

# Mitigation Measures and Lessee Advisories

## Mitigation Measures

AS 38.05.035(e) and the departmental delegation of authority provide the director, Division of Oil and Gas (DO&G), with the authority to impose conditions or limitations, in addition to those imposed by statute, to ensure that a resource disposal is in the state's best interests. Consequently, to mitigate the potential adverse social and environmental effects of specific selected lease related activities, DO&G has developed mitigation measures and will condition plans of operation, exploration, or development, and other permits based on these mitigation measures.

Under AS 38.05.035(e), ADNR has authority to apply the following mitigation measures developed for this Cook Inlet Areawide lease sale, to all oil and gas activities performed to access the state's leased mineral interest, regardless of the surface ownership status of the land from which the lessee seeks access.

Lessees must obtain approval of a detailed plan of operations from the Director before conducting exploratory or development activities (11 AAC 83.158). An approved plan of operations is the authorization by which DO&G regulates exploration, development, and production activities.

A plan of operations must identify the specific measures, design criteria, and construction methods and standards to be employed to comply with the restrictions listed below. It must also address any potential geophysical hazards that may exist at the site. Plans of operation must comply with coastal zone consistency review standards and procedures established under 6 AAC 50 and 80 including coastal district plans. Applications for required state or federal agency authorizations or permits must be submitted with the plan of operations. DO&G will require, as a condition of consistency approval, such modification or terms as may be necessary to ensure consistency with the ACMP standards.

These measures were developed after considering terms imposed in other Cook Inlet region oil and gas lease sales; fish and wildlife resource and harvest data submitted by ADF&G; environmental data relating to air and water quality, solid and liquid waste disposal, and oil spills submitted by ADEC; consensus items from the Cook Inlet Areawide stakeholders process, as well as comments submitted by the public, local governments, environmental organizations, and other federal, state, and local agencies. Additional project-specific mitigation measures are imposed if and when oil and gas lessees submit proposed plans of exploration, operation, or development.

In addition to compliance with these mitigation measures, lessees must comply with all applicable local, state and federal codes, statutes and regulations, and any subsequent amendments. Lessees must also comply with all current or future ADNR area plans and recreation rivers plans; and ADF&G game refuge plans, critical habitat area plans, and sanctuary area plans within which a leased area is located. Federal, state and local government powers to regulate the oil and gas industry are discussed in the "Governmental powers to Regulate Oil and Gas Exploration, Development, Production, and Transportation" Chapter Eight of this finding. In addition, Appendix B lists federal and state statutes and regulations that apply to lease activities.

Information to lessees relevant to the lease sale is also presented in the "Lessee Advisories," section B, which contain precautions which may apply to post-lease sale activities, and reflect existing local, state, and federal law or policy at the time of the sale.

Hereafter, wherever abbreviations are used they mean: Alaska Coastal Management Program (ACMP), Alaska Department of Environmental Conservation (ADEC), Alaska Department of Fish and Game (ADF&G), Alaska Department of Natural Resources (ADNR), Alaska Oil and Gas Conservation Commission

(AOGCC), Areas Meriting Special Attention (AMSA), Director (Director, Division of Oil and Gas), Division of Forestry (DOF), Division of Mining, Land and Water (DMLW), Division of Oil and Gas (DO&G), Division of Parks and Outdoor Recreation (DPOR), Kenai Peninsula Borough (KPB), Municipality of Anchorage (MOA), Matanuska-Susitna Borough (MSB), State Historic Preservation Officer (SHPO), and U.S. Fish and Wildlife Service (USF&WS).

Lessees are advised that portions of the sale area may be subject to special area permits by ADF&G to protect areas designated by the legislature as state game refuges in AS 16.20.010 -AS 16.20.080.

For those mitigation measures and lessee advisories that are within ADNR's authority, the Lessee may request, and the Director of DO&G may grant, exceptions if compliance with the mitigation measure is not feasible or prudent, or an equal or better alternative is offered. Requests and justifications for exceptions must be included in the initial Plan of Operations when one is required. The decision whether to grant an exception 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. Critical habitat areas and state game refuges are jointly managed by ADNR and ADF&G; exceptions to mitigation measures in these areas must be agreed to by both agencies. Agency abbreviations are: ADF&G (Alaska Department of Fish and Game), ADEC (Alaska Department of Environmental Conservation), DL (Division of Lands) and DOF (Division of Forestry).

