to those measured by the Wisconsin Department of Natural Resources. (State of New York, 1988) Major noise sources associated with the SEAD are the helicopter flights and airfield operations. Noise contour levels are scheduled to be developed for these activities although they were not available when this document was completed. The helicopter makes one or two surveillance flights over the installation each day. Records show that these flights can be heard up to four miles away from the depot, depending on wind directions. Complaints have been received from people living in the vicinity of the airfield. Actual noise levels within the SEAD and SSP boundaries would be near the figures for rural areas although noise levels would increase during routine helicopter flights and not so routine airfield flights. These levels around the SEAD and SSP would also increase near roads, developed recreation sites, housing complexes and troop training areas.

Noise levels on the split estate tracts would be lower than those on the SEAD and SSP, except for intermittent noise adjacent to roads and during automated farming operations. All of the split estate tracts would encounter these elevated noise levels on some portion of each tract since roads are located on or adjacent to every tract and automated farming operations take place on every tract except #2, which is operated by Amish farmers who typically farm with non-motorized equipment.

CHAPTER 4 ENVIRONMENTAL CONSEQUENCES

Section A. (Assumptions) describes the type of oil and gas operations, the reasonable foreseeable development scenario (RFD), and the amount of disturbance assumed to occur as a result of the typical drilling operations and the RFD. This prediction of the amount of disturbance was assumed while analyzing impacts to resources. In addition, section A also includes a reasonably foreseeable future action summary of other uses that could contribute to adverse impacts on the resource elements described in Chapter 3. These uses include both public and private uses on the SEAD, SSP, split estate tracts and on adjacent land regardless of ownership. Sections B, C, D, and E describe the impacts that would be anticipated for resources under each alternative. Section F contains a quantitative summary of the impacts described in this chapter. The organization of this section follows the format used in Chapter 3 with issues tied to the appropriate resource elements. Only those resources for which impacts would be anticipated are discussed.

A comprehensive description of potential environmental consequences is included in the New York State Department of Environmental Conservation, Draft Generic Environmental Impact Statement on the Oil, Gas and Solution Mining Regulatory Program, January 1988.

A. Assumptions

Typical Drilling Operations

The following discussion describes the type of activity that would be typical for exploration, development, and production of gas in the vicinity of the project area in Seneca and Cayuga Counties. **Table 4.1** summarizes each stage of activity, the timeframes, the number of workers involved, the type of equipment involved at each activity site, and the approximate number of trips made by the equipment. The Queenston shale at a depth of 2,600 would be the primary target on leases in the project area. The hydrocarbon that would be encountered in this formation is gas. Some brine (about 10 barrels / well/ year) would be associated with these hydrocarbons after about ten years of production.

For each vertical well, an area of approximately one quarter of an acre (100 feet by 100 feet) would be cleared of vegetation and graded level for construction of the well pad. Directional and horizontal wells would require larger well pads of approximately one to one and a half acre (200 feet by 250 feet or 250 feet square). Depending on the topography of the well site and access route, this construction may require the creation of cut slopes and fill areas. The need for cut slopes and fill areas on leases in the Seneca County project area should be minimal because of

TABLE 4.1 Estimated Activity Levels During Lease Operations

Activity	Approximate Timeframe*	Number of Workers	Vehicles - Equipment Involved at Activity Site	Number of Trips (Frequency)****
Well Site and Access Road Construction	2-3 days	5-6	2 Dozers	2 (1/week per dozer)
			Grader	1 (1/week)
			Water truck, possible	6 (2/day)
			Workers' vehicles	12 (4/day)
Well Drilling**	3-5 days	5-6-drilling 10-cementing, casing phases	Truck mounted rig	1 (1 in one day)
			Maintenance (pick-up) truck	Variable #
			Well-logging truck	1 (1 in one day)
			Semi-truck carrying casing	5 (5 on one day)
			Service trucks (mud, bits, special equipment)	10 (2/day)
			Workers' vehicles	30 (6/day)
			Salesmans' vehicles	10 (2/day)
Well Testing and Completion	1 week to 1 month	4-testing 10 to 12-fracturing and/or acidizing phase	Truck carrying tubing, packers	3 (3 in one day)
			Truck carrying wellhead	1 (1 in one day)
			Truck carrying testing tools	12 (3/week)
			Truck carrying perforation tools	1 (1 in one day)
			Pump and bulk trucks	10 (5 on 2 separate days)
Placement of Production Facilities	1 week	4 - 5	Truck carrying meter device	1 (1/week)
			Truck carrying pipe, fittings, etc.	1 (1/week)
			Truck carrying dehydrator	1 (1/week)
			Truck carrying tank	1 (1/week)
			Backhoe	1 (1/week)
			Workers' vehicles	28 (4/day)
Pipeline Construction***	1 week	5 - 8	Trencher	1 (1/week)
			Dozer	1 (1/week)
			Welding truck	14 (2/day)
			Pipeline truck	5 (5/week)
			Workers' vehicles	35 (5/day)

*Total time from construction stage to well completion can range from five weeks to two months for each well.

**Normal drilling would be 24 hours a day with three crews on 8-hour shifts

***About one mile of pipeline can be laid in one week

****Maximum estimated number

very low relief.

A reserve pit (about 20 by 60 feet and 6 feet deep) would be excavated and lined with a plastic or butyl liner that meets State standards. The access road constructed to the well pad would normally have a running surface(width) of approximately 12 to 16 feet. The length would be dependent upon the well site location in relation to existing roads or highways. Access in the Seneca County project area is well developed, with minimum road-building required to provide access to potential well sites. Newly constructed roads necessary for drilling could range from 200 to 1,000 feet in length. Assuming a width of 16 feet and an average length of 600 feet, about .2 acres would be disturbed for access road construction for each well.

Drilling operations would be conducted 24 hours a day until the well is completed, usually a period of about 3 - 5 days. Vertical wells would be drilled by a double mast, truck mounted rotary drilling rig powered by two or three diesel generators in the range of 1,200 to 1,500 horsepower. The height of this rig would be about 80 feet above the ground surface. Air is the primary circulating medium although foam surfactants are used while drilling the surface hole to allow air drilling in formations producing water. Common additives that are used as surfactants include organic sodium and sulfonates and alkyl benzene sulfonates. Foam would also be the preferred circulating medium for directionally drilled wells. Horizontal wells and the added drilling distance and pipe would require a triple mast, rotary drilling rig complete with sub-structure. Similar diesel generators would power this rig. The height of this rig would be about 120-140 feet above the ground surface. Fresh water, bentonite based mud would be the primary circulating medium, although a variety of additives could be used to adjust mud characteristics. The type of additives commonly used in fresh water mud systems include, thinners, lubricants and ph control, lost circulation, fluid loss and filtration agents. Some constituents of these additives may exhibit hazardous characteristics, although drilling fluids and additives are exempted from regulation under the hazardous waste section (Subtitle C) of the Resource Conservation and Recovery Act (RCRA).
In the case of an air system, air compressors would be used to force air down the drill pipe, thereby forcing the rock cuttings out of the well bore. The diesel engines providing power for the rig would also run the air compressors. An operator may keep a tank of water at the drill site in case conditions are encountered that require conversion to a mud system.

As the well is drilled, several concentric strings of casing (strong steel pipe used to create a pressure tight connection from the surface to the hydrocarbon reservoir) are placed and cemented in the well bore. These strings include conductor pipe,

surface casing, and production casing. An important function of the surface casing is to prevent fresh water zones from being contaminated with drilling fluids, gas, oil, or salt water. The depth to which the surface casing would extend would vary from well to well depending on how deep the base of the freshwater contact is. Horizontal and directional drilling would be initiated well below the surface casing string. About five barrels of a natural gelling agent may be used to pre-wash the hole before cementing to provide a stronger bond between the cement and bore hole.

During drilling operations a variety of logs and tests would be run in the hole. If a discovery is made, the well would be shut-in to allow the pressure to stabilize. Then a variety of tests, including pressure and flow tests, may be done to determine the appropriate well completion method.

If the flow rate is deemed inadequate, the producing formation may be fractured to increase the flow rate. Water-gel hydraulic fracturing is the most common technique used in the area. Twenty to eighty thousand gallons of fluid are injected at the rate of 20 pounds of gel to 1000 gallons of water under high pressure. The gel increases the water's viscosity allowing it to carry from 40,000 to 100,000 pounds of sand down the well. Approximately 250-500 gallons of dilute acid is used to clean out the perforations in the production casing prior to fracturing operations. Surfactants are also used at the rate of one gallon per 1,000 gallons of water to reduce surface tension. The fracture is maintained after pumping ceases with propping agents such as sand. Additives and fracture fluids are returned to the surface. When the well is completed, a wellhead is installed. Since gas is the hydrocarbon that would be produced, it would flow to the surface without mechanical assistance.

In addition to the wellhead, a water and gas drip separator, a metering device near the wellhead, and a storage tank for brine would be required for a typical producing well. Limited brine production may justify using a central location for gas/brine separation. The wellhead and tank battery facilities would protrude above the ground a maximum of 10 to 15 feet or less than 8 feet if brine separation is centralized. Production facilities would cover between 3-20% of the original drill site, approximately 40 feet square and less than 5 one hundredths of an acre. The total time period from initial construction of the site and access road to completion of each well could range from 1 to 2 months.

Brine would be removed from the lease by truck for disposal at a state/federal approved disposal well, a participating sewage treatment facility or to a county that uses brine water for road deicing and dusting. In all cases the transportation of brines must be permitted by the State of New York. Previous hydrocarbon

development in the area has required installation of gas collection and transmission lines providing relatively easy connection for new wells. Most wells in the Project area are tied into the Tennessee Gas Pipeline for marketing of gas. A gathering line would be constructed to transmit gas from the well site to a main trunk line located off the leased property which in turn would connect to a transmission/sales line for marketing the gas. A gathering line would normally be a 2" to 4" plastic pipeline buried to a depth of at least 3 feet. Wherever possible a gathering line would be constructed in or directly adjacent to access roads.

Where a gathering line must be constructed "cross-country" to reach a trunk line, operators would generally route the lines along property line boundaries. The length of gathering lines that would go "cross- country" could range from 200 feet to 1,000 feet. Assuming a corridor width of 15 feet and an average length of 600 feet about .2 acres would be disturbed for one gathering line. The construction of the gathering line would include trenching, backfilling, and reclamation.

The need for and the length of trunk lines in the project area would be dependent, to a great extent, on what company obtains a lease. For example, a company which has numerous wells and an established system of trunk lines would most probably need to do less construction than a company which does not currently have consolidated operations or sales contracts in the area. However, arrangements can be made between companies to share the use of trunklines. Trunk lines are already in place on the north side of the SEAD and near split estate tracts # 5, 6 and 11. Two to four extensions of existing trunk lines and one new trunk line could be constructed on private property to adequately move any gas produced in conjunction with the proposed leases. A portion of one or two of these trunk lines could be partially constructed on the SEAD. Two short service lines would then be constructed from the points along the trunk line closest to the SEAD main boiler buildings. A 2" to 4" diameter plastic or steel pipeline buried to a depth of at least 3 feet would be used for the trunk lines and 2" to 3" inch steel pipelines would be used for the SEAD service lines. The length of these trunk lines could range from 18.5 to 11.5 miles. Assuming a corridor width of 15 feet and a total length or 15 miles, about 28 acres would be disturbed for the trunk lines needed to keep the projected wells on line and about 7 of these acres could be on the SEAD. The length of the service lines needed to supply the SEAD heating system would be about 4000 feet. Assuming a corridor width of 15 feet and a total length of about 4000 feet , 1.4 acres would be disturbed for the service lines and about .8 acres would be on the SEAD.

The portion(s) of each well site not necessary for the production phase (approximately ninety to ninety-five per cent) would be regraded as close as possible to the original contour, mulched,

fertilized, and seeded. The access road remains so that the well tender can inspect and maintain the wells and any vehicle or equipment needed to occasionally service the well can be brought in. The well tender would need access to the wells at least once a week. All portions of pipeline corridor would be rehabilitated.

If the well is non-productive or upon abandonment following production, production equipment would be removed, the well bore would be plugged with cement and the area would be returned to near original contour, mulched, fertilized and seeded.

Reasonable Foreseeable Drilling Scenario

All exploration and development on and adjoining the Seneca County Depot Area will be targeted for gas from the Upper Ordovician Queenston formation. Initially, the majority of wells drilled for this target will be designed to expand the limits of existing fields. Exploring for new fields is unlikely to occur until shortly before the end of the life of any nonproducing leases which are issued, and after existing fields have been fully developed on leases which may be brought into production.

Some of the text for this section is directly reproduced from the Geology and Minerals Section of this report which was written by Jeff Nolder of this office.

Current market conditions and low known potential make it unlikely that formations below the Queenston will be tested at all for the foreseeable future. Production above the Queenston will not specifically be targeted, but rather serve as a potential bailout zone, i.e., a potentially productive zone which is not planned for in a well's exploration plan, but whose production could change a well from being uneconomic to economic.

It is unlikely that all of the acreage in question will be tested for oil and gas. Proven gas reserves in the area is trapped by a south-dipping homocline with a permeability barrier that appears to be roughly parallel to and north of the New York Thruway (Interstate 90). The gas production potential of the Queenston formation in Seneca and adjoining Cayuga counties generally increases up-dip from the south to the north to the limit of permeability of the producing strata. Gas production is locally enhanced by local fracturing of the reservoir rock, but the permeability barrier is the primary entrapment mechanism.

The Seneca Depot area has been divided into three groups of lands which have high, medium and low probability for leasing and development. The high probability area lies north of latitude 42.45.00. The medium probability area lies between latitudes 42.40.00 and 42.45.00. The low probability area lies south of latitude 42.40.00. A discussion of each area follows.

LOW PROBABILITY AREA

All lands south of 42.40.00 are unlikely to attract more than speculative bids at a competitive auction. If the lands are leased either by competitive bidding or during the open-season two year period following a competitive sale, it is extremely unlikely that any wells would actually be drilled on or immediately adjoining any of these lands. Lands included in this area are NYESSEN tracts 2, 3, 8 and 9. All four tracts should be offered as one sale parcel.

MEDIUM PROBABILITY AREA

The lands north of 42.40.00 and south of 42.45.00 are likely to attract low bids at best, but may attract noncompetitive lease offers during the two year period following an auction. Lands included in this area consist of NYESSEN tracts 4, 7 and 10, the Seneca Army Airfield, Sampson State Park, and roughly the lower three-fifths of the Seneca Army Depot. The area's moderate potential for gas, and the necessity for building a gathering system will probably result in a development strategy which consists of drilling one vertical well which is capable of producing in paying quantities to hold each lease, and wait for increased gas prices before any additional wells are drilled. Depending upon the price of natural gas, it is possible that horizontal or directional drilling could be used to access a significant portion of these lands, once the incentive exists to drill. The Queenston consists of four to six productive intervals, the uppermost of which is the most prolific. Directional drilling would allow production from the entire Queenston interval. However, if horizontal drilling was used, it is likely that only the uppermost interval of the Queenston could be effectively evaluated, and produced.

Current regulations restrict competitive parcels to a maximum of 2,560 acres. The lands within this area of the Seneca Depot contain an estimated 6,386 acres and because of the slow anticipated rate of development and limited surface access, the acreage should be offered in no more than three parcels. The Seneca Army Airfield and Sampson State Park have approximately 500 and 685 acres respectively, and pose significantly different surface management concerns both from each other, and the Depot. Because of this both areas should be offered as separate parcels. At first glance it would appear that NYESSEN tracts 4, 7 and 10 should be offered with a parcel which includes lands in the southeast corner of Seneca Depot. However, the fact that tracts 4, 7 and 10 have private surface, and only a 75% Federal mineral interest makes them sufficiently different from the Depot from a development standpoint that they should be offered as a separate parcel.

Drilling Scenario Seneca Army Airfield

There is a 10% chance that commercial gas will be found under the Airfield. If any wells are drilled, it is likely that only one attempt will be made to drill a capable or producing in paying quantities. The most likely result will be a dry well. The maximum that is anticipated at this time is a marginally commercial well which will be temporarily abandoned or whose production could be sold directly to the Airfield.

Drilling Scenario Sampson State Park

There is a 10% chance that commercial gas will be found under the State Park. If any wells are drilled, it is likely that only one attempt will be made to drill a capable or producing in paying quantities. The most likely result will be a dry hole. The maximum that is anticipated at this time is a marginally commercial well which will be temporarily abandoned or whose production could be sold directly to the State Park.

Drilling Scenario Split Estate Tracts NYESSEN 4, 7 and 10

The most likely lands to attract activity in this area would be the southeastern edge of the Seneca Depot and NYESSEN tract 7. As mentioned in the Geology and Minerals section of this report, a fracture zone may be present between the southeastern portion of the Depot and the village of Ovid, trending southwest to the vicinity of the town of Willard. Confirmation of the presence of this feature near these lands would affect the perceived potential of the property. It is possible that a Romulus Township, low volume, shut-in gas well (Union Drilling, state permit no. 20446) was drilled with this fracture system in mind.

The most likely scenario for these lands would be to drill one gas well on tract 7 to hold the lease until additional reserves could be found to justify building a gathering system. The most likely result would be shut-in gas well until gas prices rise to approximately $2 to $2.50 per MCF. Once these prices were reached there would be a 50% chance of finding such production, and a 30% chance that the lands underlying these tracts would be within the limits of the new gas field. Based upon a 40 acre spacing, Tract 4 is likely to have a maximum of two wells drilled on the tract, and have two wells committed to it off the tract. Tract 7 would have two wells drilled on the tract, and one well committed to it off the tract. Tract 10 would have one well drilled on the tract, and one well committed to it off the tract.

Drilling Scenario Seneca Depot

The most likely lands to attract activity in this area would be the southeastern edge of the Seneca Depot and NYESSEN tract 7. As mentioned in the Geology and Minerals section of this report, a fracture zone may be present between the southeastern portion of the Depot and the village of Ovid, trending southwest to the vicinity of the town of Willard. Confirmation of the presence of this feature near these lands would affect the perceived

potential of the property. It is possible that a Romulus Township, low volume, shut-in gas well (Union Drilling, state permit no. 20446) was drilled with this fracture system in mind.

Assuming this area is offered in three east-west oriented leases, the northern lease will experience two wells on its northern boundaries on locations within the Depot, but only towards the end of its lease term, or if the limits of commercial production can be shown to extend into this area. There is a 30% chance that commercial production will be proven to extend into the upper third of the northern lease area, and due to the lack of surface locations within the Depot, an additional six directional-horizontal wells can be expected to drill into the Depot. All eight wells will be drilled on Depot surface. This will leave a sizeable amount of unproducable acreage within the Depot core, which could be developed when horizontal drilling technology improves.

The center lease will probably remain virtually undrilled, unless drilling results begin to show that production from the southeast will merge with production to the Depot's north. The most likely case for the central lease will be to drill one well on private surface, which is communitized with lands in the Depot. If the well is incapable of producing in paying quantities, the lease will be allowed to expire.

The southern lease will probably have two to three wells drilled on its property in an attempt to establish one well which is capable of producing in paying quantities and hold the lease until gas prices rise to approximately $2 to $2.50 per mcf. Once these prices were reached there would be a 50% chance of finding such production, and a 30% chance that the lands underlying these tracts would be within the limits of the new gas field. The area believed to be most likely proven to lie within the limits of a new gas field would be a triangular area bounded by the Depots eastern and southern perimeter, and a line connecting the northwesternmost points of lands open to surface occupancy in the Depot's southeast corner. This area contains roughly 930 acres, and based upon a 40 acre spacing, could be effectively developed with 12 vertical wells, and 11 directional-horizontal wells, all of which could be drilled on Depot lands.

Summary, No of Wells Medium Probability Area

AREA	MIN	MAX	ML
Seneca Airfield	0	1 on	1 on
Sampson St. Pk.	0	1 on	1 on
NYESSEN 4	0	2 on, 2 off	0
NYESSEN 7	1 on	2 on, 1 off	1 on
NYESSEN 10	0	1 on, 1 off	0
Seneca Depot	4 on	34 on, 1 off	5 on, 1 off

Total No. of Wells

Minimum: 1 well on split estate land
: 4 straight wells on Seneca Depot
= 5

Maximum: 1 well on Seneca Army Airfield
: 1 well on Sampson State Park
: 5 vertical wells on private lands
: 5 vertical wells drilled on split estate
: 17 vertical wells drilled on Seneca Depot
: 17 horizontal wells drilled on Seneca Depot
= 46

Most Likely : 1 well on Seneca Army Airfield
: 1 well on Sampson State Park
: 1 well on private lands
: 1 well on split estate surface
: 5 vertical wells on Seneca Depot
= 9

HIGH PROBABILITY AREA

The lands north of 42.45.00 are likely to attract low to moderate bids, and experience moderate drilling within one to two years after leases are issued. The lands within this area consist of NYESSEN Tracts 5, 6, 11 and 12, and the northern two-fifths of the Seneca Depot. With the exception of NYESSEN Tract 12 all of these lands are either surrounded by or on the southern fringe of the Fayette-Waterloo field. NYESSEN Tract 12 is located in a lightly drilled area, but a gas well was drilled very close to its eastern boundary, (permit no. 19587).

The lands within this area of the Seneca Depot contain an estimated 4,201 acres and due to anticipated limited surface access, the lands should be offered in no more than two parcels. NYESSEN Tract 5 should be offered as a discrete parcel due to the fact that a portion of the lands are committed to an existing well. At first glance it would appear that NYESSEN tracts 6 and 11 should be offered with a parcel which includes lands in the northern portion of Seneca Depot. However, the fact that tracts 6 and 11 have private surface, and only a 75% Federal mineral interest makes them sufficiently different from a development

standpoint that they should be offered as a separate parcel. NYESSEN Tract 12 should be offered as a separate parcel due to its extreme distance from all the other lands being offered.

Drilling Scenario NYESSEN Tract 5

NYESSEN Tract 5 has an existing drilling unit committed to 36 acres of its lands, and hence at least a portion of the tract should become productive. Given a 40 acre spacing the remainder of the tract is likely to be committed to no more than two wells, one of which is likely to be drilled on the tract itself.

Drilling Scenario NYESSEN Tracts 6 and 11

NYESSEN Tracts 6, and 11 are likely to be affected by drilling straight wells either on or adjoining each tract. NYESSEN 6 is likely to be committed to three wells drilled off the tract. NYESSEN 11 is to be committed to 2 wells drilled off the tract.

Drilling Scenario NYESSEN Tract 12

The best development strategy for NYESSEN Tract 12 would be to drill a vertical well capable of producing in paying quantities, either on the tract itself, or in an approved drilling unit which incorporates a portion of the tract, and wait for additional production to be found in the area to justify constructing a gathering system. However, given the relative paucity of existing wells in the tract's vicinity, this could be a relatively long wait. Given a roughly 40 acre spacing for wells in this area it is likely that the tract will have a maximum of one well drilled on its surface, and the remainder of the tract will be committed to wells through communitization agreements.

Drilling Scenario Seneca Depot

If all of the lands associated with the Seneca Depot lands in this area are leased, initial drilling will be designed to expand the proven area of the Fayette-Waterloo field and take place along its north, northwest and northeast fringes, and go south and inward to its core.

Existing wells outside the perimeter of the Seneca Depot were drilled as close as legally possible to the Depot's boundaries. Because of limited surface access to the Depot lands, only five potential vertical sights inside the Depot can be identified which would meet state spacing requirements. Well sites are available outside the Depot, and a small portion of Depot lands could be developed through the use of Communitization Agreements. However, the added legal and accounting paperwork which this would cause an operator would make this option undesirable. Hence it is highly likely that a significant percentage of the wells which are drilled in this area will be either directional or horizontal wells drilled from adjoining private surface, or from the five surface sites available within the depot. If drilling operations are significantly impaired due to restrictions imposed by Depot personnel, such as only allowing

drilling during daylight, it is highly likely that all of the wells drilled on the depot will in fact be directionally or horizontally drilled from private lands.

The Queenston consists of four to six productive intervals, the uppermost of which is the most prolific. Directional drilling will allow production from the entire Queenston interval. However, if horizontal drilling is used, it is likely that only the uppermost interval of the Queenston could be effectively evaluated, and produced.

The best development strategy for this portion of the Depot would be to forego placing wells on Depot surface, and drill a series of directional-horizontal wells from adjoining property. Assuming an average depth of 2,500 feet, and a kickoff depth of 500 feet, a well could be first drilled directionally to the Queenston at a point which meets the legal distance requirements for drilling units. From this point the well could then be drilled horizontally to produce the Queenston. Horizontal wells now average around 650 to 2500 feet, with the current record being about 5,000 feet long. Assuming a capability of drilling 2,000 foot horizontal wells, it would be possible to efficiently develop the majority of this area of the Depot with 18 horizontal wells. The best location to drill the wells would be near the existing gas wells on the Depot's boundaries. This pattern would leave a central core of approximately 950 acres which would be undrainable until either improved horizontal drilling techniques were developed, or additional surface became available.

Summary, No of Wells High Probability Area

AREA	MIN	MAX	ML
NYESSEN 5	1 C.A.	1 C.A., 1 on, 1 off	1 C.A., 1 off
NYESSEN 6	0	3 off	1 off
NYESSEN 11	0	2 off	1 off
NYESSEN 12	0	1 on, 2 off	2 off
Depot	5 on	18 off	18 off

Total No. of Wells:

Minimum: 1 well committed to a Communitization Agreement
: 5 straight wells on Seneca Depot
= 6

Maximum: 1 well in a C.A.
: 8 vertical wells drilled on private lands
: 2 vertical wells drilled on split estate lands.
: 18 horizontal wells drilled on private lands
=29

Most : 1 well in a C.A.
Likely : 5 vertical wells drilled on private lands.
: 18 horizontal wells drilled on private lands
= 24

Summary Number of Wells
Seneca Depot Area

Total No. of Wells:

Minimum:
- 1 well on split estate
- 1 well committed to a Communitization Agreement
- 9 straight wells on Seneca Depot

=11

Maximum:
- 1 well committed to a Communitization Agreement
- 1 well on Seneca Army Airfield
- 1 well on Sampson State Park
- 13 vertical wells on private lands
- 18 horizontal wells on private lands
- 7 vertical wells on split estate
- 17 vertical wells on Seneca Depot
- 17 horizontal wells on Seneca Depot

=75

Most Likely:
- *1 well committed to a Communitization Agreement
- 1 well on Seneca Army Airfield
- 1 well on Sampson State Park
- 1 vertical well on split estate
- **6 vertical wells on private land
- 5 vertical wells on Seneca Depot
- *18 horizontal wells on Seneca Depot (8 surface locations could be on the Seneca Depot property)

=33

* Wells are in High Potential Areas
** 5 of 6 Wells are in High Potential Areas

Estimation of Surface Disturbance

As indicated above, the most likely number of wells that would be drilled to explore and develop the gas resources under the Project is 33 wells. The well committed to a communitization agreement has already been completed, therefore a total of 32 wells will be used here to estimate surface disturbance. The amount of area that would be disturbed for drilling operations can be approximated using these numbers and the following assumptions:

. the maximum area cleared per well pad would be 1.5 acres (about 250' x 250') - 1 acre would be stabilized in about 2 years

. the maximum area cleared per access road per well would be .41 acres (about 30' x 600') - .2 acres would be stabilized in about 2 years

. all gathering pipelines would follow existing or new access roads for a portion of the route (no additional disturbance would result from the sections along existing roads) new disturbance for gathering lines per well would be .21 acres (about 15' x 600') - the entire area of disturbance would be stabilized in about 2 years

. the maximum area cleared for a full field development trunk and service pipeline systems would be 35 acres (about 15' x 19.3 miles) - the entire area of disturbance would be stabilized in about 2 years

. dry and abandoned wells - no facilities and full stabilization of acreage

The area to be disturbed would be 48 acres for well pads, 13 acres for access roads and 42 acres for pipelines for a total of 103 acres disturbed by drilling operations.

