

SCOMM

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FISCAL NOTE

STATE OF ALASKA
2002 LEGISLATIVE SESSION

Fiscal Note Number: _____
Bill Version: HB 527
() Publish Date: _____
Dept. Affected: Natural Resources
BRU: Oil and Gas Development
Component: Oil and Gas Development
Component Number: 439

Revision Date/Time (Note if correction): _____
Title: Minto Flats Game Refuge
Sponsor: House Resources Committee
Requester: House Oil and Gas Committee

Expenditures/Revenues

(Thousands of Dollars)

Note: Amounts do not include inflation unless otherwise noted below.

OPERATING EXPENDITURES	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008
Personal Services						
Travel						
Contractual						
Supplies						
Equipment						
Land & Structures						
Grants & Claims						
Miscellaneous						
TOTAL OPERATING	0.0	0.0	0.0	0.0	0.0	0.0

CAPITAL EXPENDITURES						
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CHANGE IN REVENUES ()	**** See Below
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FUND SOURCE

(Thousands of Dollars)

1002 Federal Receipts						
1003 GF Match						
1004 GF						
1005 GF/Program Receipts						
1037 GF/Mental Health						
Other (Specify Type)						
TOTAL	0.0	0.0	0.0	0.0	0.0	0.0

Estimate of any current year (FY2002) cost: _____

none

Check this box (X) if funding for this bill is included in the Governor's FY2003 budget proposal: ☐

POSITIONS

Full-time						
Part-time						
Temporary						

ANALYSIS: (Attach a separate page if necessary)

This bill adds that entry for the purposes of oil and gas exploration and development shall be permitted when compatible with the purposes for which the refuge was established.

****In April 2001, Division of Oil and Gas received a request from Andex Resources for an exploration license which included most of the Minto Flats SGR. If Andex rejects the license, the state would lose \$499,840 in application fees as well as eventual royalties and rental fees if the license is converted to leases.

Prepared by: Mark D. Myers
Division: Oil and Gas
Approved by: Pat Pourchot
Agency: Natural Resources

Phone 269-8800
Date/Time 2-May-02
Date 2-May-02

Alaska State Legislature

Representative Beverly Masek
Co-Chair
State Capitol
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1-800-505-2678



Representative Drew Scalzi
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House Resources Committee

Sponsor Statement

HB527: An Act relating to entry into the Minto Flats State Game Refuge for purposes of exploration and development of oil and gas resources.

This bill will facilitate economic development in the state of Alaska by allowing for the responsible exploration and development of oil and gas resources within the Minto Flats Game Refuge.

STATE OF ALASKA

DEPARTMENT OF FISH AND GAME

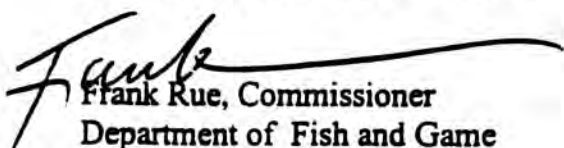
Commissioner's Office

TONY KNOWLES, GOVERNOR

P.O. BOX 25526
JUNEAU, AK 99802-5526
PHONE: (907) 465-4100
FAX: (907) 465-2332

MEMORANDUM

TO: Pat Pourchot, Commissioner
Department of Natural Resources

FROM:  Frank Rue, Commissioner
Department of Fish and Game

DATE: May 1, 2002

SUBJECT: Oil and Gas Exploration in the Minto Flats State Game Refuge

This memo clarifies the Department of Fish and Game's position regarding oil and gas exploration and development in the Minto Flats State Game Refuge (MFSGR). In the absence of sufficient site-specific information to render a compatibility determination at this time, the department's position was summarized in our March 15, 2002, recommended Licensee Advisory. That advisory stated in part,

Licensees are advised that ADF&G may require additional mitigation measures for activities within the refuge and may, in some instances, not find all oil and gas development compatible with the refuge's purposes and management plan. Licensees must coordinate closely with ADF&G early in the exploration and development process to ensure that proposed activities are consistent with the refuge management plan and can be developed in a manner that protects core refuge habitats and public use values.

We remain committed to working with the Department of Natural Resources, the project proponents, and the affected public to find ways to advance this project consistent with the MFSGR's statutory purposes, management plan, and public use values. Final decisions regarding the compatibility of gas resource development in the MFSGR will be made on their own merits once project siting and design information is available.