Except as indicated, the restrictions listed below do not apply to geophysical activity on state land; geophysical exploration is governed by 11 AAC 96.

The following mitigation measures and advisories will be imposed on oil and gas activities in or on all Cook Inlet Areawide leased lands and waterbodies as a condition of the approval of plans of operation. If units are formed with leases issued under different mitigation measures, the most recent measures will most likely be applied to the whole unit.

### General

1. Oil and hazardous substance pollution control: In addition to addressing the prevention, detection, and cleanup of releases of oil, contingency plans (C-Plans) for oil and gas extraction operations should include, but not be limited to, methods for detecting, responding to, and controlling blowouts; the location and identification of oil spill cleanup equipment; the location and availability of suitable alternative drilling equipment; and a plan of operations to mobilize and drill a relief well.
2. Use of explosives will be prohibited in open water areas of fishbearing streams and lakes. Explosives must not be detonated beneath, or in close proximity to fishbearing 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 fishbearing 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)

There are numerous fishbearing streams and lakes within the sale area. Specific information on the location of these waterbodies may be obtained by contacting ADF&G.

3.\* 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 and DL, 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 - DL.

4.
  - a. Removal of water from fishbearing rivers, streams, and natural lakes shall be subject to prior written approval by DMWM and ADF&G.
  - b. Compaction or removal of snow cover overlying fishbearing 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.
5. Water intake pipes used to remove water from fishbearing 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 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

6.
  - a. The siting of onshore facilities, other than docks, or road and pipeline crossings, will be prohibited within 500 feet of all fishbearing streams and lakes. Additionally, siting of facilities will be prohibited within one-half mile of the banks of Harriet, Alexander, Lake, Deep and Stariski creeks, and the Drift, Big, Kustatan, McArthur, Chuitna, Theodore, Beluga, Susitna, Little Susitna, Kenai, Kasilof, Ninilchik and Anchor 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.
  - c. Surface entry will be prohibited in parcels that are within the Kenai River Special Management Area (KRSMA).
  - d. Surface entry will be prohibited on state lands within the Kenai National Wildlife Refuge. This term does not limit surface entry on other private lands within the refuge.
  - e. Lessees are prohibited from placing drilling rigs and lease-related facilities and structures within an area near the Kenai River composed of: all land within Section 36 in T6N, R11W that is located south of a line drawn from the protracted NE corner to the protracted SW corner of the section; all land within the western half of Section 31 in T6N, R10W and Section 6 in T5N, R10W; and all land within Section 1 in T5N, R11W.
  - f. A fresh water aquifer monitoring well with quarterly water quality monitoring should be required down gradient of a permanent storage facility unless alternative acceptable technology is approved by ADEC.
7. 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.
- 8.\* Measures will be required by the Director, after consultation with ADF&G and 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 - ADF&G, ADEC.
- 9.\* Impermeable lining and diking, or equivalent measures such as double-walled tanks, will be required for onshore oil storage facilities (with a total above ground storage capacity greater than 1,320 gallons, provided no single tank capacity exceeds 660 gal) and for sewage ponds. Additional site-specific measures may be required as determined by ADNDR, 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 and lakes, and key wetlands. Sumps and reserve pits must be impermeable and otherwise fully contained through diking or other means. \*Exception - ADF&G, ADEC.
- 10.\* With the exception of drill pads, airstrips, and roads permitted under Term 3, 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 - ADF&G, DL.

11. 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. Offshore pipelines must be located and constructed to prevent obstructions to marine navigation and fishing operations.
- c. 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

12. 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

13. 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

14. a. Public access to, or use of, the leased area may not be restricted except within 1,500 feet (457 m) or less 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).
15. 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, subsea completion techniques, and other technologies deemed appropriate by the commissioner.

