



MEMORANDUM
Department of Natural Resources

STATE OF ALASKA
Division of Oil & Gas

DATE: September 13, 2005

TO: Distribution List

FROM: Patrick S. Galvin 
Petroleum Land Manager

SUBJECT: Final ACMP Consistency Determination for Proposed Gas Storage Lease Application (ADL 390776), Pretty Creek Unit

The Alaska Department of Natural Resources (ADNR), Division of Oil and Gas (DO&G), has reviewed the proposed gas storage lease application for consistency with the Alaska Coastal Management Program (ACMP). Union Oil Company of California (Unocal) proposes to store natural gas in two gas sand horizons within a gas storage reservoir area utilizing existing gas wells and facilities located approximately 30 miles west of Anchorage in the Susitna Flats State Game Refuge. All of the lands within the proposed storage area are subject to existing oil and gas leases owned and operated by Unocal. The proposed lease area lies within Alaska's coastal zone, and has been reviewed for consistency with the Matanuska-Susitna Borough Coastal Management Plan (MSBCMP).

On June 24, 2005, DO&G initiated an Alaska Coastal Management Program Review for the proposed Gas Storage Lease. Agencies, local governments, coastal districts, the oil industry, environmental organizations, and the public were invited to comment on the proposed lease's consistency with the ACMP, and on any issues relative to the state's best interests regarding the proposal. Several entities provided comments. The Matanuska-Susitna Borough, Department of Planning and Land Use, commented that the project is consistent with stipulations of the MSBCMP. Trading Bay Oil & Gas, LLC identified a potential concern regarding consistency with the ACMP. This comment has been fully considered, and a determination has been made that ACMP consistency is not a concern regarding the issue raised. DO&G issued a proposed consistency determination under 11 AAC 110.255 on July 28, 2005.

Pursuant to 11 AAC 110.600, a state resource agency, the project applicant, or an affected coastal resource district that did not concur with the proposed consistency determination could request an elevation of the proposed determination to the department's director or commissioner. Instructions for how to initiate an elevation were provided in the proposed consistency determination. The deadline for requesting elevation was 5:00 p.m. Alaska time, August 4, 2005. No elevation requests were received.

A best interest finding for the proposed lease is valid for the length of the lease. However, proposed activities on the lease will be subject to ACMP consistency. The best interest finding for the proposed lease is being released concurrently with this final consistency determination.

DO&G will attach the mitigation measures and lessee advisories below, which are based upon the Cook Inlet Areawide 2005 Lease Sale mitigation measures and lessee advisories, as terms of the storage lease.

Mitigation Measures

The proposed gas storage lease is entirely within the Susitna Flats State Game Refuge (SGR). Management of the Susitna Flats SGR is the co-responsibility of ADNR (AS 38.05.027) and ADF&G (AS 16.20.050-060). For activities occurring within the refuge, the lessee will be required to obtain permits from both ADNR and ADF&G. The decision whether to grant an exception to these mitigation measures will be based on review of the Plan of Operations by the public and in consultation with appropriate state resource agencies. Mitigation measures subject to exceptions are noted with an asterisk (*), followed by the initials of the agency that must be consulted in any decision to grant an exception. Agency abbreviations are: ADF&G (Alaska Department of Fish and Game), ADEC (Alaska Department of Environmental Conservation), OHMP (ADNR/Office of Habitat & Management Permitting) and DMLW (ADNR/Division of Mining, Land & Water).

Operations within this refuge must comply with the terms and conditions of the lease and the regulations at 5 AAC 95. Where the requirements of this lease are more restrictive than the requirements of other sources, the provisions of this lease prevail.

General

1. Use of explosives will be prohibited in open water areas of fish bearing streams and lakes. Explosives must not be detonated beneath, or in close proximity to fish bearing streams and lakes if the detonation of the explosive produces a pressure rise in the waterbody greater than 2.5 pounds per square inch (psi) unless the waterbody, including its substrate, is solidly frozen.