It is assumed that all wells would prove to be commercially productive. For production, the access roads and rights of way would be stabilized by seeding the cut and fill slopes and surfacing the top of the road bed. A small portion of the road rights of way would be returned to a pre-disturbance condition. A major portion of the well pads (up to nine-tenths) would be rehabilitated. A portion of the gas gathering lines would be constructed along the new access roads resulting in no additional disturbance except for extensions off of roads used to shorten pipeline routes for connection to trunk lines. Gas gathering, trunk and service lines would be completely rehabilitated.

The following chart displays the estimated amount of disturbance (in acres) expected if the project area is fully developed based on the previously discussed most likely reasonably foreseeable development scenario. The chart also assumes that 100% of the wells forcasted in the most likely reasonably foreseeable development scenario would be commercially productive wells and that successfull reclamation would occur after construction operations are completed or gas operations cease.

	Commercially Productive Wells	
	Pre-Site Reclamation	PostSite* Reclamation
Well Sites		
SEAD	21.0	1.4
SSP	1.5	.1
Split Estate	1.5	.1
Off Lease	24.0	1.6
Total	48.0	3.2
Access Roads		
SEAD	5.7	2.8
SSP	.4	.2
Split Estate	.4	.2
Off Lease	6.5	3.2
Total	13.0	6.4
Pipelines		
SEAD	9.9	.0
SSP	.2	.0
Split Estate	.2	.0
Off Lease	31.7	.0
Total	42.0	.0
TOTAL ACRES DISTURBED	103.0	9.6

* The figures in this column represents the total area committed to production facilities and permanent access roads after the unused portions have been successfully rehabilitated.

The disturbed acreage of 40.8 acres on lands that could be leased represents about .33 per cent of the entire proposed lease area. The remaining 62.2 acres of disturbance would take place on private land off of the Federal leases. It is estimated that the total number or wells would be drilled within a five year period, before competitive leases terminate. Noncompetitive leases would more than likely be issued in this area extending the time of exploratory drilling to nine or ten years.

Reasonably Foreseeable Future Actions Scenarios (RFS)

The following table illustrates the type of actions that may contribute to adverse impacts on the resources of the project area and adjacent property. The activities listed below are based on past and present use within the area and an assumption that these activities will continue in the future. Appendix D-1 includes a summary of the type of activities that are planned by the SEAD during their planning cycle and Appendix D-16 shows an example of proposed plans for developments at SSP.

Table 4.2
SUMMARY OF OTHER ACTIONS THAT COULD CONTRIBUTE TO ADVERSE IMPACTS

Resources	Action		
	Military Operations	Recreation	Homesite Development & Farming
B. Land Use: (Issue 1,2 & 6)	No	No	No
C. Geology/Minerals:	No	No	No
D. Critical Elements:			
Soil/Slopes (Issue 3)	Yes	Yes	Yes
Prime Farmland	No	No	No
Cultural/Historical	Yes	Yes	Yes
Native American Concerns	No	Yes	No
Water Resources (Issue 3)	Yes	No	Yes
Floodplains (Issue 3)	No	No	No
Wetlands (Issue 3)	No	No	Yes
Air Quality	No	No	No
Hazardous/Solid Waste	Yes	No	No
Threatened/Endangered Species	No	No	No
E. Other Elements:			
Wildlife (Issue 4)	Yes	Yes	Yes
Visual Resources (Issue 5)	Yes	No	No
Noise (Issue 5)	Yes	Yes	No

B. IMPACTS TO LAND USE (Issues 1, 2 and 6)

Several resource elements and issues are directly linked to the existing land use of the project area, therefore they are considered in this discussion.

Impacts under Alternative A (The Proposed Action Alternative)

Impacts to the present and future land use of the area are

centered around the various, military, recreational and farming activities that take place on the proposed lease area, and the facilities that support these activities.

Locating seismic lines plus wells and associated equipment too close to occupied dwellings or buildings and areas used for public purposes could unnecessarily expose users, employees and homeowners to possible accidental injury from increased traffic or from far less common, but potentially serious accidents such as well blowouts or fires. Impacts to local traffic would be greatest when equipment is moved in to construct an access road and well site, when the various portions of the drilling rig are moved in, and when equipment is moved in to complete the well and to construct a pipeline. To alert the public, signs warning of unusual traffic could be required along the proposed route as part of the APD approval. Table 4.1 indicates how many trips are required for each phase of oil and gas activity, except for geophysical operations.

The general restrictions imposed by the State and restrictions required by the affected surface management agencies, that are outlined in the description of Alternative A, would provide some distance between surface disturbance and existing roads, developed facilities, buildings and occupied dwellings.

All of the intensive use areas on SEAD and SSP would be surrounded by a buffer that would extend well beyond the area that is normally occupied at these sites. Facilities and development that could be constructed in the future would also be protected by the restrictions established under this alternative. Surface disturbance associated with well drilling could still impact the use of roads and areas around private dwellings since the general State requirements affect the well location and not the area of surface disturbance. Associated surface disturbance could be as close as 25 feet from occupied dwellings under Alternative A. There could be some construction activity for pipelines and access roads as close or closer since these activities would not be restricted around private dwellings or on a large portion of the SEAD. Construction activity could also interrupt traffic while pipelines are installed adjacent to or across roads. Some of this activity could occur during peak recreation periods near or at the main entrance of SSP. Physical disruption and potential conflict with road users would be limited to a period up to a week long during construction and reclamation if pipelines are installed. The added long term impact of traffic would result if access roads are constructed near private dwellings or the entrance of SSP or if existing roads both on and off the proposed lease area are used to access drilling sites.

Agriculture fields could be temporarily divided, creating inconveniences for landowners conducting farming operations.

Natural and artificial drainage areas could also be altered or destroyed. These type of impacts could be avoided if private oil and gas leases contain, specific clauses for compensation or replacement and conditions designed to eliminate conflicts with farming operations.

Additional road construction could result in increased access or trail mileage if SSP or landowners decide to operate roads after gas wells are abandoned. Increased road construction and direction/horizontal or spacing unit well site development, off of the lease property, could occur on lands adjacent to the split estate parcels and the SEAD. Access to federal mineral well site locations from new roads outside the SEAD boundary would not be allowed, therefore traffic would be confined to existing roads until spur roads are constructed to individual well sites.

Gas related development outside of the SEAD and SSP could occur if a successful discover is made on a federal lease. This type of development would probably be influenced by local discoveries on private property, that is already leased, long before any federal lease activity affects the overall exploration climate in this part of New York.

Recreation users would avoid construction areas along access roads and drilling sites that would be located in non traditional high use recreation sites. This could temporarily preclude the use of a favorite hunting, bird watching or wild flower gathering area for certain individuals.

Impacts under Alternative B

Under this alternative the impacts would be the same as those described for Alternative A, except for the following variations.

Surface disturbance associated with well drilling could still impact the use of roads and homesites since there would be some construction of pipelines and access roads across existing roads, along with use of existing roads for access and roads and utility corridors for pipeline routes.

Physical disruption and potential conflict with road users and home owners would be limited to a period up to a week long during construction and reclamation if pipelines are installed. The added long term impact of traffic would result if access roads are constructed across cropland, adjacent to or across existing roads and driveways or if existing roads and portions of driveways both on and off the proposed lease area are used to access drilling sites.

Additional mitigation measures to protect existing and future land use would be developed on a case by case basis as the Bureau and the affected surface owners or agencies analyze each drilling

proposal. This could include temporary or permanent location changes to segments of existing access roads and driveways to avoid all forms of physical disturbance to road or driveway corridors. In addition, existing corridors for roads or utility lines would be considered for pipeline and road crossing sites in lieu of creating new disturbance corridors.

Impacts Under Alternative C (No Action or No Federal Lease Alternative)

Implementation of Alternative C would mean that no Federal leases would be issued within the proposed lease area. No impacts would occur to any surface or subsurface resources under this alternative, except for the non-recovery of oil and gas. To eliminate duplication the impacts under this alternative are only addressed one more time, in the following section on Geology and Minerals.

C. IMPACTS TO GEOLOGY/MINERALS

Impacts under Alternative A (The Proposed Action Alternative)

Under this alternative all Federal lands within the Seneca Depot Area could be protected from drainage, and the revenues from the existing NYESSEN Tract 5 drilling unit could be made available to the Federal Government.

With the exception of the Seneca Depot, there is a reasonable chance that all lands within the proposed lease area could be prudently explored and developed. Any gas resources beyond the immediate perimeter of the Seneca Depot would be only partially exploitable using existing technology, particularly in the Depot's northern core. The inner core which is currently undevelopable has approximately 25% of the northern core's potential reserves. Further requiring, horizontal drilling will limit immediate exploitation of the Queenston to one producing zone. If the area which is likely to be developed under this alternative could be fully developed using vertical wells, it is conceivable that the amount of gas recovered from this outer ring could be doubled.

Impacts Under Alternative B

This alternative would pose the same impacts on the exploration and development plan anticipated for the proposed lease area under Alternative A. The only significant impact would be the increased need for proper communication and coordination between the surface owners, the Federal Government and the oil and gas industry.

Impacts Under Alternative C (No Action or No Federal Lease Alternative)

Under this alternative no Federal leases would be issued within the project area. In this case, lands within the northern area of the Depot would continue to be subjected to drainage of its underlying gas resources. It is also likely that the area which will be drained will expand to the south in the next five to ten years. Without orderly development, reservoir pressures in producing gas fields tend to drop at the field's edge, and lessen the maximum amount of gas which could be recovered from under the lands within the Seneca Depot area.

A decision to not lease any of the Federal lands, will result in the revenues which have been escrowed for NYESSEN Tract 5 to be indefinitely tied up in limbo, and unavailable for use by the Federal Government.

Without leasing, the majority of the gas reserves underlying the Seneca Depot Lands would remain unavailable for use. It is unlikely that the entire area will be proven productive. However, using an average estimate of 100 MMCF for the recoverable reserves for each well, and an overall Dry Hole Risk of 40%, gives the following recoverable reserves estimates for the entire Seneca Depot Area.

Estimated Recoverable Reserves
Seneca Depot Area

Minimum	Maximum	ML
3.3 BCF	25.5 BCF	9.9 BCF

It must be born in mind that the figure of 100 MMCF per well is derived from data for straight wells drilled in the Seneca area. Many of the wells to be drilled on the Seneca Depot are projected to be directional-horizontal wells, which will drain a larger area, but will only drain the most prolific zone from the Queenston, hence it is felt that the reserves derived from the larger area, will probably be balanced out by the diminished section available to drain. The 40% Dry Hole Risk represents the overall Dry Hole Risk for the entire project area. Most of the wells drilled on the northern portion of the Seneca Depot Area will be productive, while many of the wells, drilled on the split-estate lands, the Seneca Army Airport, Sampson State Park, and the southern end of the Seneca Depot have a much higher Dry Hole Risk.

D. IMPACTS TO CRITICAL RESOURCES

SOILS/SLOPES/PRIME FARMLAND (Issue 3)

Impacts under Alternative A (The Proposed Action Alternative)
The following describes impacts that would occur to soil under Alternative A. Construction of access roads, well pads and

pipeline corridors would result in removal of vegetation, exposure of soil to erosion by rain and wind, and removal of top soil. Erosion potential tends to increase with an increase in slope, although the soil type and amount of vegetation directly influence the erodibility of slopes. Less than 5% of the proposed lease area is characterized by steep to very steep (≥ 21% slopes) soil mapping units. The most limiting factor affecting occupancy of these soils is the combination of steep slopes and fine texture which encourage high erosion hazards.

The primary standard method that would be used to reduce direct impacts to soil is to stockpile the topsoil and return it to the area upon reclamation. Methods available to control runoff and erosion from construction and long term use of access roads, pipelines, well pads and production facilities are described in Appendix D-17.

The exact methods necessary for minimizing impacts to soil will be evaluated and determined by the Bureau in consultation with the State of New York, surface management agencies, and landowners when an APD is filed. Use of standard erosion control techniques, best management practices and appropriate rehabilitation methods would reduce erosion and sedimentation on nearly level to steep slopes. Surface use during periods when soils are saturated could subject bare soils to precipitation and runoff events.

Occupation and modification of very steep soils would create areas that would be extremely difficult to reclaim. Larger areas and contour modification would be needed to construct roads, pipelines and drilling pads. Natural contours would be permanently altered, even if sites were abandoned and reclaimed. Most of the steep to very steep soils could not be used to construct well pads under this alternative. About 1 well site on the SEAD and 4 well sites on private off lease locations adjacent to the SEAD could be located on steep to very steep slopes. In addition, pipelines routes could also be located on steep to very steep soils.

Soils could be contaminated from produced water (brine) spills. Brine spills could originate from leaking, ruptured or overflowing pits during drilling and from pipelines, transport vehicle accidents or storage facilities if production of gas occurs within the project area. Salt and sodium affected soils could result in reduced plant growth. Soil structure deteriorates under sodic conditions and saline soils could affect plant growth by making water less available. Natural leaching would alleviate some of these affects if the contamination source is contained and soils with good drainage are affected. Supplemental leaching, drainage and incorporation of soil amendments may be necessary to fully reclaim disturbed sites.

In order to mitigate impacts of pit fluids, the Bureau requires a plastic or butyl liner (or its equivalent) and removal of the fluid fraction prior to pit closure. Vacuuming out the liquid portion of the pit would result in removal of the majority of the saline fractions of the pit contents. A small percentage of the formations encountered under the development scenario contain salt cuttings. These cuttings would be buried on site inside the pit liner. Migration of these cuttings would most likely impact soils and water if the pit is constructed in soils with high permeability rates or high water table conditions. These soil conditions occur within the proposed lease area, although most of these soils also contain high clay contents, which slow drainage and the migration of salts. The well sites that could be located on steep to very steep, shallow to bedrock soils would be especially vulnerable to leaching and migration.

Pipeline and storage tank spills would originate at the same sites used for well drilling. A standard Bureau condition on production facilities requires that tank batteries be surrounded by a dike or firewall capable of containing one and one-half times the volume of the largest tank in the battery. This dike would act as a containment barrier for an overflow, until the operator can vacuum out the spilled liquid and dispose of it at State-approved facilities.

Avoidance of impacts of brine leaks or overflows depends primarily on the operator's diligence in regularly inspecting and maintaining production equipment and reacting quickly in containing, cleaning up, and reporting a release. Avoidance of these impacts depends secondarily on inspections of these facilities by Federal and State oil and gas inspectors and local officials with the respective surface management agencies. The Bureau of Land Management (Bureau) would be notified of any brine or chemical spills, either by the strict reporting measures of Notice to Lessees Reporting of Undesirable Events (NTL 3A), for spills between 10 and 100 barrels and by required Monthly Report of Operations for spill less than 10 barrels. Major spills require immediate notification. The Bureau would respond to these reports with help from the State to determine if clean up actions are needed. An important part of the Bureaus' response to any spill is an evaluation of the events which contributed to the spill, and orders to correct deficiencies to avoid future spills and reclamation requirements. Brine production is expected to be very low, even after several years of production, therefore the frequency of brine spills is also expected to be low.

Disturbance of prime or statewide/locally important farmland is likely since most of the soils within the proposed lease area are classified as either prime or important. The total acreage of prime or important soils that could be permanently converted to a non-farm use would be about 9.6 acres.

Impacts under Alternative B

Under this alternative the impacts would be the same as those described for Alternative A, except for the following variations.

Surface occupancy would be eliminated from steep and very steep slopes, except for the use of existing roads. Topsoil would be more plentiful on disturbed sites and less would be lost from erosion during construction activities and after sites are converted for production of oil and gas or abandoned and reclaimed. This would assure successful reclamation of disturbed sites, reduce the size of construction sites and maintain the natural contours of post reclamation sites.

CULTURAL AND HISTORICAL RESOURCES

Impacts under Alternative A (The Proposed Action Alternative)

The survey and site mitigation review provisions under this alternative are adequate to mitigate impacts to cultural and historical resources.

NATIVE AMERICAN RELIGIOUS CONCERNS

Impacts under Alternative A (The Proposed Action Alternative)

No impacts were identified by the Native American Tribes that are recognized by the Bureau of Indian Affairs.

WATER RESOURCES/GROUND AND SURFACE WATER (Issue 3)

Impacts under Alternative A (The Proposed Action Alternative)

Water pollution sources and impacts to water resources under this alternative are closely related to those described under soil impacts, therefore the entire section on soil impacts applies to the following discussion.

During and after construction, sediment-laden runoff could enter local water bodies, thus degrading water quality by adding another source of sediment, increasing turbidity, and possibly damaging aquatic life. Sediment movement would be reduced by the erosion control measures described in Appendix D-17. However, some sediment could still enter local water bodies even with implementation of these measures, especially if very steep soils are disturbed. The restrictions under this alternative would eliminate occupancy near streams on SSP, although no natural buffer strips are included on portions of the proposed lease on the SEAD and split estate parcels. Some runoff, sediment, or brine may reach a water body in certain circumstances. This situation could occur near both intermittent and perennial

streams on the split estate parcels, SEAD and off lease areas used to develop Federal minerals.

Pit fluids could escape and flow overground into a water body. This could increase the salinity of surface waters which could in turn damage or kill aquatic life. The highest potential under this alternative would occur on very steep slopes near a live stream, during a runoff event on frozen or saturated soils. Under this alternative the water bodies given State Protection status, Seneca Lake and the lower part of Reeder Creek, would not be affected by gas drilling or production activities. Activities associated with the development of Federal minerals would be located at least 3,500 feet east of the Seneca Lake shoreline and about 6,000 feet from the municipal water intake. Most of the drilling likely to take place under the proposed action would occur more than 8,000 feet from the Seneca Lake shoreline. Off lease activities associated with development of Federal minerals, in the northwest corner of the SEAD, could contribute to sediment loading or direct chemical contamination from brine spills, along the protected section of Reeder Creek.

Brine leaking from corroded flowlines, storage tanks or tanker trucks that flow overground into a water body would pollute surface waters and possibly damage or kill aquatic life.

Brine and escaped pit fluids could also percolate through the soil profile into shallow aquifers in the glacial till. The project area is not within a regionally important aquifer or recharge area. In fact, both bedrock and till wells within and adjacent to the project area have marginal quantity and quality characteristics. Pollution potential is relatively low since the surface soil and underlying till contain high clay contents, and transfer rates within the bedrock formations are very slow. Small lenses of sand and gravel deposits occur along well developed streams within the project area. These areas would be subject to contamination if a spill reached stream bottoms by surface transfer, or if local stream deposits are encountered during pit excavation.

Air drilling and routine mud drilling operations are typically completed with a limited number of drilling additives. The Bureau requires that the oil and gas operators supply a listing of the substances that may be used during all phases of well development. Once a well is completed, the operator would be required to file a report of actually used downhole substances. The contents of these reports would be used to determine if the pit has the potential to contain hazardous substances and whether there may be a need for further pit chemical analysis. Depending on site specific hydrogeologic conditions and drilling additive information, the Bureau may require modifications to pit locations and closure techniques. Pits could be located off site in areas with acceptable soil and subsoil conditions. An

alternative to off site location would be to build pits on site with special closure provisions. Pit closure measures may include solidification and fixation prior to burial or removal to a State approved commercial disposal site. The solidification and fixation process is used to physically or chemically stabilize unstable material. This process has also been used in the oil and gas industry to remove free water and reduce the mobility of salts from buried reserve pits.

Some potential exists for downhole pollution of subsurface aquifers during drilling and production. This potential is mitigated by a standard Bureau condition of approval on APDs that requires all shows of fresh and potable water to be protected. Protection involves setting and cementing casing through fresh water sections encountered during drilling. This would prevent drilling fluids, as well as fluids and gases from other formations encountered in the wellbore, from contaminating aquifers. This measure, when properly completed, adequately mitigates the anticipated impacts to ground water. The Bureau evaluates each proposed drilling program as to the adequacy of the casing and cementing program.

Impacts under Alternative B

Under this alternative the impacts would be the same as those described for Alternative A, except for the following variations.

The 200 foot buffer zone under this alternative would provide a filter strip to slow and absorb any residual runoff resulting after application of erosion control measures. By leaving essentially undisturbed buffer strips of vegetation between streams and access roads, well sites and other disturbed areas, the existing vegetation will help trap sediment and prevent it from reaching streams or lakes. Native buffers would also slow and absorb oil or brine releases. Even with this filter strip, some runoff, sediment, or brine may reach a water body in certain circumstances. Exceptions to the 200 foot buffer would be allowed for pipeline and road crossing sites, the use of existing roads and on gentle slopes along streams. Sediment would most likely enter streams under the exception that would allow stream crossings, although drainage crossings and buffer exceptions are conditions that would always require special construction and erosion control techniques, construction time control and proper siting prior to approval. Appendix D-18 also contains measures that could be used for road and pipeline stream crossings.

Filter strips and erosion control techniques would be more effective in reducing sediment loss under this alternative since steep and very steep slopes would be avoided. Sediment flows from oil and gas operations would be less likely to reach water bodies and potential brine or pit fluid spill events would take longer to reach surface water areas, including Reeder Creek.

Avoiding gas sites on steep and very steep slopes would also give clean up crews more time to contain spills. Areas immediately adjacent to spill sites would be more accessible for clean up equipment and personnel movement.

Subsurface contamination could occur if a spill reached stream bottoms by surface transfer, or if local stream deposits exceed the buffer width established by this alternative, and operations take place on or directly adjacent to these fringe areas.

FLOODPLAINS (Issue 3)

Impacts under Alternative A (The Proposed Action Alternative)

No critical floodplain or flood hazard areas would be occupied or affected by the proposed action because the Seneca Lake shoreline and adjacent floodplain would not be disturbed under this alternative. Some floodplains that have not been identified for flood hazards could be selected for drilling sites on, the SEAD, private property adjacent to the SEAD, private property adjacent to split estate parcels and on split estate parcels. Some seasonally flooded areas that have been identified by the SEAD could be disturbed for drilling locations. In addition pipeline routes could affect floodplains on properties listed above. The same type of impacts that were previously discussed in the soil and water resources sections would affect floodplains. In addition, a small and temporary, 1.5 acre foot to 5 acre foot, reduction in floodplain storage capacity could result from each well site and associated production facilities. Flooding during drilling operations could spread drilling fluids, produced water, drilling additives and equipment onto adjacent land or into downstream water bodies.

Activities that are proposed in or that may affect floodplains would be subject to the requirements of E.O. 11988, Protection of Floodplains. This E.O. requires analysis of impacts of the proposed action on the floodplains; analysis and identification of alternative sites out of the floodplains; a public notice/comment period; and justification for siting in the floodplain, if that is the decision. Implementation of the requirements of the E.O. does not assure that floodplains would not be impacted.

Impacts under Alternative B

Under this alternative the impacts would be the same as those described for Alternative A, except for the following variations and the items already described above under Alternative B, in the water resources section.

The impacts described above could still occur if currently unidentified floodplains and seasonally flooded areas on the SEAD

exceed the buffer width established by this alternative, and operations take place on or directly adjacent to these fringe areas.

WETLANDS (Issue 3)

Impacts under Alternative A (The Proposed Action Alternative)

Oil and gas related construction and spill events could impact wetland sites. The same type of impacts that were previously discussed in the soil and water resources sections would affect wetlands. In addition, artificial draining and filling could modify wetland areas. Flora and fauna dependent upon wet conditions would either die or move elsewhere. These impacts could be short term if an oil and gas well is immediately abandoned or if the disturbance is limited to a properly constructed access road or pipeline crossing. However, wetlands disturbed for a well that proves to be commercially productive would be removed for a period of 20 years or more (the life of the well) and may not re-establish on its own. The no surface occupancy restrictions on wetlands in the SEAD would preclude direct disturbance of wetlands, although off site activity that could effect water quality of wetland areas is not specifically precluded by the features of this alternative.

Activities that are proposed in or that may affect wetlands would be subject to the requirements of E.O. 11990, Protection of Wetlands. This E.O. requires analysis of impacts of the proposed action on the wetlands; analysis and identification of alternative sites out of the wetlands; a public notice/comment period; and justification for siting in wetlands, if that is the decision. Implementation of the requirements of the E.O. does not assure that wetlands will not be impacted. Wetland ecosystems on private land adjacent to the SEAD and split estate tracts could be disturbed to host well sites, pipelines and production facilities. Proposed operations in wetlands would be subject to mitigation measures of the Corps of Engineers section 404 permit.

Impacts under Alternative B

Under this alternative the impacts would be the same as those described for Alternative A, except for the following variations and the items already described above under Alternative B, in the water resources section.

Avoiding occupancy of wetland ecosystems altogether and establishing a distance criteria around wetland areas would eliminate the confusion of whether or not an oil and gas proposal might affect a particular wetland, thus triggering implementation of provisions under the Wetland Executive Order. All proposals within 200 feet of wetland sites would represent lease

stipulation exceptions that would require analysis of the existing topography, soils, ground water and the adequacy of planned erosion control measures. The 200 foot protection zone would also keep existing buffers around surface water resource sites consistent, whether the site is a stream, lake or wetland. Pipeline and road crossings would be completely eliminated from the Palustrine (marsh and bog) wetland sites, which would be more susceptible to pollution, maintenance problems and ecosystem modifications, than the relatively narrow Riverine wetland systems.

AIR QUALITY

Impacts under Alternative A (The Proposed Action Alternative)

Oil production would not occur on the lease area and the need to vent gas would be limited to small levels of gas that could enter the well bore from non paying formations, therefore no impacts on the overall air quality are anticipated.

Increased dust levels resulting in local impacts would be confined to corridors along access roads and at air drilling sites. Dust could directly affect people if well sites or access roads are constructed near occupied dwellings.

Impacts under Alternative B

Under this alternative the impacts would be the same as those described for Alternative A.

HAZARDOUS AND SOLID WASTE SITES (Issue 2 & 3)

Impacts under Alternative A (The Proposed Action Alternative)

The restrictions imposed under this alternative would eliminate surface and subsurface disturbance from areas that do or could contain hazardous and solid waste. This measure would remove the chance of a gas well influencing or spreading already contaminated sites.