### **Prehistoric, Historic, and Archeological Sites**

16.
  - 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 KPB, MOA, 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 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 KPB, MOA or 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.

### **Fishbearing Streams**

17. Under Title 16 of the Alaska Statutes, the measures listed below will be imposed by ADF&G below the ordinary high water mark to protect designated anadromous fish-bearing streams. Similar provisions will be imposed by the Director to protect non-anadromous fishbearing streams. Specific information on the location of anadromous waterbodies in and near the area may be obtained from ADF&G.
  - 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 efficient passage of fish.

### **Waste Disposal**

18. 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 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. Injection of non-hazardous oilfield wastes generated during development is regulated by AOGCC through its Underground Injection Control (UIC) Program for oil and gas wells.
  - 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 underground 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. Onpad 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.
19. 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 AOGCC and approved by DL.

#### Gravel Mining

20. 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

21. Management of legislatively designated state game refuges and critical habitat areas is the co-responsibility of ADF&G (AS 16.20.050-060) and ADNR (AS 38.05.027). For activities occurring within a refuge or critical habitat area, the lessee will be required to obtain permits from both ADNR and ADF&G.

Five state game refuges (SGR) and four critical habitat areas (CHA) are located within or partially within the sale area: The Goose Bay SGR, Palmer Hay Flats SGR, Anchorage Coastal Wildlife Refuge, Susitna Flats SGR, Trading Bay SGR, Redoubt Bay CHA, Kalgin Island CHA, Clam Gulch CHA, and Anchor River and Fritz Creek CHA.

Operations within these refuges must comply with the terms and conditions of the sale, the regulations contained in 5 AAC 95, and the requirements applicable to special area management plans. Where the requirements of this term are more restrictive than the requirements of other Sale 85 terms, the provisions of this term prevail.

- a. Surface entry for drilling and above ground lease-related facilities and structures will be prohibited within the Palmer Hay Flats SGR, Anchorage Coastal Wildlife Refuge, Clam Gulch CHA, Anchor River and Fritz Creek CHA, within the core Tule goose and trumpeter swan nesting and molting corridors along the Big, Kustatan, and McArthur rivers in the Trading Bay SGR and Redoubt Bay CHA, on tidelands and wetlands in the Goose Bay SGR and Kalgin Island CHA and within the primary shorebird area in Susitna Flats SGR, Trading Bay SGR, and Redoubt Bay CHA. Surface entry may be allowed on uplands within the Goose Bay SGR and Kalgin Island CHA; and surface entry for seismic surveys and similar temporary activities may be allowed in all of these areas, consistent with the Special Area regulations and applicable Special Area management plans. Directional drilling from adjacent sites may be allowed. Similar provisions will be imposed by the Director to protect primary shorebird habitat in Redoubt Bay south of the CHA.
- b. Exploration, development, and major maintenance within important Tule goose and trumpeter swan habitat in Trading Bay SGR, the Redoubt Bay CHA, and the Susitna Flats SGR, and the primary waterfowl area above mean high tide within the Susitna Flats SGR and Trading Bay 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 in the Susitna Flats SGR and the Trading Bay SGR and important Tule goose and trumpeter swan habitat in the Trading Bay SGR, Redoubt Bay CHA and Susitna Flats SGR.

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.

- d. Surface discharge of produced waters will be prohibited.
- e. Disposal of drilling muds and cuttings will be allowed only at upland sites approved by the Director and ADF&G, after consultation with DL and ADEC.
- f. Facilities must be designed and constructed to prevent the spill and spread of hydrocarbons and to facilitate cleanup efforts.
- g. Facilities must be designed to minimize the possibility of spills or fires resulting from vandalism or hunting accidents.
- h. 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 Habitat Special Area Permit (AS 16.20.060 and/or AS 16.20.530).



- i. Gravel roads will not be allowed during exploration unless an exception is granted as provided above.
  - j. 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. 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).
22. Surface entry into the critical waterfowl habitat along the Kasilof River is prohibited. Directional drilling from adjacent sites may be allowed.
- 23.\* 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.
24. If the lessee discovers a previously unreported active or inactive bald eagle nest site, the lessee must immediately report the nest location to the Director. Lessees are advised that oil and gas activities likely to disturb nesting eagles are subject to the provisions of the Bald Eagle Act of 1940, as amended.