Explosives must not produce a peak particle velocity greater than 0.5 inches per second (ips) in a spawning bed during the early stages of egg incubation. The minimum acceptable offset from fish bearing streams and lakes for various size buried charges is:

Charge Weight	Distance from Stream
1 pound charge	37 feet (11.2 m)
2 pound charge	52 feet (15.8 m)
5 pound charge	82 feet (25.0 m)
10 pound charge	116 feet (35.4 m)
25 pound charge	184 feet (50.1 m)
100 pound charge	368 feet (112.2 m)

Specific information on the location of these fish bearing waterbodies may be obtained by contacting ADF&G.

- 2.* Onshore exploration activities must be supported by air service, an existing road system or port facility, ice roads, or by vehicles which do not cause significant damage to the ground surface or vegetation.

Unrestricted surface travel may be permitted by the directors of DO&G, DMLW, and by ADF&G if an emergency condition exists.

Construction of temporary roads may be allowed. Temporary means that a road must be removed to the extent that it is rendered impassable or is otherwise rehabilitated in a manner such that any placed gravel remaining approximates surrounding natural features. Construction of permanent roads will be prohibited during the exploration phase. *Exception – DMLW, ADF&G

3.
 - a. Removal of water from fish bearing rivers, streams, and natural lakes shall be subject to prior written approval by DMLW, OHMP.
 - b. Compaction or removal of snow cover overlying fish bearing waterbodies will be prohibited except for approved crossings. If ice thickness is not sufficient to facilitate a crossing, ice and/or snow bridges may be required.
4. Water intake pipes used to remove water from fish bearing waterbodies must be surrounded by a screened enclosure to prevent fish entrainment and impingement. Screen mesh size shall not exceed 0.04 inches unless another size has been approved by OHMP and ADF&G. The maximum water velocity at the surface of the screen enclosure may be no greater than 0.1 foot per second.

Facilities and Structures

5.
 - a. The siting of onshore facilities, other than docks, or road and pipeline crossings, will be prohibited within 500 feet of all fish bearing streams and lakes. Additionally, siting of facilities will be prohibited within one-half mile of the banks of the Theodore and Beluga rivers. New facilities may be sited within the one-half mile buffer if the lessee demonstrates that the alternate location is environmentally preferable, but in no instance will a facility be located within one-quarter mile of the river bank. ADF&G concurrence will be required for siting within the one-half mile buffer. Road and pipeline crossings must be aligned perpendicular or near perpendicular to watercourses.
 - b. Lessees will minimize sight and sound impacts for new facilities sited less than one-half mile from river banks and in areas of high recreational use by (1) providing natural buffers and screening to conceal facilities; (2) conducting exploration operations between October 1 and April 30; and (3) using alternative techniques to minimize impacts.
6. The siting of new facilities in key wetlands and sensitive habitat areas should be limited to the extent possible. If facilities are to be located within these areas, the lessee should demonstrate to the satisfaction of the Director and ADF&G that impacts are minimized through appropriate mitigation measures.
- 7.* Measures will be required by the Director or ADF&G, after consultation with ADEC, to minimize the impact of industrial development on key wetlands. Key wetlands are those wetlands that are important to fish, waterfowl, and shorebirds because of their high value or scarcity in the region or that have been determined to function at a high level using the hydrogeomorphic approach. Lessees must identify on a map or aerial photograph the largest surface area, including reasonably foreseeable future expansion areas, within which a facility is to be sited, or an activity will occur. The map or photograph must accompany the plan of operations. DO&G will consult with ADF&G and ADEC to identify the least sensitive areas within the area of interest. To minimize impacts, the lessee must avoid siting facilities in the identified sensitive habitat areas. *Exception – ADEC.

- 8.* Impermeable lining and diking, or equivalent measures such as double-walled tanks, will be required for onshore oil storage facilities and for sewage ponds. Additional site-specific measures may be required as determined by ADNR, with the concurrence of ADEC, and will be addressed in the existing review of project permits or oil spill contingency plans (C-Plans).

Buffer zones of not less than 500 feet will be required to separate onshore oil storage facilities and sewage ponds from marine waters and freshwater supplies, streams, lakes, and key wetlands. Sumps and reserve pits must be impermeable and otherwise fully contained through diking or other means.

*Exception – ADEC, ADF&G.