Drilling fluids, produced waters, and other wastes associated with the exploration, development or production of crude oil, natural gas, or geothermaL energy are exempt from being regulated by the U.S. EPA as hazardous wastes under Resource Conservation and Recovery Act (RCRA) Subtitle C. However, at the time an oil and gas operator files an Application for Permit to Drill (APD) the Bureau will review the proposed drilling fluid and completion/stimulation fluid components and methods of storing, mixing, use and disposal to determine if hazardous substances are proposed and if adequate measures are being used to preclude a hazardous substance release as defined by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

The Bureau also requires the following for drilling permits associated with Federal minerals:

> Only drilling muds, drilling fluids, cuttings, native soils, cementing materials and/or approved pit solidifying materials may be placed in the reserve and working pits.

The purpose of this is to avoid placing substances/wastes in the pit that could render the pit contents hazardous under RCRA Subtitle C.

Impacts under Alternative B

Under this alternative the impacts would be the same as those described for Alternative A.

THREATENED AND ENDANGERED SPECIES

Impacts under Alternative A (The Proposed Action Alternative)

The survey and site mitigation review provisions under this alternative are adequate to mitigate impacts to threatened and endangered species.

Impacts under Alternative B

Under this alternative the impacts would be the same as those described for Alternative A.

E. OTHER IMPORTANT ELEMENTS

FISH AND WILDLIFE (Issue 4)

Impacts under Alternative A (The Proposed Action Alternative)

Wildlife would be displaced by the construction of well pads, roads, pipeline corridors, noise, and dust. Reclamation efforts would revegetate the majority of these drill pads and over time could provide openings that are commonly viewed as wildlife habitat improvements, if properly managed. Small mammals and birds would be disturbed and dens and nests destroyed. Larger, more mobile wildlife would abandon the drill pad areas and roads during construction and early development, however, similar surrounding habitat would maintain the displaced wildlife.

Valuable edge habitat adjacent to streams could be altered for up to 20 years if wells are drilled close to streams on and adjacent to the SEAD and split estate parcels.

Impacts under Alternative B

Under this alternative the impacts would be the same as those described for Alternative A, except for the following variations.

The stream buffer zones would leave the majority of stream side habitat intact and it would also allow wildlife access to water with protective hiding cover.

VISUAL RESOURCES (Issue 4)

Impacts under Alternative A (The Proposed Action Alternative)

Visual impacts would be greatest during construction of the access road and wellsite, well drilling and completion operations, and construction of pipelines. The degree of impact would depend on the location of the access road and well pad in regard to an existing viewshed. Little can be done to mitigate visual impacts during construction, drilling and completion operations unless surface use restrictions eliminate the activity from sensitive areas. Immediate views and many foreground-middleground views (areas seen from highways or other viewing locations which are less that 3 to 5 miles away) around recreation and visitor use sites would be protected under this alternative. Views along the main access road to SSP, highway 96 on the east side of the SEAD, highway 96A inbetween SSP and SEAD, and around private dwellings would be interrupted for a maximum of 1 month for each well. Viewsheds could be interrupted during the high use recreation season if road or pipeline construction is permitted adjacent to the main access road or boundary roads of SSP. Once drilling and completion operations and pipeline construction are over, long-term visual impacts would result primarily from the presence of production facilities (which would be painted to blend into the surrounding environment), new roads, and pipeline corridors, which would be revegetated. Most of the area disturbed for well drilling would be rehabilitated when a well enters the production phrase. Rehabilitated sites on very steep soils would not blend naturally with the existing topography.

A proposed ground disturbing activity could still be located within the viewshed of developed travel corridors, recreation or administrative areas if the view is from or to a highpoint or beyond the foreground-middleground view.

Impacts under Alternative B

Under this alternative the impacts would be the same as those described for Alternative A, except for the following variations.

Drastic topographic contrasts from oil and gas operations on steep and very steep slopes would be eliminated under this alternative.
Visual impacts near concentrated use areas, travel corridors and homes would be reduced throughout the calendar year by the no surface occupancy restrictions, near roads and buildings. In addition, special visual screening or softening measures would be

used as conditions of approval when oil and gas operations are conducted. These measures would not reduce short term intrusions from traffic, construction or drilling equipment, but would reduce potential short term impacts caused by removing vegetation and grading sites for roads and well pads and long term impacts associated with permanent access roads and production equipment.

Appendix D-19 includes a sample list of design techniques for mitigating visual impacts.

NOISE (Issue 4)

Impacts under Alternative A (The Proposed Action Alternative)

Noise impacts would result from construction activities, well drilling and completion operations, construction of pipelines and all related traffic. The greatest noise impacts would result from the diesel engines on the drilling rig. As part of an Environmental Assessment of a proposed oil and gas lease in Arthurdale, West Virginia, the Bureau found that decibel readings for a typical rotary drilling rig can range from a high of 110-112 decibels, A-weighted scale (dBA), in front of the diesel engines to a low of 60 dBA, 1,500 feet away from the rig. Noise levels decrease at a rate of about 6 dBAs for every doubling of distance away from the rig. However, noise levels are greatly affected by topography and vegetation patterns. Increased noise levels would be 24 hours per day for a short term lasting three days to two weeks, if horizontal wells are completed.

Noise impacts would also result from vehicles and equipment traveling roads to the well site. However, noise from vehicles would be intermittent and relatively brief. Noise impacts from construction of pipelines would be short term, lasting a week at most and only during daylight hours. Noise impacts from production would be limited to traffic from vehicles used by well tenders on a daily or every other day interval. This noise impact would be long-term, but intermittent. Well workovers would be expected to occur one or two times during production, lasting about one or two weeks. The noise associated with workover operations would be similar to well drilling operations, although overall noise created by workover activities would be less than the noise associated with initial drilling and completion operations.

Existing developed recreation areas on SSP would have sufficient audible screening during the high use recreation season, except for users passing by, the area open for surface occupancy, on their way into and out of SSP. Traffic related to drilling and completion operations and pipeline construction equipment working across or adjacent to the main access road for SSP would elevate noise levels during a short time period, but this activity could take place during the high use recreation season. This source of

noise could be eliminated and would be considered once a drilling application is reviewed. The specific location of access roads and pipelines on SSP are subject to approval by the surface management agency. Regardless of the exact location, these activities would take place on the portion of SSP that shares boundaries with the SEAD Airfield and State Highway 96A, an area already subject to increased noise levels.

Home owners would also experience, short term, elevated noise levels if wells are drilled on or adjacent to the split estate tracts. Long term noise impacts, as previously discussed, would also affect home owners if production occurs.

Impacts under Alternative B

Under this alternative the impacts would be the same as those described for Alternative A, except for the following variations.

Noise impacts near concentrated use areas, travel corridors and homes would be reduced throughout the calendar year by the no surface occupancy restrictions, near roads and buildings. Noise would also be reduced by using special audible screening or softening measures when oil and gas operations are conducted. Measures that could be considered to decrease noise impacts, include adjustments to rig orientation, requiring mufflers, sound absorbers or sound screens during drilling and natural sound screens for production phase traffic.

F. SUMMARY OF IMPACTS

The following table is a quantitative summary of the impacts described in the impact sections above. Figures represent the maximum that could be subject to impact during the term of oil and gas leases on the SEAD, SSP and Split Estate Tracts, according to the most likely reasonable foreseeable development scenario. This table assumes that off lease surface locations would be used to develop Federal minerals and the same lease constraints would apply if the stipulated resources exist on off lease locations.

Table 4.3
SUMMARY OF IMPACTS

Resources	Impacts by Alternative		
	A. STL, SEAD & SSP Proposals	B. STL, SEAD & SSP Proposals & Additions	C. No Lease
B. Land Use: (Issue 1, 2 & 6)			
Sites Subject to Surface Disturbance Within 25 Feet of Occupied Homes	11	0	0
Miles of All Types of Roads Subject to Increased Traffic	> 70	> 70	0
C. Geology/Minerals:			
Hydrocarbon Extraction Precluded BCF	0	0	10
D. Critical Elements:			
Soil/Slopes/Prime Farmland (Issue 3)			
Acres of Very Steep Slopes Disturbed	16.1	0	0
Acres of Prime Farmland Converted	9.6	9.6	0
Water Resources (Issue 3)			
Public Water Supplies Affected	0	0	0
State Protected Stream Affected	1	0	0
Floodplains (Issue 3)			
Acres Disturbed	22.5	13	0
Wetlands (Issue 3)			
Acres Disturbed	16	0	0
Miles of Riverine and Palustrine Wetlands Subject to Road and Pipeline Crossings	11.5	8.5	0
Hazardous and Solid Waste (Issue 2 & 3)			
Sites Affected	0	0	0
E. Other Elements:			
Wildlife (Issue 4)			
Key Habitat Areas Affected	0	0	0
Visual Resources (Issue 5)			
Square Miles Subject to Scenic Disturbance Adjacent to or in Sampson State Park	1	<1	0
Homesites Subject to Scenery Disturbance	11	<11	0
Noise (Issue 5)			
Developed Recreation Areas Open to Intrusion	0	0	0
Homesites Subject to Intrusion	11	<11	0

CHAPTER 5. COORDINATION AND CONSULTATION

The Bureau contacted the following agencies, corporations, individuals and nations by letter and in some cases in person, to obtain resource information, specific resource clearances and interested party involvement.

Consolidated Rail Corporation
New York Department of Environmental Conservation, Bureau of Resource Management and Development, Department of Environmental Conservation
New York Office of Parks, Recreation & Historic Preservation
New York Office of Parks, Recreation & Historic Preservation
. Finger Lakes State Park & Recreation Commission
New York Executive Department, Office of General Services
New York Department of Transportation
Seneca County Real Property Tax Service
U.S. Department of Agriculture, Soil Conservation Service
U.S. Department of Defense, Department of the Army, Seneca Army Depot
U.S. Department of Defense, Department of the Army, Seneca Army Depot, New York District Corps of Engineers
U.S. Department of the Interior, Fish and Wildlife Service

The Following Native American Tribes
. Mohawk Nation of Akwesasne
. Oneida Nation
. Seneca Nation of Indians
. Onondaga Nation of Indians
. Tuscarora Nation of Indians
. Tonawanda Band of Senecas
. Cayuga Nation

In addition, Chief Oren Lyons with the Department of American Studies in Buffalo, New York and Mr. Raymond Fougnier, Director of the American Indian Program at Cornell University at Ithaca, New York.

All of the known landowners associated with the split estate tracts were also contacted by mail. A summary of these contacts and their responses follows. Many phones calls were made to these individuals or their attorneys as a result of the initial letters.

SENECA COUNTY SPLIT ESTATE PARCEL
PRIVATE LANDOWNER RESPONSE RECORD

PARCEL NUMBER	NO. OF SURFACE OWNERS	NO. OF RESPONSES	NO. OF NEGATIVE RESPONSES	NO.OF FAILED CONTACTS
NYESSEN #1	1	1	0	0
NYESSEN #2	2	1*	1*	0
NYESSEN #3	5	2*	1*	0
NYESSEN #4	6	2*	1*	1
NYESSEN #5	2	0	0	0
NYESSEN #6	2	1*	1	0
NYESSEN #7	1	1	0	0
NYESSEN #8	3	2*	1*	0

NYESSEN #9	1	0	0	0
NYESSEN #10	2	2*	1*	0
NYESSEN #11	3	0	0	0
NYESSEN #12	3	0	0	0
TOTAL	31	12	6	1

* Those who originally submitted a negative response were given another opportunity to comment. The * represents a second comment and/or seconds negative response by a landowner.

ACTUAL RESPONSE SUMMARY

PARCEL NUMBER	OWNER	DATE	RESPONSE
NYESSEN #1	THOMPSON	05/08/91	MINERALS RECONVEYED 05/16/57, QUITCLAIM DEED FURNISHED
NYESSEN #2	STOLTZFUS	05/02/91 03/02/92	AMISH FARMERS THAT RECENTLY PURCHASED MAJORITY OF THE TRACT STRONGLY OPPOSED TO ANY DEVELOPMENT OF THE OIL AND GAS RIGHTS, RESPONSE THROUGH AN ATTORNEY, ATTORNEY WAS CONTACTED
NYESSEN #3	CULVER	03/29/91	WANTS A COPY OF THE BID PACKAGE
NYESSEN #3	3RD FAMILY	06/27/91 04/06/92	WILL NOT CONSENT TO ANY OIL OR GAS DRILLING PRODUCTION OR STORAGE ACTIVITIES, ATTORNEY WAS CONTACTED
NYESSEN #4	BEASLEY	06/06/91 02/19/92	WOULD NOT AGREE TO SURFACE USE AGREEMENTS
NYESSEN #4	SMITH	04/17/91 05/16/91	DISPUTED OUR FMO SENECA COUNTY CORRECTED ID FOR PARCEL #4 "SMITH" IS NOT A SURFACE OWNER ON NYESSEN #4
NYESSEN #4	SHAFF	05/30/91	FAILED TO PICK UP MAIL (TWO NOTICES) TRY TO CONTACT BY PHONE, Tried and could not find a number

NYESSEN #6	LUCHETTE	04/17/91	EXPRESSED EXTREME DISPLEASURE WITH THE FMO SITUATION, WAS GOING TO LOOK AT HIS DEED RECORD TO CONFIRM MINERAL OWNERSHIP, SENT HIM A COPY OF 209 INFORMATION
		03/03/92	INTERESTED IN MORE DETAIL CONCERNING 209 PROCESS, PROVIDED ESO CONTACT AND MORE INFORMATION
NYESSEN #7	HANCY	03/13/92	INTERESTED IN PROGRESS OF PROPOSED LEASING PROJECT
NYESSEN #8	CRONENBERG	06/07/91 02/12/92	STRONGLY OPPOSED TO DRILLING PROPOSAL, WOULD LIKE TO PURCHASE MINERALS, SENT A COPY OF 209 PACKAGE and explained possible drilling scenarios
NYESSEN #8	AMAN	03/13/92	INTERESTED IN PROGRESS OF PROPOSED LEASING PROJECT AND WOULD ALSO LIKE A COPY OF THE BID PACKAGE
NYESSEN #10	WARRICK	06/25/91 02/11/92	OPPOSED TO DRILLING, SENT A COPY OF 209 PACKAGE
NYESSEN #10	HANCY	03/13/92	INTERESTED IN PROGRESS OF PROPOSED LEASING PROJECT

The Bureau contacted the following agencies and corporations by telephone to acquire additional resource information and to enhance coordination efforts.

New York Department of Environmental Conservation, Division of Air Resources, Geological Survey, Division of Water, Bureau of Resource Mgt and Development, Leasing and Mining Section, Fisheries Unit, Minerals Resources Region 8, Division of Hazardous Waste Remediation and Water Resources Development
Meridian Exploration Corporation
New York Office of Parks, Recreation & Historic Preservation
U.S. Department of Interior, Geologic Survey
U.S. General Services Administration

Individuals involved in the preparation of this EA and the sections each prepared are as follow:

Jim Albano — Prepared the written portion for all chapters of the EA, and information for maps, figures and information for appendices.

LaRoye Chisley — Produced Maps for Figures

Larry Johnson	Reviewed all lease areas for possible presence of solid or hazardous waste sites.
Sylvia Jordan	Researched Threatened and Endangered Species and wetland status. Provided recommendations based on agency input and consultation.
Dave Lachance	Prepared the reasonable foreseeable drilling scenario and impacts to geology/minerals.
Duane Marti	Researched, Native American, Cultural and Historical Resource Status. Provided recommendations based on agency input and consultation.
Jeff Nolder	Prepared sections describing geology/minerals.

APPENDICES

FEDERAL LEASING PROCESS

The Federal Onshore Oil and Gas Leasing Reform Act of 1987, hereinafter referred to as the Reform Act, requires that all lands available for leasing under the Mineral Leasing Act must first be exposed to the competitive bidding process for a national minimum acceptable bonus bid of $2 per acre or fraction thereof payable on the gross acreage, and shall not be prorated for any lands in which the United States owns a fractional interest. Only those lands offered competitively at the oral auction that receive no bids shall be available for filing on a noncompetitive basis. Under the Reform Act each proper Bureau of Land Management State Office shall hold Sales at least quarterly where eligible lands are available for competitive leasing. The parcels at these Sales shall be offered by oral bidding. The Reform Act allows the Bureau of Land Management to hold Sales in any State where the office has jurisdiction over the lands. Parcels offered at Competitive Lease Sales are generally through over-the-counter offers and informal letters of interest from the industry. The Bureau of Land Management (BLM) may also offer lands for leasing it determines will be in the public interest. Prior to offering any lands for competitive bidding, BLM must obtain surface management agency leasing recommendations and consent where applicable and required by law. These leasing recommendations and consents will identify any special stipulations to be included as part of the lease terms. In addition, compliance with National Environmental Policy Act requirements must be met prior to offering any lands for competitive bidding. Once consents to lease have been received from pertinent surface management agencies and all requirements under the National Environmental Policy Act have been met, the Sale Notice is prepared. Upon completion, the Notice of Competitive Lease Sale is posted 45 days prior to conducting a competitive auction in the Public Room of the BLM State Office having jurisdiction over the lands. Copies of the Sale Notice will be sent to Surface Management Agencies having jurisdiction over any of the included lands for posting in their Regional Offices. BLM's District Offices will also be provided with copies of the Sale Notice. Those individuals who have established accounts with the State Office for the purpose of receiving copies of the Sale Notices will automatically receive them by mail. Otherwise payment must be received before any copies are sent. A single copy is $15. Forms used to open an account are available from the State Office and a few are here today for your inspection. The Notice of Competitive Lease Sale will describe the lands available for competitive oral bidding and stipulations applicable to each parcel. The time, date and place of the Sale will be stated therein and any other pertinent information involving Sale procedures. Leases awarded as a result of the competitive oral auction will be for a primary term of 5 years, and so long thereafter as there is production in paying quantities.

COMPETITIVE SALE PROCEDURES

On the day of the Sale, bidders will be required to obtain a bidding number from authorized Bureau personnel prior to making any bid. Registration of bidders will be required to speed paperwork and will commence one hour prior to the competitive oral auction. The actual time, date and place of the Competitive Lease Sale shall be stated in the Sale Notice. Parcels will be offered for oral bid in the order indicated in the Sale Notice. The minimum acceptable bonus bid will be the lump sum equivalent of $2 per acre or fraction thereof. A winning bid shall be the highest oral bid by a qualified bidder, equal to or exceeding the national minimum acceptable bid. The decision of the auctioneer shall be final.

Winning bidders shall be required to make payment for the parcel on the day of the oral auction for a total amount consisting of: (1) a bonus bid deposit of at least $2 per acre or fraction thereof; (2) the total amount of the first year's annual rental, at a rate of $1.50 per acre or fraction thereof; and (3) an administrative fee of $75 per parcel. This amount must be tendered at the auction after the close of the oral auction. The entire amount due may be paid at this time. Any unpaid balance of the bonus bid must be received by the Eastern States Office by the 10th working day following the close of the oral auction, or all monies held by BLM and the right to issuance of the lease shall be forfeited.

Payment shall be made by personal check, certified check, or money order. Payment by cash shall NOT be allowed. All remittances shall be made payable to DEPARTMENT OF THE INTERIOR - BLM.

Successful high bidders will be required to submit with the required payments for each parcel on the day of the oral auction of such parcel a properly signed current competitive lease bid form (Form 3000-2), which is a legally binding offer by the prospective lessee to accept a lease pursuant to the terms and conditions specified for the parcel and on the standard lease form (Form 3100-11, June 1988 edition).

Prospective lessees are advised that leases may be issued, upon signature by the authorized officer, without further action on their part, once all remaining bonus bid moneys are timely received.

Lands offered at the oral auction that receive no bids shall be available for filing for noncompetitive lease for a 2 year period beginning the first business day following the auction at a time specified in the Notice of Competitive Lease Sale.

Immediately following conclusion of the Sale, a Results List is prepared showing bids received/no bids received on the parcels. A roster of the bidders registered for the Sale is part of the Results List. This List is FAX'd back to the Eastern States Office for same day posting in the Public Room.

NOMINATIONS/EXPRESSIONS OF INTEREST

A person or entity may if desired submit an over-the-counter offer to the proper BLM office on Form 3100-11, June 1988 edition to nominate lands to be offered at a competitive oral auction. If this option is undertaken, 3 copies of this form shall be accompanied by the first year's rental based on $1.50 per acre or fraction thereof and a nonrefundable filing fee of $75. Offers filed in this manner will receive priority status as of the date and time of filing. Once the lands in the offer have been exposed to the competitive bidding process and if no bid is received at the oral auction, such offer shall have priority for issuance of a noncompetitive lease on the affected lands over any offers filed subsequent to the oral auction. A statement will be made on the Sale Notice advising potential bidders that those parcels marked with an asterisk will be issued to a party who has offered to lease the lands noncompetitively if no competitive bid is received. All noncompetitive leases shall be for a primary term of 10 years. Form 3100-11, June 1988 edition may be obtained by contacting the State Office and copies are available today for review. Further instructions for filing Form 3100-11 are contained in the Code of Federal Regulations and also on the form itself.

A person or entity may also submit an informal expression of interest by letter describing lands they wish to be offered for competitive oral bidding. No filing fee or rental is required for this method and no priority status is given.

The Bureau's Oil and Gas Lease Form 3100-11 contains the standard lease terms and conditions. Under Section 6 of the lease terms, the Bureau may require, prior to surface disturbance, the lessee or operator to conduct inventories or special studies of resources such as threatened or endangered species and objects of historic, cultural, or scientific interest to ensure an adequate level of protection.

Once a lease is issued, a lessee and/or his operator is subject to the requirements of 43 CFR Part 3160 - Onshore Oil and Gas Operations. Subpart 3162.5 - Environment and Safety of the regulations broadly outlines the environmental obligations of the lessee. Subpart 3162.5 - Environment and Safety of the regulations broadly outlines the environmental obligations of the lessee. Subpart 3164 - Special Provisions provides for the issuance of Onshore Oil and Gas Orders (Orders), which implement and supplement the 3160 regulations, and of Notices to Lessees (NTL), which implement the Regulations or Orders on a local/ regional basis.

The following summarizes the Orders and NTL's in effect which relate to environmental concerns:

Onshore Oil and Gas Order #1 (Approval of Operations on Onshore Federal and Indian and Gas Leases)	Requirements for all proposed exploratory, development, and service wells and all approvals of subsequent well operations and other lease operations. Includes requirements for submission of a drilling program and surface use plan; predrilling inspections; clearances for cultural resources and threatened and endangered species; environmental review of subsequent operations; and well abandonment.
Onshore Oil and Gas Order #2 (Drilling Operations)	Sets forth the Bureau's uniform national standards for the minimum levels of performance expected from lessees and operators when conducting drilling operations on Federal and Indian (except Osage Tribe) lands.
Onshore Oil and Gas Order #6 (Hydrogen Sulfide Operations)	Requirements for conducting operations that may reasonably be expected to cause concentrations of H_2S gas to escape in quantities which would be harmful to life or property.
NTL - 2B (Disposal of Produced Water)	Requirements for handling, storing, and disposing of water produced from oil and gas wells on Federal leases.
NTL - 3A (Reporting of Undesirable Events)	Requirements for reporting spills, discharges or other undesirable events (such as fires or fatalities).

Order #1 charges lessees and operators with the responsibility to see that all operations are conducted in a manner which conforms, not only with applicable Federal laws and regulations, but with State and local laws and regulations as well, to the extent that such laws are applicable to operations on Federal leases and do not conflict with Federal regulations.

Order #1 also requires that a permit for drilling and other surface disturbing activities be approved by the Bureau in consultation with the surface managing agency and with other appropriate Federal, State, and local agencies.

A lessee or operator would submit an "Application for Permit to Drill" (APD) to the Milwaukee District Office (District) for processing before any operations could commence. The APD consists of a proposed drilling program and plans for subsurface/surface use and reclamation, all of which must be approved before operations can begin. The APD may also contain plans for proposed production facilities should the well prove to be capable of production; or such information may be filed later in a Sundry Notice. At the time the first APD is filed, the lessee or operator must post a bond for the lease with the Bureau.

Upon receipt of the APD, the District staff will arrange an on-site meeting with the operator, the dirt contractor, and representatives from the surface managing agency and other appropriate Federal, State and local agencies. All environmental and technical concerns, including potential conflicts with the surface uses or facilities, are worked out to the greatest extent possible during the on-site meeting.

The District prepares the appropriate environmental document for the APD in compliance with the National Environmental Policy Act (NEPA) of 1969. During the review, a copy of the APD is forwarded to the appropriate Federal, State and local agencies. As a result of the review, the surface managing agency and other Federal, State or local agencies may recommend additional site-specific condtions of approval. It should be noted, however, that the APD approval process does not include the power to prohibit reasonable access for enjoyment of the lease. If the APD adequately addresses environmental concerns and protects surface and subsurface resources, the District will then approve the APD subject to standard conditions of approval and any additional conditions recommended by the surface managing agency or other Federal, State, or local agencies and determined to be reasonable and appropriate by the District.

Once drilling operations begin, the District inspects the operations as frequently as necessary to ensure compliance with the approved APD, the operating regulations, lease terms, stipulations, and any other order issued. The surface managing agency, other Federal, and State personnel may participate in these inspections. If the well is productive, routine inspections are conducted to ensure compliance with applicable regulations for protection of the Federal mineral and royalty interest, health and safety, and the environment.

When the well is to be abandoned, the operator submits an abandonment plan to the District. The plan is analyzed to ensure that the well will be plugged properly and the drill site reclaimed to protect surface and subsurface values. If the plan is judged adequate, the District will approve it. The drill site is then inspected by the District and Federal, State, or local agency staff to ensure compliance with the approved plan for abandonment and reclamation. The bond posted at the time of the first APD is held in force until the last well on the lease is plugged and reclaimed to the satisfaction of the District.

ADMINISTRATION OF POST LEASE OPERATIONS

Onshore Oil & Gas Orders

1. Formal numbered orders that implement & supplement the regulations contained in 43 CFR 3160; authorized by the Director of BLM.

2. All orders are published in the Federal Register both for public comment and in final form.

3. Orders are binding on lessees and operators of leases that have been or hereafter issued.

4. Orders provide regulatory detail, reporting requirements, minimum standards, gravity of violations, enforcement actions, and allowable variances.

5. Existing Onshore Oil & Gas Orders

Order No.	Subject	Effective Date
1	Approval of Operations	November 21, 1983
2	Drilling Operations	December 19, 1988
3	Site Security	March 27, 1989
4	Measurement of Oil	August 23, 1989
5	Measurement of Gas	March 27, 1989
6	Hydrogen Sulfide Operations	November 23, 1990
8	Well Completion, Workover, & Abandonment	Proposed

Notice to Lessees (NTL's)

1. Similar to Onshore Orders in that they also implement and supplement regulations contained in 43 CFR 3160; can be authorized by either the Director or authorized officer.

2. Existing NTL's

NTL No.	Subject	Effective Date
2B	Disposal of Produced Water	October 1, 1977
3A	Reporting of Undesirable Events	March 1, 1979
4A	Venting and Flaring of Gas	January 1, 1980

ONSHORE ORDER NO. 2 -- DRILLING OPERATIONS

1. Implements and supplements the regulations found at 43 CFR 3162.3-1, 3162.3-4, 3162.4-1, 3162.4-2, 3162.5-1, 3162.5-2, 3162.5-3. Addresses minimum standards expected of lessees and operators when conducting drilling operations on Federal and Indian lands.