Permanent facilities may be prohibited within one-quarter mile and will be prohibited within 500 feet of nests, active or inactive. Surface entry, fixed wing aircraft flights below 500 vertical feet, and helicopter flights below 1,500 vertical feet will be prohibited within 500 feet of active nests between April 1 and August 31. Human safety shall take precedence over this provision.

Temporary activities within 500 feet of nesting sites may be allowed between September 1 and March 31 if they will not alter bald eagle habitat.

Maps identifying documented nest sites will be made available by ADF&G, upon request.

25. The following measures will be required to minimize impacts on Kenai Lowlands Caribou Herd:
- a. Surface entry within the core caribou calving area is prohibited, except that surface entry for seismic exploration will be allowed from October 16 to March 31.
  - \*b. Exploration and development activities will be restricted or prohibited between April 1 and October 15 within the core caribou summer habitat, except that maintenance and operation of production wells will be allowed year-round. Permanent roads, or facilities other than production wells, will also be restricted or prohibited within this area. Facilities within the core caribou summer habitat that required year-round access must be located in forested areas, where practical.  
\*Exception - ADF&G
  - \*c. Pipelines must be buried within the core caribou summer habitat. \*Exception - ADF&G.
26. For projects in close 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 drill sites and the proper procedures to take; (d) if authorized, deter bears from the drill 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.

27. Prior to commencement of any activities, lessees shall confirm the locations of den sites that are actually occupied in the season of the proposed work with the Division of Wildlife Conservation, DF&G, based on data provided by DF&G. Exploration and development activities, begun between November 15 and March 31, will not be conducted within one-half mile of occupied brown bear dens, unless alternative mitigation measures are approved by DF&G. Occupied dens not previously identified by DF&G that are encountered in the field must be reported to the Division of Wildlife Conservation, DF&G, within 24 hours. Mobile activities shall avoid such dens by one-half mile unless alternative mitigation measures are approved by DO&G with concurrence from DF&G. Non-mobile facilities will not be required to be relocated.
28. To avoid possible adverse impacts to Kenai Peninsula brown bears, exploration activities will be allowed only between November 15 and March 31 within the brown bear movement corridors around Skilak Lake, Tustumena Lake, along the upper Anchor River drainage, and at the head of Kachemak Bay.
29. Lessees must disclose any requests for exceptions to these mitigation measures and advisories in their plans of operation and applicable permit applications.
30. 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.
31. 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. The use of explosives for seismic activities with a velocity of greater than 3,000 feet per second in marine waters is prohibited.
2. Lessees must include in their seismic permit applications a plan for notifying the public of their activities.
3. Forest clearing for seismic activity must be approved by the Director, after consultation with DOF and ADF&G.
4.
  - a. Aircraft flying over the primary shorebird habitat within the Susitna Flats SGR, Trading Bay SGR, and Redoubt Bay CHA must maintain a minimum altitude of 1,500 feet above ground level or a horizontal distance of one mile.
  - b. Aircraft flying over the Goose Bay SGR and the Palmer Hay Flats SGR, the primary waterfowl habitat above mean high tide within the Susitna Flats SGR and Trading Bay SGR, and the core

Tule goose and trumpeter swan molting and nesting corridors in Trading Bay SGR and Redoubt Bay CHA must 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.

5.
  - 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.
6. 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.
7. To ensure sufficient vegetative cover in Kenai Peninsula brown bear feeding concentration areas, lessees may be required to locate exploration and development facilities beyond the 500 foot buffer along anadromous fish bearing streams. This requirement will be considered during review of site-specific plans of operations, in consultation with DF&G.
8. If data indicate that brown bear movement will be hindered by development and production activities, lessees may be required to locate facilities outside of the Kenai Peninsula brown bear movement corridors around Skilak Lake, Tustumena Lake, along the upper Anchor River drainage, and at the head of Kachemak Bay. This requirement will be considered during review of site-specific plans of operations, in consultation with DF&G.