- 9.* With the exception of drill pads, airstrips, and roads permitted under Measure 2, exploration facilities must be consolidated, temporary, and must not be constructed of gravel. Use of abandoned gravel structures may be permitted on an individual basis. *Exception – DMLW, ADF&G.
10. a. Wherever possible, onshore pipelines must utilize existing transportation corridors and be buried where soil and geophysical conditions permit. In areas where pipelines must be placed above ground, pipelines must be sited, designed and constructed to allow free movement of moose and caribou.
- b. Pipelines must be located upslope of roadways and construction pads and must be designed to facilitate the containment and cleanup of spilled hydrocarbons. Pipelines, flowlines, and gathering lines must be designed and constructed to assure integrity against climatic conditions, tides and currents, and other geophysical hazards.

Local Hire

11. To the extent they are available and qualified, the lessee is encouraged to employ local and Alaska residents and contractors for work performed on the leased area. Lessees shall submit, as part of the plan of operations, a proposal detailing the means by which the lessee will comply with the measure. The proposal must include a description of the operator's plans for partnering with local communities to recruit and hire local and Alaska residents and contractors. The lessee is encouraged, in formulating this proposal, to coordinate with employment services offered by the state of Alaska and local communities and to recruit employees from local communities.

Training

12. Lessee must include in any plan of exploration or plan of development, a training program for all personnel, including contractors and subcontractors, involved in any activity. The program must be designed to inform each person working on the project of environmental, social, and cultural concerns which relate to the individual's job. The program must employ effective methods to ensure that personnel understand and use techniques necessary to preserve geological, archeological, and biological resources. In addition, the program must be designed to help personnel increase their sensitivity and understanding of community values, customs, and lifestyles in areas where they will be operating.

Access

13. a. Public access to, or use of, the leased area may not be restricted except within the immediate vicinity of onshore drill sites, buildings, and other related structures. Areas of restricted access must be identified in the plan of operations.

- b. No lease facilities or operations may be located so as to block access to or along navigable and public waters as defined at AS 38.05.965(13) and (17).
14. Lease-related use will be restricted when the commissioner determines it is necessary to prevent unreasonable conflicts with local subsistence harvests and commercial fishing operations. In enforcing this term the division, during review of plans of operation or development, will work with other agencies and the public to assure that potential conflicts are identified and avoided. In order to avoid conflicts with fishing activities, restrictions may include alternative site selection, requiring directional drilling, seasonal drilling restrictions, and other technologies deemed appropriate by the commissioner.

Prehistoric, Historic, and Archeological Sites

- 15.
 - a. Prior to the construction or placement of any structure, road, or facility resulting from exploration, development, or production activities, the lessee must conduct an inventory of prehistoric, historic, and archeological sites within the area affected by an activity. The inventory must include consideration of literature provided by the Matanuska-Susitna Borough (MSB) and local residents; documentation of oral history regarding prehistoric and historic uses of such sites; evidence of consultation with the Alaska Heritage Resources Survey and the National Register of Historic Places; and site surveys. The inventory must also include a detailed analysis of the effects that might result from the activity.
 - b. The inventory must be submitted to the Director for distribution to Division of Parks and Outdoor Recreation (DPOR) for review and comment. In the event that a prehistoric, historic, or archeological site or area may be adversely affected by a leasehold activity, the Director, after consultation with DPOR and the MSB, will direct the lessee as to what course of action will be necessary to avoid or minimize the adverse effect.
 - c. Discovery of prehistoric, historic, or archaeological objects: In the event any site, structure, or object of prehistoric, historic, or archaeological significance is discovered during leasehold operations, the lessee must immediately report such findings to the Director. The lessee must make every reasonable effort to preserve and protect such site, structure, or object from damage until the Director, after consultation with the SHPO, has given directions as to its preservation.

Fish Bearing Streams

- 16. Under Title 41 of the Alaska Statutes, the measures listed below may be imposed by OHMP to protect designated anadromous fish bearing streams. Similar provisions will be imposed by the Director to protect non-anadromous fish bearing streams. Specific information on the location of anadromous waterbodies in and near the area may be obtained from OHMP.
 - a. Alteration of river banks will be prohibited.
 - b. Operation of equipment within riparian habitats will be prohibited.
 - c. The operation of equipment, excluding boats, in open water areas of rivers and streams will be prohibited.
 - d. Bridges or non-bottom founded structures will be required for crossing fish spawning and important rearing habitats. In areas where culverts are used, they must be designed, installed, and maintained to

provide for the efficient passage of fish.