2. Specific areas addressed by the Order are:

   A. Well Control Requirements

   B. Casing and Cementing Requirements

   C. Mud Program Requirements

   D. Drill Stem Test Requirements

   E. Special Drilling Requirements

   F. Surface Use

   G. Drilling Abandonment Requirements

   H. Variances from Minimum Standards

ONSHORE ORDER NO. 3 -- SITE SECURITY

1. Implements and supplements the regulations in 43 CFR 3162.7-1 and 3162.7-5. Establishes minimum standards for site security by providing a system for production accountability.

2. Specific areas addressed by the Order are:

   A. Seal requirements for storage and sales facilities

   B. Lease Automatic Custody Transfer (LACT) Systems

   C. Removal of Crude Oil From Storage Facilities by Means Other Than Through a LACT Unit

   D. By-Pass Around Meters

   E. Theft or Mishandling of Oil

   F. Self Inspection Program

   G. Recordkeeping

   H. Site Security Plans

   I. Variances from Minimum Standards

ONSHORE OIL AND GAS ORDER NO. 4 -- MEASUREMENT OF OIL

1. Implements and supplements the regulations in 43 CFR 3162.7-2 by establishing minimum standards for the measurement of oil and practices for lease oil storage and handling facilities.

2. Specific areas covered by the Order are:

   A. Recordkeeping

   B. Oil Measurement by Tank Gauging

   C. Oil Measurement by Positive Displacement Metering Systems

   D. Oil Measurement by Other Methods

   E. Measurement at Off-Site Locations

   F. Variances From Minimum Standards

ONSHORE OIL AND GAS ORDER NO. 5 -- MEASUREMENT OF GAS

1. Implements and supplements regulations found in 43 CFR 3162.7-3, relating to the measurement of gas.

2. Specific areas addressed by the Order are:

   A. Recordkeeping

   B. Gas Measurement by Orifice Meter

   C. Gas Measurement by Other Methods

   D. Measurement at Off-Site Locations

   E. Variances from Minimum Standards

ONSHORE ORDER NO. 6 -- HYDROGEN SULFIDE OPERATIONS

1. Implements and supplements the the regulations in 43 CFR 3162 by addressing requirements to conduct oil and gas operations in an environment known to or expected to contain hydrogen sulfide (H_2S).

2. Specific areas addressed by the Order are:

   A. Applications, Approvals, and Reports

   B. Public Protection Plan

   C. Drilling/Completion/Workover Requirements

   D. Production Requirements

   E. Variances from Requirements

NOTICE TO LESSEES - 2B, DISPOSAL OF PRODUCED WATER

Requires operators involved with the production of Federal minerals to properly handle, store, and dispose of produced water. An acceptable method of water disposal must be approved within 90 days of onset of production. NTL-2B details the required information that is to accompany a water disposal application. Applications are submitted to the Milwaukee District Office for review and approval.

NOTICE TO LESSEES - 3A, REPORTING OF UNDESIRABLE EVENTS

Requires operators involved with the production of Federal minerals to report all spills, discharges, or other undesirable events. Does not relieve operator of compliance with applicable requirements of other State or Federal Agencies. Major events (100+ barrel spills, 500+ MCF gas leaks, fires, accidents in sensitive areas, fatalities, blowouts, etc...) must be orally reported within 24 hours to be followed up with a written report within 15 days. Other-Than-Major events (10+ barrel spills, 50+ MCF gas leaks) are to be detailed in a written report within 15 days. Notification and reports are to be submitted to the Milwaukee District Office.

NOTICE TO LESSEES - 4A, ROYALTY OR COMPENSATION FOR OIL & GAS LOST

Requires operators involved with the production of Federal minerals to pay royalty on oil and gas that is determined to be "avoidably lost". "Avoidably lost" is production that is vented or flared without BLM approval and production that is lost due to negligence, inaction, or noncompliance. NTL-4A details the information requirements and application procedures necessary to obtain authorization from the BLM to vent or flare gas. NTL-4A applications are submitted to the Milwaukee District Office for review and approval.

CONDITIONS OF APPROVAL FOR APPLICATION FOR PERMIT TO DRILL

Company: Viking Resources Corporation

Wells: #31, #32-D, #33-D
Lease: OHBLMA064564

Location: All Well Located in T.1N., R.6W., Deerfield Township; Connecticut Western Reserve; Portage County, Ohio

GOVERNMENT CONTACTS

Bureau of Land Management:	Milwaukee District Office P. O. Box 631, Milwaukee,WI 53201-0631
ADM - Fluid Minerals:	Chris Hanson Home Phone: 414/547-6490 Office Phone:414/297-4421
Petroleum Engineer:	Tim Abing Home Phone: 414/383-9537 Office Phone: 414/297-4438
Environmental Scientist:	Jim Albano Home Phone: 414/762-7915 Office Phone: 414/297-4423
Petroleum Technician:	Billie Young Home Phone: 414/895-6271 Office Phone:414/297-4424
Surface Management Agency:	U.S. Army Corps of Engineers Berlin Reservoir Project Office Project Manager: Leo Summers Phone: 216/547-3801

A COPY OF THESE CONDITIONS MUST BE FURNISHED TO YOUR FIELD REPRESENTATIVE TO ENSURE COMPLIANCE

Approval of this "Application for Permit to Drill..." (APD) does not warrant or certify that the applicant holds legal or equitable title to the subject lease which would entitle the applicant to conduct drilling operations. The approved APD consists of the original submittal, any follow-up deficiency responses, and any documented telephone conversations regarding the proposed action.

The attached APD is valid for a period of one year from the date of approval. If the permit terminates, any surface disturbance created under the application must be rehabilitated in accordance with the approved surface-use plan. After termination, drilling operations may require a new application to be filed for approval with the Bureau of Land Management-Milwaukee District Office (BLM-MDO).

This attachment to the approved APD may contain requirements which alter the "Drilling Plan" or "Surface-Use Plan" submitted as part of the APD. If a conflict exists, this document takes precedence. Otherwise, all lease and/or unit operations are to be conducted in full compliance with the plans submitted for the approved APD as well as lease terms, stipulations, Onshore Oil and Gas Orders; Notice to Lessees plus current Federal laws and regulations (especially CFR 43, part 3160). A complete copy of the approved APD including conditions, stipulations shall be on the well site and available for reference during the construction and drilling phases. The operator is fully responsible for the actions of its subcontractors. All submitted information not marked "CONFIDENTIAL INFORMATION" will be available for public inspection upon request. The following items are required:

DRILLING STANDARDS

1.The well must be identified from spud date to final abandonment with a sign or marker with the name of the operator, lease serial number, well number, and surveyed description of the well (43 CFR 3162.6).

2.The spud date will be reported orally to the ADM - Fluid Minerals at least 12 hours prior to spudding. If spudding occurs on a weekend or holiday, report on the following regular workday.

3.This approval constitutes a variance on the minimum distance requirement for location of the compressor from the wellbore and length of the blooie line. The blooie line shall be not less than 60'and the compressor shall be located not less than 60' from the wellbore.

4.During drilling operations, the operator shall restrict access to the location to all but essential personnel.

5.The operator shall utilize a 45° elbow at the discharge of the blooie line to direct discharge into the pit.

6.Significant deviations from the wellbore as proposed will require prior approval from BLM-MDO. Significant is defined as deviation of more than 10° from either the average vertical angle or the horizontal bearing, or if the wellbore encroaches within 200' of the original drilling unit boundary.

7. Operator shall comply with applicable Onshore Order #2 requirements for installation and testing of 2M BOP systems.

8.Notify ADM - Fluid Minerals at least 24 hours in advance of casing or BOP pressure tests.

9.As a minimum, the BOP test procedure shall be performed when pressure control equipment is initially installed, whenever any seal subject to test pressure is broken, following related repairs, and at 30 day intervals. Other aspects of BOP testing procedure, including standards for a successful test, shall comply with requirements of Onshore Order #2.

10.Drilling progress reports must be filed with BLM-MDO on a weekly basis, until drilling activity is completed.

11.All shows of fresh water and minerals will be reported and protected. Any unusual water flows will be reported. All oil and gas shows will be adequately tested for commercial possibilities, reported and protected.

12.Gas produced from this well may not be vented or flared beyond an initial, authorized test period of 30 days or 50 MMcf following its completion, whichever occurs first, without the prior written approval of the authorized officer. Should gas be vented or flared beyond the aforementioned test period, you may be directed to shut-in the well until the gas can be captured or approval to continue flaring or venting is granted. You shall be required to compensate the lessor for that portion of the gas vented or flared without approval which is determined to have been avoidably lost.

13.Any disposal of reserve pit fluids down the wellbore must have prior approval from this office. To dispose of fluids in this manner, a "Sundry Notices and Reports on Wells" (Form 3160-5) must be submitted to BLM-MDO detailing into which formation the fluid will be disposed and what method will be used for injection. Water quality analyses for the fluid being disposed and the formation receiving the fluid may be required. Verbal approval for downhole disposal may be obtained from BLM-MDO but must be followed by the written application on form 3160-5.

14.Hazardous substances above reportable quantities (40 CFR 302.4) as defined by the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), shall not be utilized in drilling, testing, or completion operations.

15.The operator must furnish to the BLM-MDO an inventory of all drilling completion, testing and workover additives used for this well within 30 days after the end of the drilling phase. This inventory must include the name of the additive manufacturer, the name of the mud company or other subcontractors used for drilling site work, the trade name of each additive, a chemical description of it (by specific chemical names) or material name if composed of substances such as "walnut shells' or "juniper bark", the chemical abstracts service registry number (CASRN), the percentage by weight of each chemical component (chemical name) in each additive, the additive container size in pounds or gallons, the number of containers stored on site and the total quantity in pounds or gallons of each additive used in the course of well drilling and completion operation. Forms for completing the additive summary reports are attached.

16.Do not plug back, suspend operations for more than 30 days, or change the approved surface use or drilling plan without prior approval of the BLM-MDO. A "Sundry Notices and Reports on Wells" (Form 3160-5) must be filed for all proposed changes (43 CFR 3162.3-2). Emergency approval may be obtained orally but does not waive the written report requirement.

17.In the event abandonment of a drilling well is desired, an oral request may be granted by the ADM - Fluid Minerals but must be followed by a written "Notice of Intention to Abandon" on a Form 3160-5 not later than the fifth business day following oral approval. Unless plugging must take place immediately after drilling or workover operations, the ADM - Fluid Minerals will be notified at least 48 hours in advance of well plugging, so that a BLM representative may witness plugging operations. A

"Subsequent Report of Abandonment" on a Form 3160-5 must be submitted within 30 days after plugging operations and must describe any changes to the approved plugging procedure and the status of surface reclamation. If surface reclamation has not been completed at the time the subsequent report is submitted, a follow-up report on the same form shall be filed when all surface restoration work has been completed and the location is considered ready for final inspection.

18.A "Well Completion Report and Log" (Form 3160-4) must be submitted not later than 30 days after completion of the well either as a producer or dry hole. One copy of all geophysical logs, core descriptions, and other data obtained during drilling, completion, and/or workover operations will be submitted with Form 3160-4 directly to BLM-MDO.

PRODUCING STANDARDS

1.Section 102(b)(3) of the Federal Oil and Gas Royalty Management Act of 1982, as implemented by the applicable provisions of the operating regulations at Title 43 CFR 3162.4-1(c), requires that "not later than the 5th business day after any well begins production on which royalty is due anywhere on a lease site or allocated to a lease site, or resumes production in the case of a well which has been off production for more than 90 days, the operator shall notify the authorized officer [BLM-MDO] by letter or sundry notice, Form 3160-5, or orally to be followed by a letter or sundry notice, of the date on which such production has begun or resumed." The date on which production is commenced or resumed will be construed for oil wells as the date on which liquid hydrocarbons are first sold or shipped from a temporary storage facility, such as a test tank, and for which a run ticket is required to be generated or, the date on which liquid hydrocarbons are first produced into a permanent storage facility, whichever first occurs; and, for gas wells as the date on which associated liquid hydrocarbons are first sold or shipped from a temporary storage facility, such as a test tank, and for which a run ticket is required to be generated or, the date on which gas is first measured through permanent metering facilities, whichever first occurs.

Knowingly or willfully failing to comply with this requirement in the manner and time allowed, you shall be liable for a civil penalty of up to $10,000 per violation for each day such violation continues, not to exceed a maximum of 20 days. See Section 109(c)(3) of the Federal Oil and Gas Royalty Management Act of 1982 and the implementing regulations at Title 43 CFR 3163.2.2(e)2.

When reporting initial commencement of production, the notification shall provide the following items:

a. Operator name, address, and telephone number.
b. Well name and number.
c. Well location (legal description).
d. Date well was placed in a producing status (date of first production for which royalty will be paid).
e. The nature of the well's production, (i.e., crude oil, casinghead gas, natural gas, or combinations thereof).
f. The Federal or Indian lease prefix and number on which the well is located.

2.The following activities require prior approval by BLM-MDO with applications to be made on Form 3160-5: Redrilling, deepening, performing casing repairs, plugging back, altering casing, performing nonroutine fracturing jobs, recompleting in a different interval, performing water shut off, converting to injecting or disposal, and any subsequent new construction or reconstruction of existing facilities.

3.Oil and gas measurement facilities will be installed on the leasehold whenever possible. Oil and gas meters will be calibrated in place prior to any deliveries. The ADM - Fluid Minerals will be notified in advance with the date and time for the initial meter calibration and all subsequent meter provings. A copy of the meter calibration reports will be submitted to BLM-MDO. All meter measurement facilities will conform with the API standards for measurement of liquid hydrocarbons and the AGA standard for natural gas measurement.

4.All off-lease storage, off-lease measurement, or commingling [whether on or off lease] must have prior written approval from the BLM-Milwaukee District Office.

5.A "Site Facility Diagram" must be submitted to BLM-MDO within 60 days after new measurement facilities are installed or existing facilities are modified. Refer to 43 CFR 3162.7-4 for a description of site security requirements on Federal leases and units.

6.If a production facility is constructed on this lease, it must be surrounded by a firewall or containment dike of sufficient capacity to adequately contain 1.5 times the storage of the largest tank in the facility.

7.All semi-permanent and permanent facilities will require painting or camouflage to blend with the natural surroundings. Unless a change is mutually agreed upon by the operator, the Surface Management Agency and the BLM-MDO, the following permanent facilities will be painted green: all high level equipment such as tanks, separators, heater treaters (except fire box and stack), large flow lines (above 4 inches), pumpjacks, gates, chain link fences, and equipment buildings. Small size flow lines, low level equipment, and small or galvanized wire and pipe not normally painted may not require painting. If this type of equipment is normally painted or was painted during previous use, color contrast will be evaluated using the current painting requirements. It is desirable that as much equipment as possible be painted a uniform noncontrasting color. Permanent structures are

considered to be those facilities which are on site more than 90 days after completion of the well.

8.This well must be reported on a "Monthly Report of Operations and Production" (Form MMS-3160) starting with the month in which drilling operations commence, and each month thereafter until the well is physically plugged and abandoned. Submit this report to the Minerals Management Service; Production Accounting Division; P.O. Box 17110; Denver, Colorado 80217.

SURFACE STANDARDS

1.BLM-MDO and the Surface Management Agency (SMA) must be notified at least three days prior to commencement of construction activities. This contact will allow BLM-MDO and/or the SMA to have personnel present for consultation during the construction of roads and locations. Please be advised that these personnel may determine that additional surface-protection requirements are necessary if construction or surface disturbance is conducted under adverse weather conditions.

2.Unless otherwise specified herein, construction and maintenance of surface facilities approved under this plan shall be in accordance with the guidelines set forth in the Federal brochure entitled, "Surface Operating Standards for Oil and Gas Exploration and Development". This brochure describes standards for road construction and maintenance, handling of top soil, and rehabilitation.

3.All filter fabric fences and hay bale barriers, must be installed prior to site construction and maintained until the disturbed area is permanently stabilized.

4.Filter fabric fences must be extended along the southwest side of the well pad all the way to the southwest corner.

5.Filter fabric fences and hay bales must be installed along the entire northeast side of the well pad, from the northeast corner to the northwest corner.

6.Pursuant to "Notice to Lessees 2B" (NTL-2B), this is authorization for temporary, lined-pit storage of the water produced from this well for a period of 90 days from the date of initial production. A permanent disposal method must be approved by this office prior to the end of this 90 day period. In order to meet this deadline, an application for the proposed permanent disposal method should be submitted along with any necessary water analyses no later than 45 days after the date of first production.

7. The operator is responsible for informing all persons associated with this project that they will be subject to prosecution for knowingly disturbing historic or archaeological sites, or for collecting artifacts. If historic or archaeological materials are uncovered during construction, the operator is to immediately stop work that might further disturb such materials, and contact the authorized officer (AO). Within five working days the AO will inform the operator as to:

-whether the materials appear eligible for the National Register of Historic Places;
-the mitigation measures the operator will likely have to undertake before the site can be used (assuming in situ preservation is not necessary); and,
-a timeframe for the AO to complete an expedited review under 36 CFR 800.11 to confirm, through the State Historic Preservation Officer, that the findings of the AO are correct and that mitigation is appropriate.

If the operator wishes, at any time, to relocate activities to avoid the expense of mitigation and/or the delays associated with this process, the AO will assume responsibility for whatever recordation and stabilization of the exposed materials may be required. Otherwise, the operator will be responsible for mitigation costs. The AO will provide technical and procedural guidelines for the conduct of mitigation. Upon verification from the AO that the required mitigation has been completed, the operator will then be allowed to resume construction.

8.Spills, fires, blowouts, leaks, accidents, or any other unusual occurrences shall be promptly reported to BLM-MDO in accordance with "Notice to Lessees (NTL) 3A". "Major Events" will be reported verbally within 24 hours, followed by a written report within 15 days. "Other than Major Events" will be reported in writing within 15 days. "Minor Events" will be reported on the "Monthly Report of Operations and Production" (Form 3160-6).

9. The following is required for the access road and well pad area:

a. Trees must be cleared and avoided as marked by flagging on the proposed access road and pad area. However, the large Black Walnut on the eastern end of the well pad and large Black Cherry located on the northern edge of the pad must not be disturbed;

b. All trees larger than 8" DBH on COE property must be avoided along the access road;

c. Viking Resources Corporation must forward a check for twelve hundred dollars ($1,200.00) as reimbursement for timber damage to: Department of the Army, Pittsburgh District Corps of Engineers, Attn: Real Estate Division, 1000 Liberty Avenue, Pittsburgh, Pennsylvania 15222. This check should be made payable to "Finance and Accounting Office, United States Army, Ohio River Division";

d. Standing timber, located adjacent to the access road and well sites, suffering damage or mortality will be assessed damages at a later date.

c. Clearing must be accomplished according to the following guidelines:

-60% of all stumps will be hauled off site for disposal, the remaining 40% will be used for foundation material for wildlife brush piles to be built in forest openings along the access road and around the well pad. Three small brush piles must be built on the completed pad after seeding, prior to planting trees as specified. 50% of all brush must be chipped and blown onto the surrounding forest floor not to exceed a 6-inch depth. Brush piles must be built as specified in Technical Report EL-86-13, Brush Piles.

-The southern side of the well pad must not be scraped and grubbed down to clay, as proposed for the remainder of the well pad. On the approximate 40' X 80' strip located on the south side of the pad, trees must be flush cut. Brush, saplings and other ground vegetation must be left standing. After the pipe racks are removed, damaged seedlings, saplings and brush must be cut to facilitate natural regeneration. (See attached copy of Well Site Layout.)

10. The following is required for the access road:

a. The width of the disturbed area must not exceed 25 ft.;

b. The access road must be constructed as a permanent road by clearing and grubbing to a 6" or 8" depth;

c. Geo-textile subgrade stabilization fabric (Exxon GPF-200 or equal) must be placed directly over the ground for the full width of the sub-base;

d. Two inches of clean state-approved No. 8 slag or limestone must be spread over the surface of the Geo-textile fabric, followed by 12" of approved clean No. 1 slag, sandstone, or limestone aggregate;

e. The surface of the roadway must be dressed with smaller "304" approved slag or limestone, crowned at a rate of 3/4" to the foot;

f. Stockpiled topsoil must be fine-graded along the sides of the access road;

g. Re-vegetation along the access road will be in accordance with the subject APD Section B, Surface Use Program, item No. 10, Plans for Reclamation of Surface, with the additional requirement to mulch after seeding at a rate of 2-3 bales per 1000 square feet.

h. A gate with guide rails will be installed at the U.S. property line and a key provided to the Corps' Resource Manager.

11.A 4" compacted layer of native clay, or a State approved sealant, must be used to cover sand, gravel, or rock layers, if encountered during reserve and working pit excavation.

12. Only drilling muds, drilling fluids, cuttings, native soils, cementing materials and/or approved pit solidifying materials may be placed in the reserve and working pits.

13. The reserve and working pits may not be backfilled prior to testing of both pits' contents by the Ohio Department of Natural Resources, Oil and Gas Division, and the U.S. Army Corps of Engineers.

14. If working and reserve pit contents are buried on site the solidified contents must be covered with a minimum of three feet of subsoil and eight inches of topsoil. A portion of the pit solids must be removed to an approved disposal site to meet this minimum cover requirement, if the reserve pit is abnormally shallow because of rocky subsoil conditions.

15. The State of Ohio Oil and Gas Division [Rick Simmers - (216) 896-0616], the U.S. Army Corps of Engineers (Corps) water quality division [Mike Koryak - (412) 644-6831], and the Corps operations and readiness division [Pete O'Connell - (412) 644-2798] must be notified once the reserve and working pits have had free liquids removed and are ready for testing.

NOTICE: Viking is responsible for the testing of pit contents. Results of the lab tests run by the Corps may not be available for up to several weeks after pit samples are taken; therefore, the decision as to pit closure may be delayed.

16. If the reserve and working pits' contents do not meet State and Federal water quality standards or do not meet standards acceptable to the BLM and COE, the contents must be removed from Federal property and disposed of at a State and Federally approved site.

17. The concentration of hazardous substances in the reserve and working pits at the time of pit backfilling must not exceed the standards set forth in the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA). All oil and gas drilling-related CERCLA hazardous substances removed from a location and not reused at another drilling location must be disposed of in accordance with applicable state and federal regulation.

18. The following conditions apply to reclamation:

a. Re-vegetation will be completed by discing replaced topsoil with a tractor, broadcasting seed at a rate of 40 pounds per acre of the following:

* 12 lbs. Annual Ryegrass
* 4 lbs Ladino Clover
* 12 lbs Orchard Grass

* 12 lbs Smooth Brome

b. After seeding, the entire surface area must be mulched with hay or straw at a rate of 2-3 bales per 1,000 sq.ft.

c. Reforestation will be completed by planting three to four year old seedlings at a spacing of 8' X 8'. This shall consist of the following species: 20% Pin Oak; 20% Bur Oak; 20% Black Locust; 20% Flowering Dogwood; and 20% Red Oak.

19.All of the garbage, trash, and waste materials will be hauled to a State approved disposal site.

20.Ohio Department of Natural Resources, Oil and gas Division, approval must be obtained for use of the off-site salt cuttings disposal pit at the Nagle #3 well site.

21.All gates and fences (unless treated wood is used), pump-jacks, storage tanks and chain-link fences shall be painted dark green.

22.The Corps of Engineers reserves the right to require additional reclamation measures at a later date, if warranted.

23.The proposal to use Gibb-Norm Water Service as a possible waste and brine hauler is denied.

24.A Right of Way modification or amendment must be obtained to allow the Corps to use the access road for inspection, monitoring and emergency use.

APPEALS

These Conditions of Approval are subject to the State Director Review (SDR) and appeals provisions of 43 CFR 3165.3 and 43 CFR 4.

ENCLOSURE 1
SENECA ARMY DEPOT (SEAD) LEASE NOTICES AND STIPULATIONS

These stipulations may be waived, excepted or modified only with BLM's written approval upon the Installation Commander's (hereinafter Commander) concurrence:

1. The lessee understands that any activity on the leased lands requires prior approval of the BLM and that BLM approval requires the concurrence of the Commander or authorized representative on necessary requirements. These requirements may include but are not limited to prohibitions or specifications on:

   A. access (e.g., gates, roads, construction, maintenance, pipelines, trees cut for sale by the Army, vegetation disposal);
   B. use and protection of installation water supply;
   C. protection of the environment (including endangered species) and protection of objects of historic and scientific interest;
   D. safety and fire protection measures (e.g., use of explosives, safe working distances from ammunition and explosives, construction and maintenance of firebreaks);
   E. use of communication and transportation systems;
   F. installation security (authorized operating hours, worker identification);
   G. management of production area (e.g., size, fencing, gates, cattle guards, interim revegetation); or
   H. reclamation measures (e.g., equipment removal, well abandonment and plugging, topsoil replacement, revegetation, fertilizing);
   I. exploration activities.

   Compliance with these requirements will be at no cost to the United States. The commander for the purpose of this lease is Commander, Seneca Army Depot, and the District Engineer is the District Engineer, New York.

2. The lessee understands that the leased lands are part of a military installation. The installation mission prohibits drilling the area shown on Figure B.1 and for distances from these areas as prescribed by the Department of Defense (DOD). Furthermore, the lessee understands that future increased production, testing or storage of ammunition or explosives may further restrict the surface area available for lease operations. Safe distances from ammunition and explosive facilities are based on the quantity and type of explosive present or authorized and the proposed use (e.g., above or below ground, continuous or temporary presence of personnel). The distance involves a curve root, so distances do not increase arithmetically with explosive quantity. The lessee may obtain details at the installation safety office in the AR 385 series and DOD 6055.9 S implemented by AR 385-64.

   Lessee can be assured of access to drill on, only the shaded areas of lands shown on the enclosed map (Figure B.1). The government may be able to rewarehouse explosives on a reimbursable basis to accommodate additional drilling areas. If this is not possible, then slant drilling methods must be used to reach deposits beneath restricted areas. No

slant drilling shall intrude within 238 vertical feet from the bottom of an occupied ammunition storage igloo.

3. Before beginning any approved operations in the leased area, the lessee must consult with third parties authorized to use real estate in the leased area and must consider programs for which their parties have contractual responsibility. The lessee may consult the records of the District Engineer to determine what real estate interests have been granted to third parties on the leased lands. On the request of the BLM District Manager, the commander may seek to resolve disputes between the lessee or operator and third parties if they cannot reach agreement. Resolutions will be coordinated with contracting officers or representatives of all parties involved. The lessee shall hold the United States harmless for claims by such third parties arising from the lessee's activities, including damage to pasture and cropland capabilities.

4. The lessee shall bear all costs of repair or restoration for damages or degradation of project land or facilities, including subsidence and pollutant spills, caused by the lessee's activities. Where conditions of urgency exist as determined by the commander and time is of the essence, the lessee shall repair damages or degradation in a timely fashion in the manner specified by the commander. The commander shall confirm oral orders to the lessee or operator in writing. If the lessee or operator cannot or will not comply, the commander will act, and the lessee shall reimburse the Army for all costs of such action, including administrative costs.

   The lessee or operator shall reimburse the Commander for those costs incurred by the installation in administering and/or assisting the lessee or operator prior to, during, and after drilling operations or pipeline construction. (This administrative costs will not apply to those pipelines providing gas solely to the installation.) Direct costs for relocation of any explosives by installation personnel during drilling operation or pipeline construction will be on a case-by-case basis. The explosive relocation cost will be over and above the administration cost. Such costs shall include costs of testing, monitoring, and inspection to ensure compliance of laws, regulations, and these stipulations. The rate charged for any government services will be the current cost center rate for direct labor hours times the hours worked for each applicable cost center involved.

5. A. The lessee shall not unlawfully pollute the air, ground or water (including ground water) or create a public nuisance. The lessee shall at no cost to the United States comply with present and future Federal, state and local laws, ordinances, or regulations controlling the quality of the environment. This does not affect the lessee's right to contest their validity or enjoin their applicability.

   B. Before beginning operations, the lessee shall retain a local agent who may be served notice on these matters and who shall notify the

commander immediately of pollution, potential spills, or other hazards.

C. The lessee shall hold the United States harmless for any claim, including equitable claims, court or legal expenses incurred by the United States, and fines or penalties imposed upon the United State which are related to unlawful pollution arising from the lessee's use of the property.

6. The Secretary of the Army or designee reserves the right to require cessation of operations if a national emergency arises or if the Army needs the leased premises for a mission incompatible with lease operations. On approval from higher authority, the commander will give the lessee written notice or, if time permits, request the BLM to give the notice of the required suspension. The lessee understands the lease rights granted by this instrument do not include the period of any such cessations and the United States has no obligation to compensate the lessee for damages (including contractual losses) resulting from the exercise of this stipulation. The lessee shall include this stipulation in contracts with third parties to supply oil and gas. This stipulation shall not affect the lessee's right to seek suspension of the lease term from the BLM.

7. The United States reserves the option to purchase up to 50 percent of the working interest portion of natural gas production or refined oil products at the price defined below under a utility service contract in accordance with present or future Army regulations. The commander or the United States authorized representative shall give the operator four months delivery lead time beginning on the date of the operator's receipt of the notice for government purchase of said production or products. The lessee or operator shall include this paragraph in any contract or sale of natural gas or oil to other parties.

A. The price to the United States for natural gas shall be the lowest price paid by the wholesale gas buyer purchasing gas excess to the needs of the United States, if such buyer is fully independent from the seller and the transaction is an "arm's length" transaction; otherwise standard appraisal methods will be used. The natural gas shall be dried or processed as necessary and shall be delivered in a condition ready for use in a natural gas system. In the case that sufficient gas is produced the lessee or operator shall arrange for equivalent delivery or construct a complete automatic gas supply system from the well to the existing installation gas system according to a commander approved plan. A complete pipeline includes all necessary piping, valves, meters, regulators, fittings, compressors, and odorizers. The lessee shall be responsible for and bear all costs without further reimbursement for the exercise of this option including costs:

(1) of refining, processing, and delivering natural gas to the installation or equivalent delivery of natural gas produced elsewhere as prescribed by the commander or the United

States' authorized representative;

(2) of maintaining such facilities (including meters) during the producing life of the well; and

(3) of salvaging such facilities when production is ended.

B. The price to the United States for refined oil products shall be the lowest posted market price for production, refining, and delivery of similar quality paid by large volume purchasers in the area, or if the commander or the United States prescribes delivery to another installation the price shall be the lowest posted market price for production of similar quality in the area of this installation and for refining and delivery to the other prescribed installation; if this formula cannot be applied, an appraisal method acceptable to the United States will be used.

C. If exercise of this option involves more than one lessee or operator, the lessee or operator agrees to cooperate with the others in scheduling production, constructing pipelines from wells or gathering points to the installation distribution system, sharing expense, and other matters to assure a timely and continuous fuel supply to the United States.

D. The lessee or operator shall routinely inspect equipment and calibrate equipment with installation representatives. Annually or more often, the commander may require the lessee to engage an independent party who is acceptable to the commander to test meters for accuracy and to furnish written findings to the commander.

8. Notwithstanding any other stipulation, the United States and its officers, agents, servants, and employees ("the released parties") shall not be responsible for damages to property, injuries to persons, or any other cause of action ("released actions") which may arise from or be incident to this lease or the lessee's use and occupation of the leased premises. Released actions include, without limitation, damage to the lessee's property, injury to the lessee's person, or other cause of action of the lessee's officers, agents, servants, employees, invitees of any of these, or anyone else otherwise on or off said premises incident to the lease. Released actions include any actions arising from flooding of the leased premises. The lessee shall hold harmless and indemnify the released parties for released actions which may arise from or be incident to this lease or the lessee's use or occupation of the leased premises.

9. If the commander or the commander's authorized representative discovers and imminent danger to safety or security which allows no time to consult the BLM, that person may order such activities stopped immediately. The authorized officer of the BLM District Manager shall be notified immediately, shall review the order and shall determine the need for further remedial action.

10. If military contamination is found in the operating area, the operator

shall immediately stop work and ask the commander's representative for help.

11. The lessee shall obtain a separate license to conduct geophysical tests on the leased area from the commander or the district engineer, and shall furnish a copy of all processed data from these tests to the BLM. The Commander will require only nonexplosive methods of SEISMIC exploration.

12. The Lessor's rights described in the printed lease form include the rights of the Department of the Army.

13. No drilling within the boundaries of the areas used for operations, administration, housing and troop training.

14. No surface occupancy within the boundaries of the US Coast Guard Loran "C" Site, the storm drainage and utility area and wetlands.

15. No drilling within the 500 foot area lateral clearance or the inhabital building sites at the airfield.

ENCLOSURE 2
Installation Conditions for Site Approval of Gas Leasing
Seneca Army Depot

1. Site approvals will be required for each drilling site, pipeline routing, and access route. Such approvals will take the form of a cover letter including an annotated installation map and accompanied by this operating provisions and site evaluation criteria document.

   Each of the following paragraphs is annotated to show that it is:

   A. An Evaluation Criteria (EC) to show an item to be considered by the installation in the approval of a proposed drilling/pipeline/access site route, or

   B. An Operating Provision (OP) to show provisions the installation will expect the lessee/operator to comply with in performing his activities under this lease.

   C. In certain circumstances, both will apply.

2. Conditions:

   A. Each drilling site shall be approved by the Installation Commander before drilling operations begin. Availability of a pipeline access route will be part of the approval procedure. Commander, as used in these conditions, shall mean the Commander, Seneca Army Depot, Romulus, NY 14541-5001. No operations at an approved drilling site shall commence until after an application for permit to drill, deepen, or plug back, has been approved by the Bureau of Land Management, Operating Regulations, 43 CFR 3160. All sites shall be approved by the New York State Department of Environmental Conservation (DEC), as appropriate. The lessee shall be responsible for obtaining any and all permits required and shall furnish proof of such approval of nonapplicability to the Installation Commander before starting work. (EC) (OP)

   B. Access to the installation controlled/limited area shall be only upon the conditions of entry at Attachment 1 (Security).

      Access to all installation lands shall be through existing gates and roads as approved in advance by the Commander. No temporary gates shall be installed in the installation's perimeter fence. Use of installation roads and land areas by the lessee resulting in damage to roads, structures, utilities, or land shall require repair of damage by lessee on a timely basis. When new access roads are necessary, they shall be constructed by the lessee or operator at no cost to the government. Routing shall be approved in advance by the Commander. Roads shall be properly drained and terraced to prevent erosion, and shall be compacted and surfaced to provide for all-weather access to wells and equipment. The lessee or operator shall maintain all roads which he constructs.

(EC) (OP)

C. A final review of site locations by Safety officials both on and off the installation will be required prior to final approval of specific sites, routes, etc., for drilling, pipelines, and access. The procedure and evaluation criteria used in this review is as follows: (EC) (OP)

(1) Ammunition and Explosive Facilities:

Mineral exploration and drilling activities are to be separated from ammunition and explosives operating and storage facilities by public traffic route explosive safety distances provided there is to be no occupancy of the site by personnel when the exploration or drilling is completed and by inhabited building explosives safety distance if occupancy is to continue when exploration or drilling is completed. If toxic chemical agents or munitions are present, public exclusion distances must be maintained to the exploration or drilling activities. Examples of exploration activities are seismic or other geophysical tests. Examples of drilling activities are those for exploration or extraction of oil, gas, and thermal energy.

(2) Contaminated Lands: Surface occupancy, Exploration, drilling, and mining are prohibited on the surface of explosives or toxic chemical agent contaminated lands. (See Figure B.2) Exploration and extraction is permitted by directional (slant) drilling at a depth greater than 50 feet beneath the explosives contaminated land surface or by shaft mining at a depth greater than 100 feet beneath such land surface.

(3) Safety Review of Exploration and Extraction Plans: Plans for mineral exploration and extraction on land that is in proximity to ammunition and explosives facilities or land that is contaminated or suspected to be contaminated with explosives or chemical agents shall be submitted in accordance with paragraph 5-27 of AMC Regulation 385-100 (Attachment 2, Safety Review of Construction Plans).

D. The installation does not have the capability to provide utility support to the lessee. Water is not available from the potable water system for drilling purposes. Water may be taken from the wildlife ponds only during periods when the spillways from the ponds are actively flowing over the top board. Water is also available from the outfall of Sewage Treatment Plants #4 and #715. (OP)

E. After each well is completed, if it is a producer, the area shall be enclosed with a permanent fence. The enclosed area shall be limited to 1/4-acre or less, unless a larger area is mutually

agreed to by the Commander and the lessee. The permanent fencing around the well sites shall be 72-inches woven wire utilizing steel post. Fencing should conform to Army standard FE-6 and will include a smooth clear zone extending 10 ft. to the inside and 20 ft. to the outside. Fence gates shall be kept locked and the lessee or operator shall furnish the Commander with keys to all locks. Vegetation will be controlled inside and outside of the enclosure by the lessee to preclude a fire hazard. Standards and methods employed to control vegetation will be negotiated between the lessee and the Commander. Responsibility for vegetation control by the lessee shall extend to an area 20 ft. outside the perimeter of each fenced site. (OP)

F. If the drilling does not result in a producing well, the hole shall be plugged and the area returned for installation use. In the event a producing well is later abandoned, the lessee or operator shall plug the well, remove its facilities, and restore all grounds to their original condition, including lime, topsoil, seeding, and fertilizing. Seed mix shall be approved by the Installation Commander. The plugging ow all wells, both dry holes and depleted producers, shall be accomplished in accordance with plugging programs approved by the Bureau of Land Management, Milwaukee District Office pursuant to the Oil and Gas Operating Regulations, 43 CFR 3160. (OP)

G. The Commander will have the right to regulate the operations of the lessee to prevent any security, fire, safety, or environmental violations. The lessee or operator shall be required to clear and maintain fire breaks around drilling sites, roads, fences, pipelines, and other installations as the Commander deems necessary. (OP)

H. The total costs of cleaning any spill of pollutant caused by lessee or operator shall be borne by the lessee or operator. The lessee or operator shall reimburse the Army for any costs the Army incurs in helping clean a spill, and any court, legal, or fine costs resulting from such a spill or incident caused by the lessee. (OP)

I. The lessee or operator shall provide completely installed and operable supply systems from the well to existing installation boiler plants if and when the government exercises its option to purchase its share of a well's production. (OP)

(1) Materials: All piping shall be schedule 40 steel. Welded joints are required for underground piping and for piping 2-1/2 inch diameter or more if above ground. Above ground piping of 2-inch diameter or less may be screw joints. All piping, valves, and fittings shall meet existing EPA requirements for high pressure gas distribution systems, as well as American National Standards Institute Specification

B31.8 (latest edition) for Gas Transmission and Distribution Piping Systems.

(2) Coating: All underground piping shall be coated with coal tar enamel and glass fiber reinforced felt or suitable factory-applied polyethylene or plastic coating (tape-wrapped at joints) to fully meet all EPA recommendations/requirements for gas distribution lines. Cathodic protection shall be provided by magnesium anodes or rectified/ground-bed systems. The government shall review and approve proposed systems and shall perform quality control testing and inspection of piping, coatings, and cathodic protection systems.

(3) Welding and General Workmanship: Welding and general workmanship shall be in accordance with all EPA and ANSI requirements for high pressure gas distribution systems.

(4) Size of Piping: Size of piping shall be sufficient to convey 50 percent of the well's production capability, or 2,500,000 cubic feet per day of gas, whichever is smaller, to the specified delivery point with a minimum delivery pressure of 50 psig and a maximum lineloss of 15 psig. Sizing shall be approved in advance by the government.

(5) Meters: Meters shall be provided, maintained, and calibrated by the lessee or operator, and shall be of the type and quality equivalent to those used by the alternate nongovernment gas purchaser.

(6) Pressure Regulators and Accessories: Pressure regulators and accessories shall be provided and maintained by the lessee or operator to automatically pass gas into the installation distribution system as required to maintain a system pressure of 50 psig at the delivery point.

(7) Construction Provisions:

(a) All buried pipelines or other facilities shall be marked with a standard warning tape located at least one foot above the buried item.

(b) Prior to excavation across any depot roads, the lessee shall arrange for and provide the following: (1) necessary detours (complete with temporary roadways, pavements, etc.); (2) barricades, fences, and temporary guard rails; and (3) signs, lights, and/or other necessary safety aides required for safe traffic movement. All such detours shall be inspected by the Depot Safety Manager and Law Enforcement/Crime Prevention Office before use of detour can be allowed for depot traffic.

(c) All hazardous work, e.g., cutting and welding, and use of power actuated tools, requires a Hazardous Work/Flame Permit issued by the Safety Office (telephone ext. 41261 or 41432).

(d) All of the lessee's equipment shall be equipped with an approved fire extinguisher.

(e) The lessee shall have approved type safety cans and only these shall be used for refueling or storage of small quantities of fuel.

(f) The contractor shall be responsible for safeguarding and maintaining safeguards on excavation.

(g) No excavation of more than one foot depth shall be undertaken without first notifying the Chief, Maintenance Division, USAISC-Seneca (telephone ext. 41299) and Electrician Foreman (telephone ext. 41456) and the Plumbing Foreman (telephone ext. 41740) for the locations and identification, as necessary, of buried power, communications cables, water, steam, and sewer lines at or in the vicinity of the excavation or job site.

(h) The contractor is responsible for providing all necessary occupational safety equipment for his and the subcontractor's employees.

(i) The contractor is responsible for conducting all operations in accordance with applicable Federal, state, and local regulations. Questions can be referred to the Safety Office (telephone ext. 41261 or 41432).

(j) The lessee shall be responsible for the security of any equipment, vehicles, supplies, and/or materials left on the job site.

(k) The contractor shall at all times keep the work area, including storage areas, free from accumulations of waste materials. Before completing the work, the Contractor shall remove from the work and premises any rubbish, debris, tools, scaffolding, equipment, and materials that are not the property of the Government. Upon completing the work, the Contractor shall leave the work area in a clean, neat, and orderly condition satisfactory to the Contracting Officer.

J. The company shall undertake explorative drilling at least of the medina formation depth at one location within a period of three

years. A minimum total of three exploratory wells shall be drilled to the medina formation before drilling is abandoned. Failure to complete these exploratory wells within a five-year period shall permit the government to revoke the lease and negotiate with another company. (OP)

K. The operation of any mobile/portable radio communications equipment, including Citizen Band (CB) radios, is prohibited until the lessee has coordinated with the Communications-Electronics Officer (C-EO), the Electromagnetic Radiation Hazard (EMRH) Control Officer, and the Security Officer's office and received approval to operate the equipment on depot. (OP)

L. No drill rig shall be used which represents a hazard to aircraft flight unless it is adequately marked in accordance with applicable regulations for both day and night operations. (OP)

M. All drilling wastes shall be removed from the installation. Drilling ponds shall be restored to original condition, vegetation, and contour. (OP)

N. The lessee will abide by all depot fire regulations. A handbook of general information regarding fire prevention by contractors working on the installation is at Attachment 3. (Fire Prevention) (OP)

O. As part of the site approval required in paragraph 1 a site safety review will be conducted by the AMC Field Safety Activity in Charlestown, Indiana. This requirement is contained in Army Material Command-Regulation 385-100.

P. The Directorate of Engineering and Housing (DEH) will be the single oveall point of contact if the lessee runs into trouble getting safety, security or other approvals from the various Depot organizations listed in these conditions and the following attachments. However, DEH is neither responsible for actually obtaining approval for the lessee nor for correcting technically deficient submissions. Submissions of all required data, plans, forms, etc., are solely the responsibility of the lessee.

ATTACHMENT 1 ENCLOSURE 2
SECURITY REQUIREMENTS FOR CONTROLLED/LIMITED AREA

1. IDENTIFICATION OF EMPLOYEES

A. The contractor shall furnish the Intelligence Officer, Seneca Army Depot, at least 72 hours prior to commencement of work under this contract, SDSSE-TIS Forms 268 containing the complete name and duties of each of his employees engaged in performance of work contemplated by this contract.

B. The contractor shall not assign any employee to the project if the Contracting Officer has made a determination that the assignment is detrimental to the interest of the government. The Contracting Officer shall give written notice to the contractor of any such determination or action.

C. In the event it becomes necessary for any reason to add employees or replace employees working for the contractor, the contractor shall advise the Intelligence Officer, Seneca Army Depot, of the change and shall provide notice of the new employee in the format prescribed in 1.1 above at least 72 hours prior to the arrival of the employee. The contractor must provide notice to the Intelligence Officer of the deletion of any employee from the job, regardless of whether the employee is replaced.

D. In the event visitations are required by employees of the contractor who are not permanently assigned to the work site or any other individuals sponsored by the contractor, 72 hours notification to the Intelligence Officer, Seneca Army Depot, Romulus, NY 14541, is required prior to their arrival on the premises.

E. Sub-contractors: The contractor shall furnish the Intelligence Officer, Seneca Army Deport, at least 72 hours prior to commencement of work under this contract, a list of all sub-contractors to be utilized on the project. This list will include the firm name and address and the name of a firm official or contact. All sub-contractor employees shall be identified to the Intelligence Office as stated in paragraph 1.1. above by either the contractor or a firm official representing the sub-contractor.

2. PROCEDURE TO ENTER AND DEPART WORK AREA

A. The following description is provided to inform the bidder of the general nature of the identification and search procedures upon entering and leaving the work area. All established rules and regulations concerning entry and departure shall be strictly enforced. The bidder shall include all costs in the bid for time expended in the identification and search process for all persons who will be engaged in the work and who will enter the work area.

No additional sums above the contract amount will be paid by the government to the contractor for time expended due to routine identification and search procedures.

B. Normally, all personnel involved in work under this contract will be identified as visitors when within the work area. At the entry control point to the work area, persons entering will be required to provide positive identification in the form of a driver's license or some other descriptive identification. When the individual is cleared for entrance into the work area, he will be logged in on the visitor log sheet and issued a controlled area visitor's badge. Upon completion of the work day, the individual(s) will depart through the entry control point and surrender the visitor's badge.

C. In some cases, the Security Officer may approve the issue of photographic controlled area badges to contractor personnel. In that event, the provisions of 2.2 above will not apply. The contractor shall be responsible and accountable for all badges issued to his employees or sub-contractor employees under his direction. The contractor shall report the loss of any badge issued and turn in any badge of an employee who leaves the employment of the contractor or otherwise is no longer engaged in conducting work under this contract. In the event an employee of the contractor loses a badge, the contractor shall pay a replacement fee of $10 per badge to the depot. In the event the contractor fails to return the badge of any employee leaving the employment of the contractor or who otherwise no longer requires access to the Depot, the contractor shall also pay a replacement fee of $10 per badge to the Depot.

D. Receipt of Supplies and Materials: The contractor shall notify the Intelligence Officer at least 48 hours in advance of the arrival of any shipment of supplies or materials. Notification shall include the type of material involved, the firm providing these supplies, and if possible, the name of the driver(s) who will be transporting the load. Suppliers who will have a recurring need for access may be identified as sub-contractors and their employees placed on permanent access rosters after identification to the Intelligence Officer as in paragraph 1.5.

E. All property, equipment, and miscellaneous items not considered normal working tools being transported into or out of the work area may be searched and are to be accompanied by DA Form 1818 issued by the Facilities Engineering Division.

F. Cameras, binoculars, or firearms shall not be brought on Depot unless prior authorization is received from the Security Officer.

G. The lessee shall become familiar with and abide by all installation security regulations and special provisions which hereby become a part of this agreement. The government shall not

be required to reimburse the lessee for any time or property lost through compliance or noncompliance with security regulations and operating procedures or due to military necessity.

H. Lessee personnel will not be allowed to drive privately-owned vehicles (POV's) in restricted areas. The lessee may provide company-owned vehicles for transportation of employees in and out of restricted areas. POV's are authorized for use in areas other than above upon approval of the Security Office. All vehicles and motorized equipment entering restricted areas will be equipped with a fire extinguisher.

I. Company and privately-owned vehicles operating on depot premises will display a valid mechanical/safety inspection sticker. If the state in which the vehicle is licensed or registered does not require a mechanical/safety inspection, the requirements of the State of New York will govern.

J. Should any lessee vehicle or mobile equipment be required to remain in the work area during nonworking hours, it will be parked not to interfere with other traffic and will be rendered immobile. Immobilizing of equipment means removal of keys, securing with a locking device, or disconnection of battery terminals, as appropriate. Under no conditions will heavy equipment be left in an operable condition overnight. No test/drilling, vehicle, materials, or other items will be set up, used, or parked within the 30 ft. inside clear zone, the 12 ft. outside clear zone of any perimeter barrier, or 50 ft. clear zone on all four sides of any building or structure storing ammunition and/or explosives.

K. All persons employed are subject to work stoppage and upon notification from responsible security force members, will be required to vacate their open work areas. In addition, those persons who are engaged in construction operations within the range impact area will not commence or continue work for duration of any weapons firing period.

3. VEHICLE REGISTRATION AND OPERATION

A. Privately-owned and contractor-owned vehicles to be operated on the Seneca Army Depot must be registered with the Security Officer's office within 48 hours after arrival at said installation. Evidence of compliance with the following automotive liability coverage must be presented upon application for vehicle registration of privately-owned vehicles.

Bodily Injury Liability	$10,000 per person $20,000 per accident
Property Damage	$ 5,000 per accident

C. Privately-owned and contractor-owned vehicles operating on the

depot premises are required to display a valid mechanical inspection sticker. If the State in which the vehicle is licensed or registered does not require mechanical safety inspection, the requirements of the State of New York in this respect will govern.

D. Should any contractor-owned vehicle or construction equipment be required to remain in the work area during non-working hours, it shall be rendered immobile.

4. WORK HOURS: The hours between 7:30 A.M. and 4:00 P.M. on Monday through Friday, excluding Federal holidays, are the normal working hours of the Depot personnel. Weekend or holiday work shall require prior approval of the Security Officer.

5. PRE-BID SITE VISITATION:

A. Firms interested in visiting the work site prior to submission of bids may do so by calling. Questions regarding security requirements should be directed to William Plate, extension 18-202 or 18-347. Work site visitation is between the hours of 7:30 A.M. and 2:00 P.M. Monday through Friday, excluding Federal holidays.

B. Interested bidders must submit to the Intelligence Officer, Seneca Army Depot, Romulus, NY 14541, written notice of their intent to visit at least three work days prior to their arrival. Such notice shall be on company letterhead and include the following:

(1) Full names and social security number of all company representatives who desire to visit the site.

(2) Date and time of visit.

6. PRIVACY ACT NOTICE: Authority for collection of the information specified in special provisions 1.4 and 5.2 above is title 10 US code __ Chapters 303 and 3012. The information is collected as a notice of visitation in order that necessary access lists may be formulated prior to arrival of visitors. The information is transferred to access lists and/or cards which are maintained at entry control points. Disclosure of the information is voluntary, however, failure to provide will delay or preclude access to the installation.

DARCOM-R 385-100

5-27. SAFETY REVIEW OF CONSTRUCTION PLANS

a. Safety approval of site plans and general construction plans will be obtained for the following types of facilities and operations:

(1) Facilities for manufacturing, handling, transporting, storing, testing, maintaining, or disposing of explosives, liquid propellants, ammunition, and lethal or incapacitating chemical agents.
(2) Facilities not involving hazardous materials which would be exposed to such hazards if not properly located, or for which a reasonalbe doubt might exist regarding exposure to hazards.
(3) Operations involving lethal or incapacitating chemical agents which have not been previously approved.
(4) Facilities for the testing of weapon systems and facilities for live fire training and practice.

b. Safety review and approval of plans are not required in the following cases:

(1) Rehabilitation of an existing standby facility in preparation ofor handling materials or conducting operations which the facility was originally designed to house, when explosives limits or chenical agent hazards will not be increased.
(2) Modification to or rehabilitation of existing facilities which does not introduce additional hazards or increase the net explosive capacity or chemical agent hazards of the facility.

c. Safety review and approal of site plans will be obtained prior to the initiation of final design. Approval of final safety reveiw submissions will be obtained prior to contractual obligation for construction or the initiation of Army construction work.

d. Site plans and safety submissions will be forwarded through safety channels to the major subordinate command level. Plans originating at depot activities will be forwarded through the parent depot safety office. The original and one copy will then be forwarded to the Director, USA DARCOM Field Safety Activity, Charlestown, IN 47111. Plans for facilities or operations involving lethal or incapacitating chemical agents will be addressed to the attention of DRXOS-C. Plans for facilities or operations involving explosives or ammunition will be addressed to the attention of DRXOS-ES-SP.

e. Drawings, plot plans, and similar technical data must be of good

quality, clearly printed and legible, and at a scale of one inch equals not more than four hundred feet. Drawings at a smaller scale may be submitted where it is necessary to show distances or structural relationships within the area surrounding the planned project.

f. Information to supplement plans, drawings, and specifications regarding facilities for explosives, ammunition, or liquid propellants will be submitted as shown in Figure 5-1. Supplemental information for site plans will include as a minimum that information addressed in items 1 through 4, 8, 10 and 11 of Figure 5-1. Supplemental information for final safety reviews will include, as a minimum, that information addressed in items 1 through 12 of Figure 5-1.

g. Site plans and safety submissions for operations involving lethal or incapacitating chemical agent filled items must be accompanied by a hazard analysis describing the scenario used in developing the Maximum Credible Event (MCE) and the methodology used for calculating the 1% lethality distance as related to the proposed activity.

ATTACHMENT 3 ENCLOSURE 2
FIRE PREVENTION

1. Fire Prevention procedures set forth herein shall be applicable to all contractors, their agents, representatives, and employees, performing work of any type, whether by government contract or otherwise, while at this installation.