Waste Disposal

17. Solid waste disposal:

- a. Solid waste generated from the development and/or operation of the lease areas shall be reduced, reused, or recycled to the maximum extent practicable. Garbage and domestic combustible refuse remaining following reuse or recycling must be incinerated where appropriate. Remaining solid waste shall be taken to an approved disposal site, in accordance with 18 AAC 60.

New solid waste disposal sites will not be approved or located on state property during the exploratory phase. Exceptions may be provided for drilling waste if the facility will comply with the applicable provisions of 18 AAC 60.

- b. The preferred method for disposal of muds and cuttings from oil and gas activities is by underground injection. AOGCC regulates both the Underground Injection Control (UIC) program and annular disposal of wastes.
- c. Discharge of drilling muds and cuttings into lakes, streams, rivers, and high value wetlands is prohibited. Surface discharge of drilling muds and cuttings into reserve pits shall be allowed only when it is determined that annular injection is not technically achievable. A solid waste disposal permit must be obtained from ADEC. If use of a reserve pit is proposed, the operator must demonstrate the advantages of a reserve pit over other disposal methods, and describe methods to be employed to reduce the disposed volume. On pad temporary cuttings storage will be allowed as necessary to facilitate annular injection and/or backhaul operations in accordance with ADEC solid waste regulations 18 AAC 60.

18. Wastewater disposal:

- a. Unless authorized by NPDES and/or state permit, disposal of wastewater into freshwater bodies, intertidal areas, or estuarine waters is prohibited.
- b. Disposal of produced waters to freshwater bodies, intertidal areas, and estuarine waters is prohibited.
- c. Disposal of produced waters in upland areas, including wetlands, will be by subsurface disposal techniques.
- d. Surface discharge of reserve pit fluids will be prohibited unless authorized in a permit issued by ADEC and approved by DMLW.

Gravel Mining

19. Gravel mining within an active floodplain will be prohibited. Upland sites will be restricted to the minimum necessary to develop the field in an efficient manner.

Special Areas

20. Since the lease area is wholly located within the Susitna Flats SGR, a legislatively designated Special Area, the following measures apply:
 - a. Surface entry for drilling and above ground lease-related facilities and structures will be prohibited within the primary shorebird area in Susitna Flats SGR. Surface entry may be allowed on uplands within the SGR. Directional drilling from adjacent sites may be allowed.
 - b. Exploration, development, and major maintenance within important Tule goose and trumpeter swan habitat in the Susitna Flats SGR and within the primary waterfowl area above mean high tide within the Susitna Flats SGR will be allowed only between November 1 and March 31, unless an extension is approved by ADF&G and DO&G. Routine maintenance and emergency repairs will be permitted on a year-round basis during the production phase. A detailed plan describing routine maintenance activities to be conducted between April 1 and October 31 must be submitted to ADF&G and DO&G for review and approval.
 - c. Gravel pads and wellheads are the only above ground structures that will be allowed within the primary waterfowl area above mean high tide and in important Tule goose and trumpeter swan habitat in the Susitna Flats SGR.
 - d. Construction activities within a refuge must utilize the best available technology to minimize the visual, biological, and physical impacts of these structures and must be approved in writing by ADF&G and the Director.
 - e. Surface discharge of produced waters will be prohibited.
 - f. Disposal of drilling muds and cuttings will be allowed only at upland sites approved by the Director and ADF&G, after consultation with DMLW and ADEC.
 - g. Facilities must be designed and constructed to prevent the spill and spread of hydrocarbons and to facilitate cleanup efforts.
 - h. Facilities must be designed to minimize the possibility of spills or fires resulting from vandalism or hunting accidents.
 - i. Upon abandonment or expiration of a lease, all facilities must be removed and the sites rehabilitated to the satisfaction of ADF&G and the Director. The departments may determine that it is in the best interest of the public to retain some or all of the facilities. Rehabilitation requirements will be identified in a Special Area Permit (AS 16.20.060).
 - j. Gravel roads will not be allowed during exploration unless an exception is granted as provided above.