2. For information purposes, the following facilities and services are available to all contractors, their agents, representatives, and employees, while performing work of any type at this installation:

   (a) Fire Department (in case of fire) DIAL #117

3. FIRE REPORTING PROCEDURES AND INSTRUCTIONS:

   All fires, regardless of type, size or nature, must be reported immediately to the Fire Department. This may be accomplished through use of either of the following methods:

   a. Telephone: To report a fire by telephone, Dial #117. Wait until fire department operator answers, then give the following information: (do not hang up until you are sure the alarm operator has correctly understood you and has repeated his information back to you)

      (1) Building Number (Whse. #20, door #1, west side, etc.).
      (2) This is ... state your name, badge number, employer's name.

   b. ADT and Acme Alarm Box: To report a fire in this manner, the following procedures must be adhered to:

      (1) Use metal pin attached at side of box to break the glass window.
      (2) When door of box is open, pull exposed lever all the way down and release. Do not close alarm box door.
      (3) Remain in the vicinity, when practical, to direct fire department to the scene of the fire.

4. Controlled Fires, Contractor Personnel will make every reasonable effort to protect government property against loss, or damage, by fire. Fires which have been readily extinguished by such personnel shall be reported to the Fire Department via telephone by dialing #316, whenever it is presumed reasonable safe to do so, and in order to avoid a general alarm.

5. GOOD HOUSEKEEPING:

   a. Good housekeeping is a prerequisite to fire prevention. Personnel will, whenever practical, maintain satisfactory conditions at all time. Constant supervision shall be exercised to assure the elimination of any fire hazards and the maintenance of conditions

in a satisfactory status.

b. To aid in the establishment of good housekeeping procedures, and unless otherwise approved by the Commanding Officer, or Post Fire Marshal, the following regulations will be complied with:

(1) All attics, shops, warehouses, store rooms, basements, and areas adjacent thereto, will be kept free from accumulation of trash, rubbish, or unnecessary combustible materials. Attics will not be used for storage purposes.
(2) All trash, rubbish, and waste materials, will be kept in metal covered containers and accumulations removed daily or as often as may be necessary to comply with good housekeeping standards.
(3) Cloth, burlap, or paper sacks, wood or paper boxes will not be used as trash receptacles.
(4) Trash or paper will not be stored temporarily under stairways or in closets.
(5) Working areas will be polished daily and left in a fire-safe manner at the close of each working day. Rubbish, debris, and other combustible materials, must be properly disposed of prior to the termination of any contract.
(6) Clothing, rags or other flammable materials, will not be stored in the vicinity of heating units, placed on hot radiators, or hung on sprinkler pipes. All clothing will be neatly hung up, or otherwise properly stored in metal cabinets or containers.
(7) Clean rags or dirty rags will be properly segregated and stored in metal-covered containers on the exterior of buildings. The same regulations are applicable, and shall be enforced, in all areas requiring the use of dusting, wiping, polishing, and waxing cloths, and/or rags.
(8) In all areas where smoking is permitted, good housekeeping rules will be enforced at all times.

6. SMOKING

a. An absolute "NO SMOKING" rule will be in effect under the following circumstances, and unless otherwise approved by the Post Fire Marshal:

(1) Smoking will be permitted at distance greater than 50 feet from stored materials or any flammable liquids.
(2) Smoking will be permitted within 50 feet of warehouses or open storage materials, but only within certain designated areas approved by the Post Fire Marshal. If such places are designated, it will be the responsibility of personnel in charge to see that inspections are made at regular intervals to insure that all discarded smoking materials have been properly extinguished or otherwise disposed of.

7. FLAMMABLE LIQUIDS AND MATERIALS:

a. The standards of the Board of Fire Underwriters and the National Fire Protection Association shall be applicable to all contractor personnel whenever, and wherever the use of these types of materials are required either for storage transfer, cleaning, or other using purposes, while at this installation. Emphasis are particularly stressed on the following:

(1) Prior to the use of any such materials, approval must be obtained from the Fire Department.
(2) Storage of flammable liquids in open type containers, or in containers, other than approved type safety containers, is prohibited.
(3) If portable containers are used for refueling, they shall be approved safety cans with flame arrestor screen, not exceeding 5 gallon capacity.
(4) If portable wheeled tanks are used (50 to 60 gallon capacity), they shall be of a type approved by Underwriter's Laboratories or other recognized testing agency.
(5) During the transfer of flammable liquids, all grounding connections must be properly affixed and/or attached.
(6) Containers will be properly identified, be of sound construction, approved safety type containers only, free of leakage, and/or other defects. Glass containers are strictly forbidden.
(7) Gasoline will at no time be used for cleaning purposes while at this installation.
(8) At no time will cleaning agents or materials having a flash point less than 140 degrees be used on the interior of buildings.
(9) Gasoline and other highly flammable liquids shall at no time be used, handled, or transferred during the presence of open flame, flame producing devices, or in areas wherein flames are produced.
(10) Careless handling of those liquids and materials is strictly forbidden, where their use is required, and when approval for same has been granted, all due caution and care will be exercised. Their usage in interiors of buildings shall be restricted in quantity to amounts necessary to meet daily requirements.
(11) The absolute "NO SMOKING" rule shall be in effect in all areas where materials of this type are being stored, or while they are being used or transferred.
(12) Operators of vehicles transporting or dispensing gasoline will at all times remain at their vehicle during loading and unloading operations. Hose nozzles will at no time be blocked in the open position to allow the free flowing of the liquid.
(13) Fire Department permission must be obtained prior to the storage of flammable liquids in large quantities.
(14) At no time will saw dust or wood shavings be used for absorbing flammable liquids, where spillage of this type

materials occur. In the event of spillage in small amounts the desirable agents to be used are Speedy-Dry Sand, or Dirt. Whenever spillage occurs in large amounts, personnel in the immediate vicinity will be notified and alerted to the danger, the Fire Department must be immediately informed, and the area properly posted, barricaded, or otherwise banned for further use by anyone, until the arrival of the Fire Department.

8. OPEN FLAME DEVICE (Welding, Cutting and Burning):

a. Contractors, their responsible agents, representatives, or employees, shall be responsible for the safe operation of any and all such equipment and devices, as well as with the compliance to the following regulation and procedures:

(1) Upon receipt of fire department written approval, necessary precautions will be taken to guard against the occurrence of fire. Such precautions shall include the proper use of asbestos shields, fire resistant drop cloths, or tarps, metal shields, and other materials of a fire resistant nature.

(2) At no time will such devices or equipment be used in the presence of flammable liquids, or where their vapors are suspected.

(3) Equipment and Devices of this type shall, whenever practical, be restricted to outside areas.

(4) Suitable fire protection facilities in the form of First-Aid firefighting appliances (extinguishers) must be present, or attached to all such equipment and devices, prior to their use.

(5) Operators of all such equipment and devices, will remain a minimum distance of 25 feet from stored materials of combustible nature.

(6) Operators of welding and cutting (Oxyacetylene) equipment will be responsible for the proper bleeding of all hose lines and gauges, and the closing of valves on the tanks or cylinders prior to the departure from any such working areas.

(7) Operators of welding and cutting equipment, will upon completion of their work assignments inspect or check areas surrounding the immediate work vicinity for the purposes of extinguishing any live sparks which may have entered foreign areas.

(8) A flame permit Form SDSSE-PS 253 will be obtained from Safety Dept., and the Fire Prev. & Prot. Br. This form will be required prior to using any flame producing device or hazardous equipment. Fire Prev. & Prot. personnel will inspect the job site before, during, and after the job is completed. Fired Department will be contacted 24 hours prior to any welding or cutting operations and one hour prior to completion of job or end of day so inspection of

job site can be completed.

9. OPEN FIRES:

a. No open burning is permitted within the limits of the depot, except in the Ammunition Demilitarization designated and controlled area.
b. Disposition of all rubble, debris, waste materials, etc., when use of the regular dumping area has been approved by Chief, DFD, shall be in accordance with verbal instructions as issued by Chief DFD when approval is granted.

10. SALAMANDERS:

All equipment of this type, when required for use by contracting personnel while at this installation, shall be subject to the following regulations and procedures. Prior to their use approval must be received from the Fire Department.

a. Be firmly set or arranged to avoid accidental up-setting.
b. Be of heavy gauge metal construction.
c. Be provided with spark arrestor screens.
d. Be subject to inspections every 30 minutes.
e. Use coal or coke as a fueling agent.
f. Be properly attended at all times.

11. OIL FIRED HEATING UNITS:

Whenever equipment of this type is required for heating or drying purposes and when permission for the use of same has been granted, the following regulations will be compiled with:

a. All such units will be firmly arranged to avoid up-setting.
b. Units will be of a reasonable late model type, design, or construction.
c. All units will be properly protected and equipped with the required safety devices.
d. Proper type fuel will be used.
e. Watchman services will be provided for all such units at all times when in use.
f. Units will be subject to inspection every 30 minutes.

12. TAR KETTLES:

Tar kettles, when used within the limits of this installation, shall be governed by the following regulations and procedures:

a. Kettles will be of reasonably late model type, design and construction, and in good condition.
b. Heating units for such equipment will be properly protected and equipped with the required safety devices.
c. Kettles will be equipped with long handled covers for emergency

closing purposes.

d. Fire extinguishers, or appropriate type and size, and ready for use in an emergency, shall be visibly displayed at all times in areas where Tar Kettles are in use.
e. Kettles will not be permitted to operate in areas where flammable liquids are stored, or their vapors are suspected.
f. Kettles, when in operation, will be properly manned at all times to guard against overheating and boiling, and possible ignition.
g. Proper protective measure will be taken at the close of each working day, such as, polishing the immediate area, closing kettle covers, shutting off burners, etc., prior to leaving the area.

13. FIRST AID FIREFIGHTING APPLIANCES:

(Extinguishers)

It shall be the responsibility of the contractor, his agents, representatives, or employees, at any and all times, and unless otherwise permitted by the Commanding Officer, the Post Fire Marshal, or Fire Chief, to:

a. Provide any and all firefighting appliances (extinguishers) which may be required or deemed necessary to assure a reasonable amount of protection in the event of a fire.
b. Maintain such appliances in good working order at all times and ready for use in any emergency.
c. Assure that all employees are properly trained, instructed, or educated, in the use and limitations of such appliances.

14. VEHICLES:

a. Vehicles will not be parked within fifteen (15) feet of any temporary building, fire hydrant, fire alarm box, or fire department sprinkler system.
b. Only vehicles authorized by the Post Fire Marshal will be permitted on docks and within storage buildings, to load and unload. When in the process of loading or unloading, the vehicle driver will remain at the vehicle at all times in order to remove it in case of necessity.

15. TRAFFIC CONTROL:

When a fire alarm sounds, all traffic not connected with the fire party will immediately:

a. Pull to the right side of the road and stop.
b. Remain parked until the vehicles have passed, or until the sound of the sirens or alarm are no longer audible.
c. No contractor owned vehicle shall follow a fire truck or ambulance.
d. The drive of any contractor owned vehicle shall not park such vehicle within a radius of 500 feet of where the fire apparatus has stopped in answer to an alarm of fire; nor shall any vehicle

stand or park in such a position as to obstruct the passage of additional vehicles, hinder firefighting crews and apparatus, or hinder access to or from any building or area, or egress therefrom.

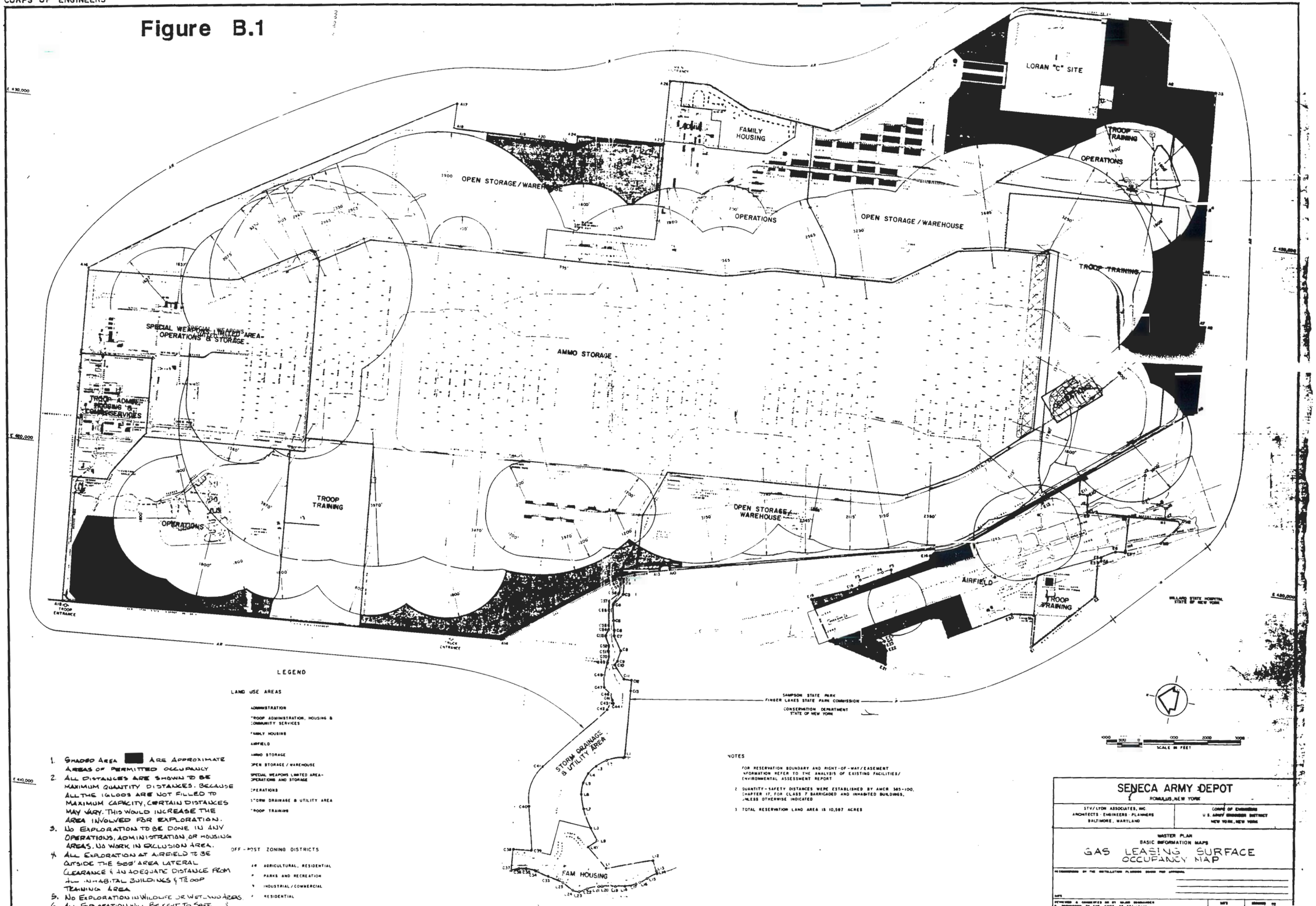
16. MISCELLANEOUS:

Contractors, their agents and/or representatives, when applicable, shall rigidly adhere to, and comply with, all government and depot regulations memorandum of instruction, directives, policies, procedures, standards, codes, or publication, and such other policies, standards, procedures, etc., published by the National Fire Protection Association and the National Board of Fire Underwriters, and which are not specifically mentioned herein.

CORPS OF ENGINEERS

U. S. ARMY

Figure B.1



LEGEND

LAND USE AREAS

- ADMINISTRATION
- TROOP ADMINISTRATION, HOUSING & COMMUNITY SERVICES
- FAMILY HOUSING
- AIRFIELD
- AMMO STORAGE
- OPEN STORAGE / WAREHOUSE
- SPECIAL WEAPONS LIMITED AREA - OPERATIONS AND STORAGE
- OPERATIONS
- STORM DRAINAGE & UTILITY AREA
- TROOP TRAINING

OFF - POST ZONING DISTRICTS

- AR AGRICULTURAL, RESIDENTIAL
- P PARKS AND RECREATION
- I INDUSTRIAL / COMMERCIAL
- R RESIDENTIAL

1. SHADED AREA ■ ARE APPROXIMATE AREAS OF PERMITTED OCCUPANCY
2. ALL DISTANCES ARE SHOWN TO BE MAXIMUM QUANTITY DISTANCES. BECAUSE ALL THE IGLOOS ARE NOT FILLED TO MAXIMUM CAPACITY, CERTAIN DISTANCES MAY VARY. THIS WOULD INCREASE THE AREA INVOLVED FOR EXPLORATION.
3. NO EXPLORATION TO BE DONE IN ANY OPERATIONS, ADMINISTRATION, OR HOUSING AREAS. NO WORK IN EXCLUSION AREA.
4. ALL EXPLORATION AT AIRFIELD TO BE OUTSIDE THE 500' AREA LATERAL CLEARANCE & IN ADEQUATE DISTANCE FROM ALL INHABITAL BUILDINGS & TROOP TRAINING AREA
5. NO EXPLORATION IN WILDLIFE OR WETLAND AREAS
6. ALL EXPLORATION WILL BE EFFECTIVE SAFE DISTANCES FROM ALL BUILDINGS, PUBLIC [illegible]

NOTES

FOR RESERVATION BOUNDARY AND RIGHT-OF-WAY/EASEMENT INFORMATION REFER TO THE ANALYSIS OF EXISTING FACILITIES/ ENVIRONMENTAL ASSESSMENT REPORT

2 QUANTITY-SAFETY DISTANCES WERE ESTABLISHED BY AMCR 385-100, CHAPTER 17, FOR CLASS 7 BARRICADED AND INHABITED BUILDINGS, UNLESS OTHERWISE INDICATED

3 TOTAL RESERVATION LAND AREA IS 10,587 ACRES

SCALE IN FEET

1000 500 0 1000 2000 3000

SENECA ARMY DEPOT

ROMULUS, NEW YORK

STV/LYON ASSOCIATES, INC. ARCHITECTS · ENGINEERS · PLANNERS BALTIMORE, MARYLAND	CORPS OF ENGINEERS U.S. ARMY ENGINEER DISTRICT NEW YORK, NEW YORK

MASTER PLAN

BASIC INFORMATION MAPS

GAS LEASING SURFACE OCCUPANCY MAP

AS DESIGNED BY THE INSTALLATION PLANNING BOARD AND APPROVED

DATE

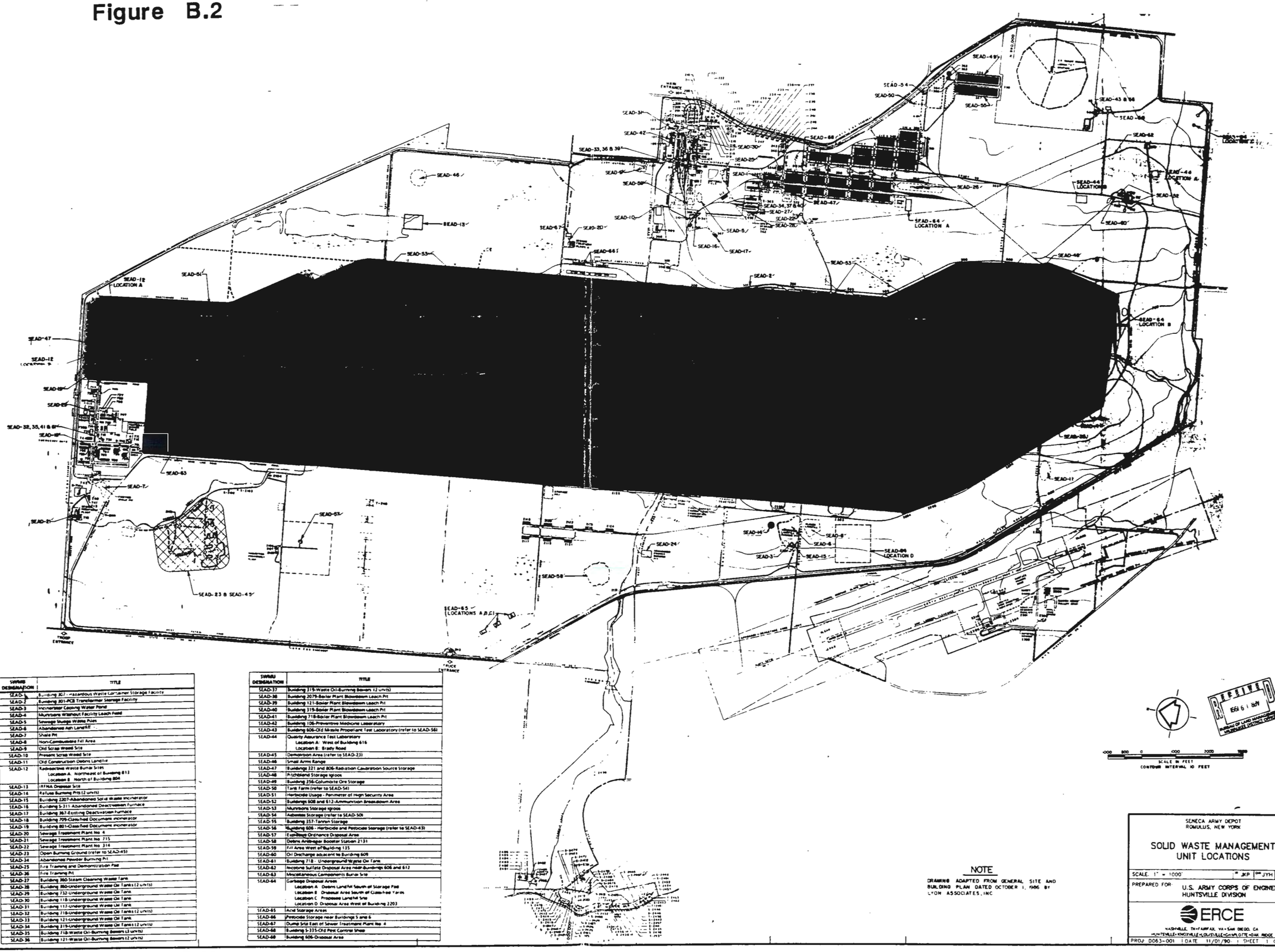
REVIEWED & CONCURRED BY ST. VALUE ENGINEERING

IS FORWARDED TO THE CHIEF OF ENGINEERS

DATE

B-33F1

Figure B.2



SWMU DESIGNATION	TITLE
SEAD-1	Building 307- Hazardous Waste Container Storage Facility
SEAD-2	Building 801-PCB Transformer Storage Facility
SEAD-3	Incinerator Cooling Water Pond
SEAD-4	Munitions Washout Facility Leach Field
SEAD-5	Sewage Sludge Waste Piles
SEAD-6	Abandoned Ash Landfill
SEAD-7	Shale Pit
SEAD-8	Non-Combustible Fill Area
SEAD-9	Old Scrap Wood Site
SEAD-10	Present Scrap Wood Site
SEAD-11	Old Construction Debris Landfill
SEAD-12	Radioactive Waste Burial Sites Location A: Northeast of Building 813 Location B: North of Building 804
SEAD-13	RFNA Disposal Site
SEAD-14	Refuse Burning Pits (2 units)
SEAD-15	Building 2307-Abandoned Solid Waste Incinerator
SEAD-16	Building S-311 Abandoned Deactivation Furnace
SEAD-17	Building 367-Existing Deactivation Furnace
SEAD-18	Building 709-Classified Documents Incinerator
SEAD-19	Building 801-Classified Documents Incinerator
SEAD-20	Sewage Treatment Plant No. 4
SEAD-21	Sewage Treatment Plant No. 715
SEAD-22	Sewage Treatment Plant No. 316
SEAD-23	Open Burning Ground (refer to SEAD-45)
SEAD-24	Abandoned Powder Burning Pit
SEAD-25	Fire Training and Demonstration Pad
SEAD-26	Fire Training Pit
SEAD-27	Building 360-Steam Cleaning Waste Tank
SEAD-28	Building 360-Underground Waste Oil Tanks (2 units)
SEAD-29	Building 732-Underground Waste Oil Tank
SEAD-30	Building 118-Underground Waste Oil Tank
SEAD-31	Building 117-Underground Waste Oil Tank
SEAD-32	Building 716-Underground Waste Oil Tanks (2 units)
SEAD-33	Building 121-Underground Waste Oil Tank
SEAD-34	Building 319-Underground Waste Oil Tanks (2 units)
SEAD-35	Building 718-Waste Oil-Burning Boilers (3 units)
SEAD-36	Building 121-Waste Oil-Burning Boilers (2 units)

SWMU DESIGNATION	TITLE
SEAD-37	Building 319-Waste Oil-Burning Boilers (2 units)
SEAD-38	Building 2079-Boiler Plant Blowdown Leach Pit
SEAD-39	Building 121-Boiler Plant Blowdown Leach Pit
SEAD-40	Building 319-Boiler Plant Blowdown Leach Pit
SEAD-41	Building 718-Boiler Plant Blowdown Leach Pit
SEAD-42	Building 106-Preventive Medicine Laboratory
SEAD-43	Building 606-Old Missile Propellant Test Laboratory (refer to SEAD-56)
SEAD-44	Quality Assurance Test Laboratory Location A: West of Building 616 Location B: Brady Road
SEAD-45	Demolition Area (refer to SEAD-23)
SEAD-46	Small Arms Range
SEAD-47	Buildings 321 and 806-Radiation Calibration Source Storage
SEAD-48	Pitchblende Storage Igloos
SEAD-49	Building 356-Columbite Ore Storage
SEAD-50	Tank Farm (refer to SEAD-54)
SEAD-51	Herbicide Usage - Perimeter of High Security Area
SEAD-52	Buildings 608 and 612-Ammunition Breakdown Area
SEAD-53	Munitions Storage Igloos
SEAD-54	Asbestos Storage (refer to SEAD-50)
SEAD-55	Building 357-Tannin Storage
SEAD-56	Building 606 - Herbicide and Pesticide Storage (refer to SEAD-43)
SEAD-57	Explosive Ordnance Disposal Area
SEAD-58	Debris Antiaircraft Booster Station 2131
SEAD-59	Fill Area West of Building 135
SEAD-60	Oil Discharge adjacent to Building 609
SEAD-61	Building 718 - Underground Waste Oil Tank
SEAD-62	Incinerine Sulfate Disposal Area near Buildings 606 and 612
SEAD-63	Miscellaneous Components Burial Site
SEAD-64	Garbage Disposal Areas Location A: Debris Landfill South of Storage Pad Location B: Disposal Area South of Classified Tanks Location C: Proposed Landfill Site Location D: Disposal Area West of Building 2203
SEAD-65	Acid Storage Areas
SEAD-66	Pentaborate Storage near Buildings 5 and 6
SEAD-67	Dump Site East of Sewer Treatment Plant No. 4
SEAD-68	Building S-335-Old Pest Control Shop
SEAD-69	Building 606-Disposal Area

NOTE

DRAWING ADAPTED FROM GENERAL SITE AND BUILDING PLAN DATED OCTOBER 1, 1986 BY LYON ASSOCIATES, INC

RECEIVED
FEB 16 1991
BUREAU OF LAND MANAGEMENT
ENVIRONMENTAL QUALITY OFFICE

SCALE IN FEET
CONTOUR INTERVAL 10 FEET

SENECA ARMY DEPOT
ROMULUS, NEW YORK

SOLID WASTE MANAGEMENT UNIT LOCATIONS

SCALE: 1" = 1000' | DR: JKP | CH: JYH | REV:

PREPARED FOR: U.S. ARMY CORPS OF ENGINEERS HUNTSVILLE DIVISION

ERCE
NASHVILLE, TN • FAIRFAX, VA • SAN DIEGO, CA
HUNTSVILLE • KNOXVILLE • LOUISVILLE • CHARLOTTE • OAK RIDGE

PROJ: D063-001 | DATE: 11/01/90 | SHEET 1 OF 1

SAMPSON STATE PARK LEASE STIPULATION

Number	Description of Lease Stipulations

1. STIPULATION: NO SURFACE OCCUPANCY except in the area shown on Figure B.3.
RESOURCE: RECREATION, SAFETY, VISUAL AND NOISE
OBJECTIVE: To protect developed facilities and forest users and to maintain visual and audible buffers.
EXCEPTIONS/MODIFICATIONS: A single surface occupancy corridor would be allowed to construct gas production, gathering and distribution lines plus access roads. The location of this corridor would have to be approved prior to the commencement of drilling activity. Written approval for these exceptions and modifications must be obtained from the Bureau of Land Management and the New York State Office of Parks, Recreation and Historic Preservation.
WAIVERS: This stipulation can not be waived.

LEASE NOTICES THAT APPLY TO ALL PROPOSED LEASE AREAS

Number	Description of Lease Notices
1.	Any activities proposed in or likely to affect wetlands will be subject to: identification and analysis of alternative sites; a public notification and comment period; and the provisions of any other Federal, State, or local laws and regulations as required under Executive Order 11990, Protection of Wetlands.
2.	Any activities proposed in or likely to affect floodplains will be subject to: identification and analysis of alternative sites; a public notification and comment period; and the provisions of any other Federal, State, or local laws and regulations as required under Executive Order 11988, Protection of Floodplains.
3.	Prior to the start of any surface disturbing activities the lessee may be required to conduct an inventory that is acceptable to the authorized officer, Bureau of Land Management, to determine the presence or absence of any State or Federal designated threatened or endangered species that might be affected by any proposed activities. Mitigation measures or movement may be necessary to avoid disturbance of critical habitat. The need for mitigation or movement will be based on consultation between the Bureau of Land Management, the New York Department of Environmental Conservation, the affected surface owner or agency , the lessee and the U.S. Fish and Wildlife Service.
4.	A cultural resources survey is required at the time an Application for Permit to Drill/Notice of Staking is submitted. Cultural resource surveys may also be required prior to the start of subsequent well operations which involve surface disturbance. Mitigation measures or movement may be necessary to avoid disturbance of cultural sites. The need for mitigation or movement will be based on consultation between the Bureau of Land Management, the New York State Office of Parks, Recreation and Historic Preservation the affected surface owner or agency, the lessee and the Advisory Council on Historic Preservation.

ADDITIONAL LEASE STIPULATIONS UNDER ALTERNATIVE B
THAT APPLY TO ALL PROPOSED LEASE AREAS

Number	Description of Lease Stipulations

1. STIPULATION: NO SURFACE OCCUPANCY within 200 feet of the channel of any stream.
RESOURCE: WATER QUALITY, FLOODPLAIN, RIPARIAN AREA
OBJECTIVE: To protect water quality , riparian vegetation and the floodplain landform.
EXCEPTIONS/MODIFICATIONS: Perpendicular pipeline and road crossings may be permitted. The 200 foot distance may be modified on gentle slopes along streams if the proposed site is not characterized by shallow groundwater or well drained stream deposits. The use of existing roads for access and pipeline corridors may be permitted. Written approval for these exceptions and modifications must be obtained from the Bureau of Land Management and the affected surface owner or agency.
WAIVERS: This stipulation can not be waived.

2. STIPULATION: NO SURFACE OCCUPANCY within 200 feet of the center line of all roads.
RESOURCE: RECREATION, SAFETY, VISUAL AND NOISE
OBJECTIVE: To protect developed facilities, dwellings and road users and to maintain visual and audible buffers.
EXCEPTIONS/MODIFICATIONS: Perpendicular pipeline or road crossings and the use of existing roads for access, and existing roads or utility corridors for pipeline routes may be permitted. The 200 foot distance from the centerline of roads may be modified if the proposed action does not compromise public safety, and visual/audible buffers. Written approval for these exceptions and modifications must be obtained from the Bureau of Land Management and the affected surface owner or agency.
WAIVERS: This stipulation can not be waived.

3. STIPULATION: NO SURFACE OCCUPANCY will be permitted in, and within 200 feet of wetlands.
RESOURCE: WATER QUALITY, WETLAND, RIPARIAN AREA
OBJECTIVE: To protect water quality, riparian vegetation and wetland ecosystems.
EXCEPTIONS/MODIFICATIONS: Perpendicular pipeline and road crossings may be permitted across sections of Riverine wetland and the 200 foot buffer may be modified if operations are proposed on gentle slopes, and the site is not characterized by shallow groundwater or well drained stream deposits. The use of existing roads for access and pipeline corridors may be permitted. Written approval for these exceptions and modifications must be obtained from the Bureau of Land Management and the affected surface owner or agency.
WAIVERS: This stipulation can not be waived.

4. STIPULATION: NO SURFACE OCCUPANCY on slopes equal to or greater than 21% within the lease area.
RESOURCE: WATER QUALITY
OBJECTIVE: To prevent excessive soil erosion, mass movement, slumping and sediment transfer.
EXCEPTIONS/MODIFICATIONS: The use of existing roads for access and pipeline corridors may be permitted. Written approval for this exception must be obtained from the Bureau of Land Management and the affected surface owner or agency.
WAIVERS: This stipulation can not be waived.

5. STIPULATION: NO SURFACE OCCUPANCY within 200 feet of all occupied dwellings and proposed homesites.
RESOURCE: SAFETY, VISUAL AND NOISE
OBJECTIVE: To protect existing and proposed dwellings and homeowners and to maintain visual and audible buffers.
EXCEPTIONS/MODIFICATIONS: The use of existing roads for access, and existing roads or utility corridors for pipeline routes may be permitted. The 200 foot distance from occupied dwellings and proposed homesites may be modified if an existing or proposed homesite is permanently abandoned. Written approval for these exceptions and modifications must be obtained from the Bureau of Land Management and the affected surface owner.
WAIVERS: This stipulation can not be waived.

CHAPTER IV.

C. POLLUTION SOURCE CONTROL PROGRAMS

8. MINERAL RESOURCE EXTRACTION

A. INTRODUCTION

This section deals with both the extraction of minerals by mining, and the production of oil and natural gas. Within New York State, both of these activities are regulated by the NYSDEC.

The majority of mining activity in New York State is devoted to the production of sand and gravel (90 percent) and limestone (7 percent). The effects on groundwater of mining and associated activities appear quite limited, but may be important in some local circumstances.

New York State is also a producer of oil and natural gas. Gas production occurs in the central and western portions of the State while oil production is confined primarily to an area in the southwestern corner of the State. More recently, exploration for natural gas has also taken place in the eastern portions of the State. Where oil and gas production exists, the potential threats to groundwater without regulation of these activities would be significant.

B. EXISTING PROGRAMS

The NYSDEC administers New York State's Mined Land Reclamation Program under Article 23, Title 27 of the Environmental Conservation Law (ECL). The program involves the permitting of all mining operations in the State from which more than 1,000 tons of mineral are extracted within twelve successive calendar months. DEC's rules and regulations require the preparation and filing of plans and, through the process of an application review and field inspection, the determination that the mining operation will be conducted in an environmentally sound manner and that the affected land will be returned to a condition which encourages future productive use upon completion of mining. Provisions for protection of ground and surface waters from potential adverse impacts of mining activity are included within the program.

Mining process wastewater discharges and effluents resulting from mine dewatering are considered to be industrial wastewater discharges and are regulated under the State's SPDES program.

The Mined Land Reclamation Law does not provide jurisdiction over the disposal of mine tailings or other solid wastes from processing plants located away from the mining site. Where appropriate, these wastes are regulated through the Department's Solid Waste Management Program.

The drilling and production of oil and gas, and solution mining, are regulated by the NYSDEC under Article 23 of the ECL. The present regulations are NYCRR Parts 550 through 559.

Prior to the mid-1960's, the drilling and production of oil and gas was not regulated by the State. At that time, awareness of the problems that can be associated with oil and gas development resulted in the passage of legislation in 1963 and the development of associated State regulations. While regulations were first adopted in 1966, major changes to the State legislation occurred in 1981 as a result of a series of reforms proposed by the DEC. In addition to bringing all oil and gas production wells under the same regulations for the first time (many wells had been grandfathered and had exclusions to some requirements under previous regulations), it also established the Oil, Gas and Solution Mining Advisory Board which is mandated to advise the Department on any proposed program actions. In 1984, the Department also negotiated new financial security requirements for plugging and abandonment of wells with the industry, resulting in an increase of from a $15,000 maximum to a $150,000 maximum.

The permit program (Oil and Gas Regulatory Program) administered under the law and the regulations includes a number of provisions to address the protection of both ground and surface water resources:

Part 550.5 -- Access to properties...

This provision enables Department employees to inspect oil and gas exploration, drilling, transportation and storage facilities to determine compliance with rules and regulations.

Part 551.4 -- Financial Security ...

This provision ensures that funds will be available to offset well plugging and surface restoration costs in the event that an owner or operator has failed to carry out permit obligations in compliance with rules, regulations, and Departmental orders.

Section 554.1 -- Prevention of pollution and migration...

This provision requires that the drilling, casing and completion programs adopted for any well shall be such as to prevent pollution of the land and/or of surface or fresh groundwater resulting from exploration or drilling.

This Section also requires the operator to submit a plan to the Department for preventing surface and groundwater pollution from gas and oil exploration and production activities.

Section 555.5 -- Plugging methods, procedures and reports...

This provides procedures for plugging wells which are to be abandoned, that will protect potable fresh water.

Section 556.5 -- Pollution and disposal...

This provides the requirements and procedures for preventing pollution of the land and/or surface or fresh groundwater resulting from producing, refining, transportation or processing of oil, gas and products, or in connection with solution mining.

A variety of more specific requirements are contained within the sections cited above. Additionally, the DEC in 1982 developed a series of "supplementary permit conditions for aquifer drilling" which are currently applied to all permits issued for drilling within "Principal" and "Primary" Public Water Supply Aquifer Areas (see Chapter I, Figure I-2 and Table I-3 for identification of Primary Public Water Supply Aquifer Areas). The adequacy of the DEC's regulatory requirements for oil and gas development in critical groundwater aquifer areas was the subject of detailed reviews in 1982 as the result of concerns over aquifer drilling in the Jamestown area. These conditions, as far as can be determined, are the most stringent aquifer drilling conditions in the Nation.

Disposal of waste products from gas and oil drilling and related activities is also accomplished under Part 554. In addition, depending on the method of disposal chosen by the applicant, a Part 360 Solid Waste Disposal Permit or Part 750 SPDES permit for disposal and/or discharge also may be required by the Department.

The Federal government (USEPA) also has regulatory authority over some aspects of oil and gas drilling and production. Specifically, Section 1025 of the Safe Drinking Water Act authorizes a permit program for the control of underground injections including those related to the recovery and production of oil and gas and solution mining. The coverage of the UIC Program includes wells which involve the following:

- the underground injection of brine or other fluids which have been brought to the surface in connection with oil or natural gas production;

- any underground injection for the secondary recovery of oil or natural gas (secondary recovery involves the injection of fluids into the producing oil or gas formation to force the oil or gas into the producing wells);

- any underground injection for the purpose of solution mining of minerals.

Although there are provisions in the Federal law by which states may acquire primary enforcement responsibility for UIC, New York State has chosen not to seek delegation of this program. New York State examined this issue in detail through a consultant contract administered by DOH in consultation with DEC. Although New York State's programs already provide regulatory coverage comparable to that provided by UIC, it was concluded that delegation would entail

significant additional administrative burdens which would not be fully reimbursed by the Federal government. Therefore, the responsibility for administering the program will remain with USEPA.

On May 11, 1984, EPA promulgated regulations (40 CFR Part 147) establishing federally administered programs for "non-primacy" states such as New York. The USEPA Region II office is presently using those regulations to administer the New York UIC program.

Within the program, injection wells associated with oil and gas production (both those used to inject fluids for the enhanced recovery of oil and gas, and those used to dispose of fluids brought to the surface in connection with oil and gas production) are known as "Class II" wells. Injection wells associated with the solution mining of salt are known as "Class III" wells.

Injection wells in existence prior to promulgation of the regulations may be "authorized" by rule and thus not require a permit. To maintain the authorization, however, the well owner/operator must comply with requirements relating to casing, cementing, and mechanical integrity; limitations on injection pressure; monitoring of injection pressure, volume, and quality of injection fluids; annual reporting to EPA; and plugging and abandonment of the well.

The regulations require that applicants for Class II permits for construction or conversion must, in addition to the above, review all wells that penetrate the injection zone within a surrounding "area of review" and repair any which may constitute pathways for contamination of drinking water sources.

C. DISCUSSION

This discussion will focus on the major issues which have been identified with mining and with oil and gas development as they relate to the protection of groundwater resources in New York State. The issues involving mining will be covered first.

1. Mining

There are roughly 1,700 known mines in New York State which produce more than 1,000 tons per year each. Roughly 1,500, or about 88 percent, of these are sand and gravel operations.

Another 70 mines, or 4 percent of the Statewide total, are limestone mines devoted to the production of aggregate material for road construction or resurfacing or in the production of cement.

The remaining mines, about 8 percent, are involved in the production of clay, emery, garnet, iron ore, slate and other minerals. There are ten underground mines in New York State. Of these, three are involved in the production of lead and zinc; there are three salt mines, two talc mines, one gypsum mine and one wollastonite mine. There is no coal mining in New York State.

As discussed above, mining operations are regulated under the Mined Land Reclamation Law. Additionally, where applicable, mining related wastewater discharges are regulated through SPDES and off-site disposal of mine tailings is regulated through the DEC's Solid Waste Management Program. The level of protection afforded by these existing regulatory controls, overall, appears largely adequate to protect groundwater from adverse effects of mining activity.

The mining of sand and gravel, and construction aggregates, comprise the predominant portion of mining activity in the State. Both of these are relatively good aquifer materials, and thus the mining of them commonly occurs in known or potentially high-yielding aquifer areas.

These types of mining often raise public concerns because of the perception that the mining and associated activities could be a significant threat to groundwater. These concerns include the possible alteration of local groundwater flow patterns; use and possible spillage of petroleum products at the site; direct exposure of groundwater to contamination from spills if major transportation routes are nearby; and possible illicit dumping of solid or hazardous wastes at the site. Reclamation of the site, if impermeable materials are used as fill, could also significantly alter local groundwater flow patterns.

There is no evidence to indicate that these potential threats are actually causing significant water quality or quantity problems at mining sites in New York State. Groundwater issues are routinely addressed as part of the current permit review process.

A second issue is the common practice of utilizing mining sites as landfill areas for construction and demolition material. The problems associated with construction and demolition dumping are discussed in Section IV.C.4., Municipal Solid Waste Management. In that Section it is recommended that the location of construction and demolition waste disposal sites in public water supply wellhead areas or primary water supply aquifer areas be prohibited, due to the inability to monitor the type of material dumped at these sites.

2. Oil and Gas

As mentioned previously, gas production occurs in the central and western portions of New York State while oil production is confined primarily to an area in the southwestern corner of the State (see Figure IV-6). Because of the rising price of energy in the late 1970's and,early 1980's, there was a significant increase in oil and gas drilling activity. From 1981 to 1984 there was an average of 500 to 700 wells drilled annually in the State, as compared with only 112 wells drilled in 1970. Recently, drilling activity has fluctuated with changes in crude oil prices and is expected to continue to do so in the near future. In 1986, only 264 permits were issues.

There are potential threats to both ground and surface water quality which may be associated with oil and gas production. These include the release or improper disposal of highly mineralized "brine," the accidental seepage loss of drilling fluids, and the leakage or spillage of oil. These can occur at an individual well which is not constructed and operated in accord with proper environmental safeguards. In addition, there is a significant problem posed by the existence of thousands of abandoned and unplugged oil and gas wells in the southwestern portion of the State, which were drilled prior to enactment of the New York State Oil, Gas and Solution Mining Law of 1963. These unplugged wells can provide a conduit for the seepage of oil and/or brine into groundwater and into existing water supply wells, particularly where "water flooding" or pressurized injection is used to force oil into production wells or to dispose of brine.

In an effort to comprehensively evaluate the State's oil and gas regulatory program, the Division of Mineral Resources is in the process of preparing a generic environmental impact statement. The three main purposes of the document are as follows:

- To demonstrate how the regulatory program meets the mandates of the State Environmental Quality Review Act;

- To serve as the primary information document of the State's oil and gas regulatory program;

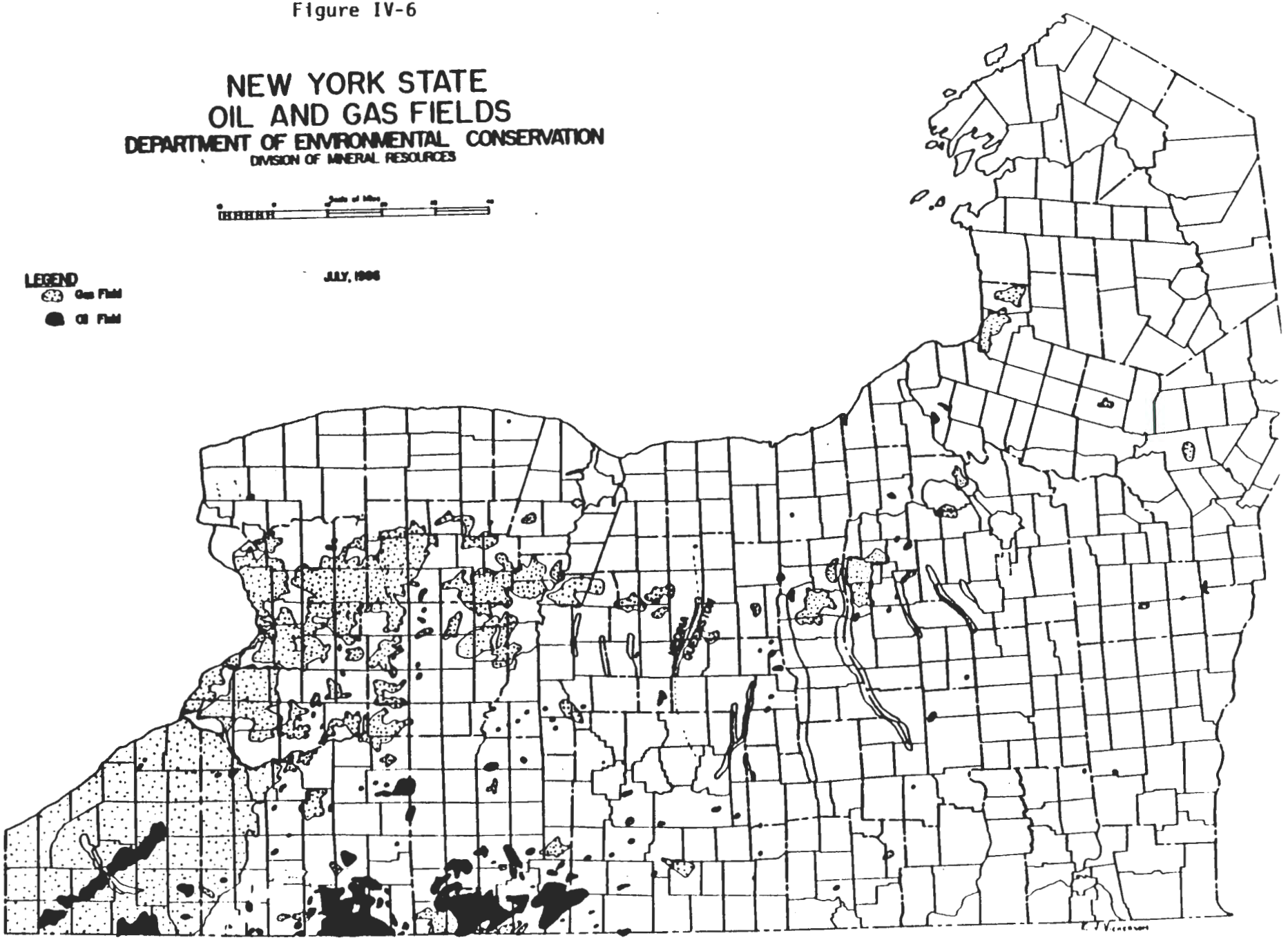
- To provide a framework for public discussion of the overhaul of existing regulations and to identify where new regulations are needed.

Although DEC's Oil and Gas Program regulations already contain a range of requirements to prevent both ground and surface water contamination, several issues relating to groundwater protection have been of concern. These include (a) the adequacy of program requirements for drilling in highly sensitive aquifer areas, (b) the environmentally safe disposal of brine, and (c) the issue of how to deal with abandoned wells.

Oil and gas drilling through sensitive, highly permeable aquifers was raised as an issue specifically in connection with the issuance of permits for drilling through the aquifer that serves the City of Jamestown for public water supply. In July of 1982, the City obtained a temporary restraining order halting all drilling in the aquifer. Subsequently, all parties agreed to a joint study to evaluate the impact on the aquifer from oil and gas development. The study was conducted by independent consultants to the City of Jamestown and the oil and gas industry, and presented to DEC for its consideration.

The study addressed all aspects of well design and construction; management of fluids at the site; brine disposal; accident prevention; and well abandonment (plugging procedures). The report verified that

Figure IV-6


NEW YORK STATE
OIL AND GAS FIELDS
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF MINERAL RESOURCES
JULY, 1986
LEGEND
Gas Field
Oil Field

the DEC's requirements are adequate to protect sensitive groundwater resources. As a result the temporary restraining order was lifted. At that time DEC made minor changes to the "supplementary conditions for aquifer drilling" which are applied to all permits for drilling within "Principal" and "Primary" Water Supply Aquifer Areas. DEC also provides special notice to local government on permit applications for drilling and rock fracturing within one-quarter mile of public water supply wells.

After a three year review, the "supplementary conditions for aquifer drilling" were again revised and strengthened in 1985, and in 1986 stricter casing and cementing guidelines were established for the entire State. These casing and cementing guidelines represented a major effort by the Division to research state-of-the-art techniques nationwide.

As discussed in Chapter I and also in Section IV.B.2., the "principal" aquifer areas in New York State are also sensitive, potentially high yielding aquifers. The major distinction between these and the "primary" aquifers is that significant development for major municipal water supplies has not yet taken place. The "supplementary conditions for aquifer drilling" are also applied to principal aquifers to provide a comparable level of protection for these areas.

The study discussed above identified the disposal of brine and other fluids associated with oil and gas drilling as a continuing problem that should be addressed. This has been recognized as a problem for years, but it has been exacerbated by the increase in drilling and production activities in the past decade.

Brine from oil and gas operations is treated as a special type of industrial waste by the Federal government and to some extent by New York State. Part 366 of the solid waste regulations specifically exempts this category of waste from the hazardous waste classification.

Current DEC policy allows for several brine disposal options. Any commercial injection well requires a State SPDES permit and also must meet Federal Underground Injection Control requirements. Discharging into a zone of potable groundwater is precluded. Another common method of brine disposal has been spreading on dirt roads for purposes of dust control. This has been allowed if approved by the local municipality. A Part 364 waste transporter permit from DEC is required. Brine may also be dischcarged through existing sewage treatment facilities, if water standards can be met. In the past, many gas well operators discharged brine from individual wells directly into so-called blow-down pits, from which the brine could enter groundwater. This option has been phased out by DEC's Division of Mineral Resources with a July 1987 deadline for compliance.

During 1986 the Division of Mineral Resources revised its Environmental Assessment Form (EAF) which is used by operators when applying for new drilling permits. As part of the revised form, operators are now required to indicate how brine will be stored and how it will be disposed of prior to any permit being issued. It is felt that this new requirement will minimize any brine disposal problems at new wells.

Another issue associated with oil and gas development relates to the thousands (DEC estimates more than 40,000) of abandoned wells that were drilled prior to enactment of the State's Oil, Gas, and Solution Mining Law of 1963. Many of those wells were drilled without the benefit of modern technology and can provide conduits for the movement of oil and/or brine into potable groundwater supplies. The problem is intensified where "water flooding," a process of injecting water into the producing formation to force oil into production wells, is used as part of present day oil production. Although problems do not appear widespread, a number of instances have occurred of individual private water well contamination due to oil leaking into groundwater through abandoned well casings.

The Oil, Gas, and Solution Mining Law establishes an Oil and Gas Account, which receives one-hundred dollars ($100) of every Oil and Gas Regulatory permit fee. The account is to be used to deal with problem and abandoned wells, but the amount of money in the account is not adequate to address the full magnitude of the problem.

A major contributing factor in permitting crude oil to enter water supply wells at or near the water table is improper water well construction. The susceptibility of water wells to contamination is aggravated by the use of undeveloped springs, well pits, insufficient well casings, and the absence of proper grouting of well casings. Additionally, faulty water well construction (like improper oil well construction) can provide a conduit for the movement of contamination from one subsurface formation to another. Other sections of this report (in particular, Section IV.B.3., on Groundwater Resource Assessment/Mapping and Section IV.G.2., on On-Lot Sanitary Wastewater Disposal) have discussed the desirability of a State licensing requirement for well drillers and/or the adoption of a State well construction code. The adoption of these measures would also contribute to alleviating problems in the oil and gas area.

Neither of the above can fully address the overall problem posed by abandoned oil and gas wells. It is not clear at this time that there is any entirely satisfactory answer to this overall problem. Simply locating all of these old wells may be impossible. Funding the plugging of these wells might be prohibitively expensive. This issue should also be a principal focus of future enforcement strategy.

D. PROGRAM ACTIONS

The following program actions do not represent individual agency commitments in the absence of adequate funding to allow for their implementation. A companion to this report is a separate Resource Assessment document which estimates cost, scheduling, priority ranking and lead implementation agency for these individual program actions.

1. The NYSDEC will continue to pursue legislative amendments to the Mined Land Reclamation Law to bolster the regulatory program including the addition of new regulatory staff.

2. DEC will continue to apply its "supplementary conditions for aquifer drilling" to all permits for oil and gas drilling within Principal and Primary Public Water Supply Aquifer Areas.

3. DEC will continue to apply its new casing and cementing guidelines for all new oil and gas wells being drilled.

4. DEC will seek legislation to require the licensing of water well drillers in the State as now required for Long Island, and to establish a Water Well Construction Code.

5. DEC will publish a draft Generic Environmental Impact Statement on the oil and gas regulatory program in 1987, including an assessment and review of existing and proposed new regualtions.

6. DEC will prepare an Oil Field Enforcement Strategy relating to old existing wells which will address the issues of:

   - problems associated with housekeeping and maintenance at existing oil production operations;

   - problems associated with abandoned and unplugged oil and gas wells.

MISSION AND SUMMARY OF SENECA ARMY DEPOT ACTIVITIES

The general mission of Seneca Army Depot is as follows:

To provide for the receipt, storage, stock distribution, and care and preservation of conventional ammunition and explosives, General Services Administration strategic and critical materials, and Office of Civil Defense engineer equipment.