- 21.* Surface entry will be prohibited within one-quarter mile of trumpeter swan nesting sites between April 1 through August 31. The siting of permanent facilities, including roads, material sites, storage areas, powerlines, and above-ground pipelines will be prohibited within one-quarter mile of known nesting sites. Trumpeter swan nesting sites will be identified by ADF&G at the request of the lessee. *Exception - ADF&G.
22. Lessees must disclose any requests for exceptions to these mitigation measures and advisories in their plans of operation and applicable permit applications.
23. Plans of operation submitted for review and approval must describe the lessee's efforts to communicate with local communities, and interested local community groups, if any, in the development of such plans.
24. Lessees must submit a plan of operations to the state for approval as required by 11 AAC 83.158. Where surface activities are proposed on non state-owned land, lessees must submit a copy of the plan of operations to the private surface owner. Plans of operation must describe the lessee's efforts to minimize impacts on residential areas and privately-owned surface lands.

Lessee Advisories

1.
 - a. Aircraft flying over the primary shorebird habitat within the Susitna Flats SGR should maintain a minimum altitude of 1,500 feet above ground level or a horizontal distance of one mile.
 - b. Aircraft flying over the primary waterfowl habitat above mean high tide within the Susitna Flats SGR should maintain a minimum altitude of 1,500 feet above ground level or a horizontal distance of one mile from April 1 to October 31. Human safety will take precedence over this provision.
2.
 - a. Because of the state's interest in encouraging clean air, lessees are encouraged to adopt conservation measures to reduce hydrocarbon emissions.
 - b. The state recognizes that in the long run sources of energy other than oil and gas will be needed. Lessee participation in conducting research on alternative energy sources is appreciated.
3. In populated areas where there is no local planning and zoning, ADNR may require, in approval of plans of operation, that permanent structures be designed to be compatible with the aesthetics of the surrounding area.
4. Bald eagles are protected under the Bald Eagle Protection Act (16 U.S.C. 668-668c) and the Migratory Bird Treaty Act of 1918 (16 U.S.C. 703-712) and are under authority of the U.S. Fish and Wildlife Service (USFWS). Lessees are responsible to ensure their actions do not take bald eagles. The Eagle Protection Act defines "take" to include disturbing birds. Any nests located within ½-mile of the project site must be mapped, and destruction of nest trees or locations is prohibited. If any nests are located within ½-mile of a project site, Lessees shall meet with the USFWS to review any site-specific concerns regarding the subject nest. USFWS generally recommends no clearing of vegetation within 330 feet of any nest. No activity should occur within 660 feet of any nests between March 1 and June 1. Between June 1 and August 31, no activity should occur within 660 feet of active eagle nests until after juvenile birds have fledged, unless specifically authorized by the USFWS. While the USFWS can recommend ways to avoid the take of eagles, final accountability lies with the party responsible for the action.

5. For projects in proximity to areas frequented by bears, lessees are encouraged to prepare and implement bear interaction plans to minimize conflicts between bears and humans. These plans could include measures to: (a) minimize attraction of bears to drill sites; (b) organize layout of buildings and work areas to minimize human/bear interactions; (c) warn personnel of bears near or on work sites and the proper procedures to take; (d) if authorized, deter bears from the work site; (e) provide contingencies in the event bears do not leave the site; (f) discuss proper storage and disposal of materials that may be toxic to bears; and (g) provide a systematic record of bears on site and in the immediate area.

CONCLUSION

Based upon the review of all currently available information, DO&G considers the Proposed Gas Storage Lease (ADL 390776), with mitigation measures and lessee advisories as described above, consistent with the ACMP.

Distribution List:

Kevin Tabler	Unocal
Susan Lee	Matanuska-Susitna Borough
Ben Greene	ADNR/OPMP
Kim Kruse	ADNR/OPMP
Christine Ballard	ADNR/OPMP
Mike Bethe	ADNR/OHMP
Mark Fink	ADF&G
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Patricia Bettis	ADNR/DMLW
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