To provide a special weapons activity to include the receipt, storage, and issue of primary and secondary items.

To perform depot level maintenance, demilitarization, and surveillance on conventional ammunition and special weapons.

To receive, inspect, test, classify, rehabilitate as required, preserve, store, and issue industrial plant equipment.

To command assigned Term of Enlistment (TOE) and Temporary Duty Assignment (TDA) units as well as provide logistical support and training assistance to U.S. Army Reserve and National Guard unit.

To process and provide for the movement of household goods, personal baggage and passenger services for military and civilian personnel residing in 15 counties in Central New York State.

To provide medical, dental, veterinary, commissary, post exchange, claims and legal assistance services for authorized personnel.

To operate a military Class C Airfield for logistics shipments, accommodating up to and including C-141 aircraft.

To provide logistical and administrative support for tenant units and other government agencies.

Assigned, attached, and tenant organizations are as follows:

1. Organizations assigned and attached to Seneca Army Depot:

   295th MP Company
   833d Ordnance Company
   HQ and HQ Company

2. Tenant activities stationed at Seneca Army Depot:

   USA Readiness Group - Seneca
   143d Ordnance Detachment (EOD)
   902d MI GP, Seneca Resident OFC
   Seneca BR OFC - 1st Region - USA CIDC
   WNY Section, VET - MEDDAC
   USACC - Seneca
   US Army Health Clinic - MEDDAC
   US Army Dental Clinic - MEDDAC
   US Army Commissary - SEAD

USA Engineer District NY - Seneca Resident Office
US Coast Guard Loran C Station - Seneca
DPDO Romulus Office - Site Scrap Branch
NE Flight Detachment - Seneca (AVN Sect.)
GAFB Exchange - SEAD
GSA - Office of Stockpile Management

Tenant units are a very important part of the Seneca Army Depot community. The tenant organizations perform a wide variety of support and service functions for the Department of the Army and Department of Defense. Activities of these tenant units include communications, navigation, health services, and numerous others. A chart showing the relationship of the various departments within the command of the depot and the tenant units is shown on the following page (Table I).

LAND USE SUITABILITY

The land use suitability analysis is one of the foundations of the master planning process. The existing land use patterns must be evaluated in view of the long term performance of the installation's assigned missions. The master plan of Seneca Army Depot must not only consider the current peacetime mission, but also provide for emergency expansion or mobilization.

The building suitability analysis which is primarily a function of the economic life of the existing structures is a major factor in determining the suitability of a particular land parcel. The availability and adequacy of the existing roadway network and utility systems to provide the necessary support for a particular activity in a particular land area are also major factors in defining the optimum land usage.

All decisions on land use suitability must consider the physical/ aesthetic constraints on the installation to new development. Physical constraints which can dramatically escalate the cost of new construction include such conditions as very steep slopes, poor soil conditions, high water table or marshland. New facilities should be sited so as to aesthetically conform to the installations natural features and existing structures.

One of the constraints to changing the existing land usage at Seneca Army Depot is the quantity-safety distance which must be maintained. Facilities which are not going to be utilized for either the handling, storage, maintenance, or disposal of ammunition must be sited outside this envelope.

The land use suitability is influenced by the environmental impacts associated with any changes to the existing land use plan. Any alternate or new land usage which will further disrupt or degrade the surviving natural habitats on the reservation or will intrude upon the surrounding community must be re-evaluated to see if the gain in operational efficiency outweighs the irreversible environmental damages.

Planning has been delineated into the following general categories as derived from AR 210-20.

- Continued Use, Built Areas
- Continued Use, Non-Built Areas
- Alternate Use Areas
- New Use Areas
- No Use Areas
- Hazardous Areas
- Areas of Potential Encroachments

Plate 6, Land Use Suitability, documents those areas on the installation which are recommended for Continued Use, both built and non-built, and those areas recommended for New Use. Areas of the installation which are considered Hazardous are shown in Plate 7. The criteria for assigning the above categories and the installation land areas which apply to each of these categories is discussed as follows.

Continued Use, Built Areas Recommendation

These areas are comprised of the permanent and semi-permanent buildings on the installation which are to be retained for their present usage. At Seneca Army Depot, these built-up areas contain established roadway and utility systems. Since the original natural environment has either been disrupted to a significant degree or destroyed, it becomes a matter of mitigating continuing adverse impacts such as air, runoff, and noise. It becomes both cost effective and economically beneficial to attempt, as far as practical, to limit proposed development to the built-up areas.

As can be seen in Plate 6, Land Use Suitability, all of the existing built-up areas of the reservation are recommended for Continued Use. All of the existing built-up areas are functional, in regard to the ongoing mission, with the exception of the Southwest Ammo Workshop Area, and conform to quantity-safety distance criteria. Although it is recommended that the buildings in the Southwest Ammo Workshop Area be demolished, a new complex with modern ammunition maintenance or demilitarization facilities could be constructed in this area.

Continued Use, Non-Built Areas Recommendation

These areas include parcels required for ammunition demolition, those used for open storage, and those reserved for recreational/open space. The pressure to site proposed facilities in these areas is a function of proximity to existing developed areas and lack of physical/environmental constraints.

Due to the hazardous nature of the materials handled at SEAD and the need to maintain proper quantity-safety distances, operational and storage facilities are spread out over the Main Post. Therefore, there is a great deal of land available for open storage or open space.

It is planned that all undeveloped parcels within the confines of the quantity-safety envelope surrounding the exclusion storage, ammunition storage, and operational areas be retained as non-built. The vast majroity of the non-built tracts outside of this envelope are also recommended for continued use, non-built. Existing natural habitats such as ponds and woodlands should be preserved. However, some of the parcels outside the quantity-safety envelope, which are designated as open storage, open space on the Existing Land Use Plan offer potential sites for New Use. These sites are addressed in more detail in New Use Areas, Recommendation.

Alternate Use Areas, Recommendation

Areas designated for possible alternate use fall into two categories. The first category are those parcels which currently contain outdated, outmoded temporary structures for which there is little current or projected future use. The second category of parcels recommended for alternate use are training areas in which the combination of proximity to developed areas and limitations imposed by the configuration of that particular parcel make an alternate usage more appropriate.

Since it is apparent that there are no parcels at SEAD that fall under these two categories, there are no areas of the reservation designated for Alternate Use on Plate 6, Land Use Suitability.

New Use Areas, Recommendation

Areas designated for new use are those parcels accessible to the built-up portions of Seneca Army Depot which are presently not experiencing major use and in general do not exhibit any major physical constraints to construction. Since conversion of these areas to developed land usage entails significant environmental impacts, the need for new facilities and the cost benefit thereof must be assessed in relation to the resulting environmental losses.

Those areas recommended for New Use are currently designated as Open Storage/Open Space on the existing Land Use Plan and are located in conformance with quantity-safety distance criteria. Since these sites are contiguous to existing built-up areas, utility-transportation networks are readily available. All of the parcels designated for New Use on the Land Use Suitability Plan are located in such a manner that existing woodland and pond environs should remain relatively undisturbed. Areas of SEAD recommended for New Use, should construction of new facilities become necessary, include:

- Lake Housing: parcel located south of Kendaia Creek and east of Liberator Road and Army Travel Camp.
  Projected Use: Family Housing (currently under construction - 30 units)

- North Depot: parcel located north of Access Road, west of fenceline, and east of Building S-714.
  Projected Use: Community Services

- North Depot: parcel located north of Access Road, west of fenceline, and east of Building 701.
  Projected Use: Administration or Community Services

- South Depot: parcel located west of East Patrol Road, south of West Romulus Road, north of East Kendaia Road.
  Projected Use: Warehouse Storage or Operations

- South Depot: parcel consisting of two parking lots which are located within the fenceline at the South Depot gate, west of Route 96.
  Projected Use: Community Services

- South Depot: parcel located south of Administration Area, north of Warehouse Area, and west of Family Housing units 233 to 243.
  Projected Use: Family Housing and/or Community Service

- South Depot: parcel located south of Buildings 339, 347, 348; east of Brady Road; and west of Buildings 356, 357.
  Projected Use: Warehouse Storage

No/Use Disposal Areas, Recommendation

An assessment of current installation land use patterns, installation security requirements, and projected land use requirements lead to the recommendation that no land areas on the depot be considered for disposal.

Hazardous Areas, Recommendation

Sites designated as Hazardous Areas on Plate 7 include the following:

- ammunition storage
- columbite ore storage
- proposed landfill

Additionally, the quantity-safety distance which must be maintained for facilities used for the maintenance, storage, or demilitarization of

ammunition and related materials, and the airfield clear zone preclude the use of the majority of the installation's land area for either Alternate Use or New Use.

Columbite ore which emits some radioactivity is stored in Building 357. The proposed landfill is sited in the southeast corner of the Main Post.

Sites designated as Hazardous Areas are recommended for either Continuous Use, Built or Continuous Use, Non-Built depending on the existing land usage. Hazardous substances stored within the installation are discussed in more detail in the Hazardous Substances section in the Environmental Assessement portion of this report.

Potential Encroachment Areas

Potential encroachment is defined as the extent and intensity of predictable future land use activities in the communities bordering the installation that would be detrimental to the successful accomplishment of the installation's mission. Potential encroachments can be divided into two categories; those that intrude upon the confines of the post and those that are outside the reservation boundary, yet affect the post.

Seneca Army Depot's geographic location in a sparesely populated, rural county minimizes the impact of surrounding communities upon the activity of the depot. The existing land use surrounding the depot is predominantly agricultural and institutional. It is the intent of both regional and county planning authorities that the rural nature of this portion of Seneca County remain intact. Therefore, it can be concluded that there are no land use activities in the surrounding communities, either present or future, which adversely intrude upon the activities of the depot.

BUILDING SUITABILITY

The nature of Seneca Army Depot's primary mission, that of operating a supply depot for the receipt, storage, issue, maintenance and disposal of assigned quantities has, over the years, resulted in a predominance of permanent buildings. The gross floor area of building construction types is as follows:

TABLE II
GROSS FLOOR AREA OF BUILDING CONSTRUCTION TYPES

	Number of Building	Square Feet
Permanent	798	4,464,409
Semi-permanent	71	91,405
Temporary	17	56,401

The building suitability analysis evaluates the structural stability and functional adequacy of the exiting buildings, then makes a recommendation relative to the future disposition of these buildings. These recommendations are made in accordance with AR 210-20 as follows:

- buildings or groups of buildings which should be retained for continued permanent use

- buildings or groups of buildings which are recommended for disposal or replacement

- buildings which should be converted to another usage

Buildings recommended for continued permanent use include the permanent and semi-permanent buildings on the installation with long term economic life after the year 2000. The "Building Information Schedule" indicates that nearly all the permanent buildings have an economic lifespan estimated beyond the year 2010. The average economic lifespan of the permanent buildings, by functional type, is as follows:

TABLE III
FINAL YEAR OF AVERAGE ECONOMIC LIFESPAN OF PERMANENT BUILDINGS

Function	Final Year of Average Economic Lifespan
Administration	2035
Family Housing	2010
Igloos	2060
Troop Housing	2035
Warehouses	2010

Nearly all the permanent buildings on the reservation, with the exception of the family housing units, are constructed of either concrete, block, or brick. The structural condition of these buildings ranges from fair to excellent, largely depending on age.

Family housing units and garages located in the Lake Housing Area account for the majority of semi-permanent buildings on the post. Originally constructed as summer cottages, these buildings have an economic lifespan to 1995, as indicated by the "Building Information Schedule." Recently, the condition of these family housing units has been upgraded by replacing doors and windows, and by installing insulation and new siding.

The preponderance of temporary buildings remaining on the installation are wooden structures which are World War II vintage. As these structures become deteriorated and their economic lifespan expires, they should be demolished. Permanent and semi-permanent buildings on the installation which are recommended for removal and/or replacement, mainly due to functional inadequacy include the following:

TABLE IV
PERMANENT AND SEMI-PERMANENT BUILDINGS RECOMMENDED FOR REMOVAL AND/OR REPLACEMENT

Building	Usage
2073	Rocket overhaul shop
2076	Storage
2077	Public toilet
2078	Ammunition Renovation Workshop
2079	Heating Plant
S-311	Deactivation Furnace
S-2074	Ammunition Maintenance
S-2084	Ammunition Renovation Workshop
S-2085	Ammunition Maintenance

At the present time, there are no buildings on the reservation which are recommended for conversion into another type usage. The recommendations regarding building suitability are illustrated on Plate 8, Building Suitability.

PHYSICAL/ENVIRONMENTAL CONSTRAINT COMPOSITE

The restraints to development of certain areas due to physical/environmental limitations has been summarized on one resource constraint composite map. These physical/environmental restraints include:

- quantity-safety distance criteria
- steep slopes
- natural habitats to be preserved
- ponds

It is this resource composite in combination with the building suitability analysis which when considered in the context of the requirements of the Depot mission forms the criteria for land use suitability recommendations. The proposed location of any new building or improvement can be sited on this map to determine the extent, if any, of physical/environmental constraints to construction at this location. This map provides a basis for siting new facilities so as to minimize both construction cost and damage to the environment, and conform to quantity-safety requirements.

At Seneca Army Depot, the dominant feature of this Physical/Environment Composite which effects the land use suitability analysis is the quantity-safety distance envelope which surrounds those areas already dedicated to the storage, maintenance, and disposal of ammunition and other related materials. The Physical/Environment Composite is shown on Plate 9.

MANAGEMENT PRACTICES AND MAINTENANCE PROCEDURES

Chemical Vegetation Control

Vegetation control is practiced on railroad and fenceline areas. Herbicides used are the following:

Fences - #1 Roundup (Glyphosate)
Princip 80-W (Simazine)
Arsenal

Restricted Area Fence and Some Utilities - Boracil (for total kill)

Railroads - Atrex-4-L (Atrazine)
- 2, 4-D (for broadleafs)

There is no expected change in vegetation control needs. Seneca Army Depot plans to use only biodegradable herbicides. Shrub control on earth covered structures is performed with 2, 4-D.

Erosion Control

Erosion of the soil is very slight. The land is rather flat; see discussion under Physical/Biological Features, Physiography - Topography and Plates 9 and 11. Present drainage channels are of long standing and have established width and depths adequate to provide for stream flow of low velocity. Stream beds are bed rock, mostly shale. No erosion control is practiced or required. Erosion on igloos is controlled by vegetation and is not considered soil erosion control for the purpose of this paragraph.

This area is not in a dust region. Adequate moisture, heavy vegetation, and hardstands in parking areas control all dust. No program of dust control is required beyond the spreading of calcium chloride on the few roads where road dust is a problem.

For areas of seasonal flooding see Plate 12, Drainage Map. Seasonal flooding at Seneca Army Depot does not induce erosion problems.

Construction actions are performed in accordance with the environmental protection constraints of the National Environmental Policy Act.

Drainage Requirements

Drainage requirements at Seneca Army Depot are small due to the slope of the area (see Physiography - Topography). Drainage systems (see Physical/ Biological Features) involve surface drainage, which includes existing streams and open ditches.

Developed areas are drained by storm sewers, which exit to the surface drainage system (maps and tabulations of storm drainage system are available at the installation as part of the Master Planning Program).

Prescribed Burning

Prescribed Burning is not practical at Seneca Army Depot.

Fire Protection

Fire prevention on the installation consists of inspection, education and preventive maintenance. Inspection is a continuing process. Members of the depot's Fire Department and of the Security Patrols inspect all areas for any fire outbreak or for any accumulation of debris that would create a fire hazard. These problem areas are reported to the Roads and Grounds Department for correction.

Education is through the use of daily orders bulletins, the installation newspaper, and releases from the Safety Manager. In addition, movies and lectures on fire prevention and suppression are occasionally given.

Preventive maintenance consists of maintaining all fire breaks by the Roads and Grounds Department and the correction of unsafe conditions by the same department as requested.

Fire prevention is also included in depot safety and conduct rules and regulations, for conduct in buildings as well as in the area. For example, no fire producing materials (lighters, matches, or spark producers) are allowed in the ammunition storage area.

Vegetative fires are detected by security patrol, guards, or depot personnel who might be in the aea of the fire breakout. Reporting is done by security patrol over shortwave radio, by guards and depot personnel over administrative and fire reporting telephone systems.

Control of fires is directed by the Fire Chief or Assistant. Fires in grass areas are answered with a pick-up and 500 GPM pumper truck, and if needed tanks and pumpers equipped with two-way radio. If fire is in igloo area, vent doors and stacks of igloos in immediate area involved are closed automatically and responding crews fight fire with back pack pumps, fire brooms, fire rakes, and shovels. If quantity of water is needed immediately, the 1,000 gallon tanker (Roads and Grounds Equipment) and necessary distributing equipment is used. Backfiring is started if necessary. Complete cooperation of the grounds maintenance personnel and equipment is always available. Firebreaks may be made with heavy equipment if necessary and other work as requested. This method, however, is believed seldom necessary due to

the vast network of road and railroad locations acting as firebreaks throughout the depot.

Mutual Aid, provided through written cooperative agreements with the New York State Fire Radio Network and the Seneca County Mutual Aid System provides assistance from thirteen fire departments in neighboring communities, of which about six departments could be on the depot within 10 minutes if requested.

The responsibilities of Army supervisory personnel are to furnish equipment to the fire department and to maintain the fire stations. Army personnel, however, do not play any active part in directing fire fighting.

Resource Requirements

Non-Recurring Work Items - Clear vegetation and limbs in Seneca Army Depot Exclusion Area, PR 13-85. Area to be redesignated as a limited area. Required removal of brush and trees up to 4" in diameter, removal of all branches on trees over 4" in diameter to a height of 3 meters.

Recurring Work Items -

	Annual Mandays
Mowing	798
Cemeteries	29
Bale Fields	10
Unimproved Grounds	521
Electric Distribution Lines	27
Herbicide	38
Aerate Lawns	9
Repair Winter Damaged Lawns (Renovate Turf)	33
Plant Wildlife Food Plots	11
Remove Undesirable or Unnecessary Trees and Shrubs	48
Debris Clean-Up	41
Prune Shade Trees	15
Plant Trees	8
Fertilize	2
	1,590

LAND MANAGEMENT PRACTICES

Planting and Feeding

Planting on improved grounds involves trees and shrubs (as described under Landscape Plan) and grass seeding as needed. Fertilization is performed on cover plots using 15-15-15 (for Wildlife Management).

Mowing

Mowed areas are shown on Appendix III.

The following information and requirements are given occupants of quarters:

1. SEADR 210-16 - Occupant Maintenance of Government Quarters.

"Para n.) Special Instructions: Occupants will mow and trim lawns and shrubbery. Grass will be cut to a height not less than 1-1/2 inches will be watered as required.

ELLIOT ACRES: Area will be from the street pavement edge, including ditch, fronting or adjoining a quarters, to not more than 50 feet, approximately, in the rear of the quarters. Side limits will be one-half the distance to the adjoining building.

LAKE: Area will be from the street or driveway edge to the Lake Shore. Side limits will be one-half the distance to the adjoining house. Between S-2427 and S-2429, and between S-2429 and S-2432, occupants need not exceed a 50 foot limits.

2. SEADR 420-5 - Self Help Program:

Para (3) Responsibilities:
(12) Mow and Trim Lawns

3. SEADR 420-14 - Family Quarters Fire Prevention Inspection Plan:

Para (4) General:
(6) Improper Storage of Flammable Liquids

Irrigating

See Irrigation System under Land Management and Grounds Maintenance. Newly planted trees, shrubs, and grasses are watered occasionally as needed.

Disease and Insect Control and Sanitation

All American Elm trees were harvested. Beech trees have exhibited a fungal disease, and Ash trees have exhibited dieback. For these reasons, these species are planned to be harvested under the Forest Management Plan.

Policing

Minor repairs to damaged turf, eroded soil, surface water drainage system, and debris removal is performed on a continual basis for the Roads and Grounds Department.

Work Programming

Work programming is planned to be performed and organized in accordance with Annual Work Plans - Land Management and Grounds Maintenance, TM 5-630. Funding for fertilizer for corn plots is from 21X5095 funds. All other funding support for all activities is from appropriated funds.

LANDSCAPING PLAN

Areas Landscaped

Landscaping activities were performed in 1982, 1983, and 1985. All landscape activities are performed by contractor services.

1982 - Around the Health Clinic and Building 103, ten diseased trees were removed and 17 Silver Maple trees were planted.

1983 - Along the Access Road to the gymnasium and restricted area, 26 Silver Maple and 25 London Plain trees were planted near existing trees. Six arborbitaes shrubs were planted next to the NCO Annex.

1985 - One 15-foot Colorado Blue Spruce tree was planted as a Christmas tree for the troops, next to their barracks (Building 703). 100 White Spruce (4-plus feet high) were planted along the Capehart Housing fenceline. Ten (each) Norway Maple, Silver Maple, Crimson King Maple, London Plain, and Skyline Thornless Locust were planted along Administration Avenue and as various replacements. (These were 2 - 2-1/2 inches d.b.h., 12 foot high trees).

Areas to be Landscaped

Administration (North and South Depot areas) and housing areas and their access roads are designated for future landscaping activities. The Lake Housing area is an area of scenic beauty which does not require landscaping; however, a thirty unit housing project that is currently under construction includes landscaping the site. Landscaping is not designated for semi-improved and unimproved grounds.

NORTH

ROUTE 96A

EMPLOYEE HOUSING

REGIONAL MAINTENANCE CENTER
SAMPSON MAINTENANCE
AND CENTRAL STORES

WATER PUMPING STATION

PARK OFFICE & CONTROL STATION

NATURE EDUCATION CENTER

MEADOW

GROUP CAMP

GROUP CAMP

PICNIC AREA

MARTHA

BEACH

MAIN AREAS

SENECA LAKE

LEGEND

------ Native American Land Claim Area

Proposed Lease Area

SAMPSON STATE PARK MASTER PLAN

SCALE: 0 200 400 800 1200

FINGER LAKES STATE PARK & RECREATION COMMISSION
R.D. 3, TRUMANSBURG, N.Y. 14886
DRAWN BY C.H. DUNLAP, LANDSCAPE ARCHITECT REV. APRIL 1976

POSSIBLE MITIGATION MEASURES FOR CONSTRUCTION ACTIVITIES ACROSS STREAMS

ROADS

1. Construct a low water crossing of properly sized aggregate placed in the stream bed and on either side of the crossing. Approaches should be covered a sufficient distance to prevent trucking of mud into the stream.

2. Construct a structural crossing consisting of culverts topped with aggregate, concrete or other approved materials.

3. Culverts should be equipped with trash racks to eliminate debris. Culverts should be installed at a grade consistent with the existing stream bottom.

PIPELINES

1. Pipeline crossings should be bored beneath streams if stream bottom and embankment conditions permit.

2. Double piping should be used for all pipelines at stream crossings.

3. Control valves should be located to shut off supplies across streams when leaks are detected.

4. Temporary cofferdams should be constructed to divert streamflow into a combination of one or more culverts. All streamflow must pass through the culvert.

5. Stream pipeline crossing trenches should be opened, installed and backfilled in one continuous operation not to exceed (8) hours.

ROADS AND PIPELINES

1. Upon completion of stream crossings the work area should be graded to match as uniformly as possible the elevation and contours of the undisturbed land immediately adjacent to the area of disturbance.

2. Final bank grading should be conducted by equipment operating from dry land adjacent to the stream bed.

3. Stream crossing operations should be started and completed in one continuous operation.

4. All disturbed areas above the ordinary high water level adjacent to stream crossings should be seeded immediately upon project completion and be mulched with hay or straw to prevent erosion.

OIL AND GAS SITE BEST MANAGEMENT PRACTICES*

1. Stockpile Topsoil
2. Vegetative Soil Stabilization
3. Temporary Seeding
4. Permanent Seeding
5. Dormant Seeding
6. Sodding
7. Ground Cover
8. Salt Tolerant Plants
9. Mulching
10. Riprap
11. Stormwater Detention
12. Diversions
13. Waterway Stabilization
14. Subsurface Drainage
15. Drop Structures
16. Outlet Protection
17. Check Dams
18. Water Bars
19. Drainage Dips
20. Sediment Setting Facilities
21. Sediment Basins
22. Rock Dams
23. Sediment Traps
24. Sediment Barriers
25. Sediment Fence
26. Inlet Protection
27. Filter Strip
28. Vegetative Streambank Stabilization
29. Structural Streambank Stabilization
30. Temporary Streambank Stabilization

*More detailed descriptions of some of the BMPs listed above can be found in the New York Nonpoint Source Management Program (NYDEC, 1990) and the Draft Environmental Impact Statement on the Oil, Gas and Solution Mining Regulatory Program (NYDEC, 1988).

EROSION CONTROL TECHNIQUES

1. Avoid unstable or saturated soils.
2. Locate access roads and drill sites in areas that have a naturally dry aspect or exposure.
3. Crown and ditch roadway for natural drainage.
4. Provide drainage under the roadway for ditch relief, springs and seeps.
5. Utilize artificial road stabilization fabrics as a support to keep the road surface materials from sinking into the soil.
6. Construct diversion ditches or dikes above cleared areas to keep upland waters from flowing onto or across disturbed areas.
7. Construct an interceptor ditch below cleared areas and on slopes approaching streams. Use these ditches to collect sediment laden runoff and direct ditches to sediment traps or natural filter areas.
8. Place crushed stone along access roads before they intercept public roads to minimize soil displacement.

More detailed design criteria are outlined in the United States Department of Interior Bureau of Land Management and United States Department of Agriculture Forest Service, Surface Operating Standards for Oil and Gas Exploration and Development (RMRCC, 1989).

POSSIBLE DESIGN TECHNIQUES FOR MITIGATING VISUAL IMPACTS

1. Reduce the size of cut and fill slopes by selecting sites with less slope, following existing grades, minimizing the size of the area or disturbance and prohibiting dumping of excess material on downhill slopes.

2. Reduce earthwork contrasts by rounding sharp edges, retaining rocks and trees, shaping cuts and fills to blend with the existing landform, locating projects away from prominent topographic features and designing sites to take advantage of existing screens.

3. Minimize the impact to existing vegetation by using irregular clearing shapes, leaving seed trees, feathering/thinning edges, disposing of all slash, utilizing existing roads and limiting work to the approved construction area.

4. Minimize the number of visible structures by centralizing dehydration units, compressor sites and tank batteries.

5. Minimize structure contrast by using earth-tone paints, selecting paint finishes with low levels of reflectivity and burying structures.

6. Minimize the impact of pipeline or powerline crossings by making crossings at right angles, setting back structures at a maximum distance from the crossing, leaving vegetation along the roadside or trailside, minimizing viewing time and utilizing natural screening.

7. The value and limitations of color should be considered prior to selecting paint for structures.

   - Color is most effective within 1000 feet. Beyond that point the reflective characteristics determine visibility and visual contrast.

   - Using color has limited effectiveness (in the background distance zone) in reducing visual impacts on structures that are silhouetted against the sky.

   - Painting structures somewhat darker than the adjacent landscape will compensate for the effects of shade and shadow.