Regional staff will be submitting additional resource and public use information to DNR during the open public review and comment period. We will continue to work with DNR and the

project proponents to identify alternative mitigation measures to avoid or minimize impacts. We encourage DNR to maintain open channels of communication between all affected interests.

cc: Representative Hugh Fate
Representative Scott Ogan, Chair, House Special Committee on Oil and Gas
Senator John Torgerson, Chair, Senate Resources Committee
Chip Dennerlein, ADF&G, Habitat and Restoration
Mark Meyers, ADNR, Division of Oil and Gas
Jim Hansen, ADNR, Division of Oil and Gas
Al Ott, ADF&G, Habitat and Restoration
Jim Mery, Doyon, 1 Doyon Place, Suite 200, Fairbanks, AK 99701
Jim Dodson, Andex, 1720 S. Bellaire St., Suite 807, Denver, CO 80222

STATE OF ALASKA

Tony Knowles, Governor

Department of Natural Resources

550 W. 7th Avenue, SUITE 800
ANCHORAGE, ALASKA 99501

Division of Oil and Gas

April 12, 2002

Phone: 269-8805

Notice of Issuance of the Preliminary Finding under AS 38.05.035(e)

Proposed Nenana Basin Oil and Gas Exploration License

The Department of Natural Resources (DNR), Division of Oil and Gas (DO&G), has issued the preliminary best interest finding for the proposed Nenana Basin Oil and Gas Exploration License.

LICENSE AREA

The State of Alaska is proposing to issue an oil and gas exploration license on approximately 490,000 acres within the Nenana Basin. The proposed license area is located west of Nenana and extends from as far south as Anderson, northward to approximately nine miles south of Minto. The area includes a large portion of the Minto Flats State Game Refuge. Only lands for which the state owns the subsurface estate will be included in the license. Activities resulting from this offering may affect the communities of Anderson, Nenana, Minto and Fairbanks.

FINDING PROCESS

Before issuing the license, state law requires the commissioner of DNR to make a written finding as to whether a proposed exploration license is in the best interest of the state. To facilitate this, DO&G has collected socio-economic and environmental information in order to consider the potential effects of this proposed offering. This information was then used to prepare this finding. This finding establishes the scope of the administrative review for the proposed license; considers and discusses certain important facts and issues determined to be material as required by AS 38.05.133(f); and sets out the law, regulations and applicable policies upon which the commissioner bases his final determination. The finding also includes certain proposed mitigation measures considered necessary to minimize possible adverse impacts resulting from activity within the license area.

PUBLIC COMMENT

DO&G invites the public to comment on any aspect of this license, including the preliminary best interest finding, or the proposed mitigation measures. Mail comments to Division of Oil and Gas; 550 West 7th Ave., Ste. 800; Anchorage, AK 99501; ATTN: James Hansen. Email: jjh@dnr.state.ak.us. DO&G must **receive comments no later than 5:00 p.m. (ADT) May 31, 2002** to be considered in the final finding.

Interested individuals may obtain a copy of the preliminary finding from the Division of Oil and Gas, 550 West 7th Avenue, Suite 800 in Anchorage. Copies are also available for review at the following libraries:

Noel Wien Library in Fairbanks
Anderson School/Village Library
Nenana Public Library

Minto School Library
Tri-Valley School/Community Library in Healy
Loussac Public Library in Anchorage

PUBLIC MEETINGS

Representatives from the Division of Oil and Gas (DO&G) will be available to discuss the license proposal, answer questions, and take public comments at the following public meetings:

April 22: Nenana - 7:00 p.m.; George Hall

April 23: Minto - 1:30 p.m.; Lake View Lodge

April 23: Fairbanks - 7:00 p.m.; Noel Wien Library auditorium

FINAL FINDING

DO&G anticipates making the final finding available to the public in August 2002. Under AS 38.05.035(i) only those whom the final finding affects, and who have meaningfully participated in the best interest finding process, through written comment or oral testimony presented at a public hearing, are eligible to file an administrative appeal or request for reconsideration of the final decision by the commissioner. Further, under AS 38.05.035(l) only those who have exhausted their administrative rights by requesting reconsideration have standing to appeal the finding to the Superior Court.

The State of Alaska, DNR, DO&G complies with Title II of the Americans with Disabilities Act 1990. This Publication will be made available in alternative communication formats upon request. Please contact Suzanne Gaguzis at (907) 269-8803.



Mark D. Myers
Director

Date: May 2, 2002

Pages: 2

TO: House Special Committee on Oil and Gas
FROM: Northern Alaska Environmental Center
RE: Testimony on HB 527

Mike Chenault
District 9 - Republican
fax: (907) 465-2833

Fred Dyson
District 25 - Republican
fax: (907) 465-4587

Hugh 'Bud' Fate
District 33 - Republican
fax: (907) 465-3883

Gretchen Guess
District 16 - Democrat
fax: (907) 465-6615

Reggie Joule
District 37 - Democrat
fax: (907) 465-4586

Vic Kohring
District 26 - Republican
fax: (907) 465-3818

Scott Ogan
District 27 - Republican
fax: (907) 465-3265

**Northern Alaska Environmental Center**

830 COLLEGE ROAD, FAIRBANKS, ALASKA 99701-1535

PHONE: (907) 452-5021 FAX: (907) 452-3100

<http://www.northern.org> ♦ info@northern.org

May 2, 2002

Dear Sirs and Madam,

Please accept the following testimony from the Northern Alaska Environmental Center, pertaining to House Bill 527.

House Bill 527 specifies that "entry upon the Minto Flats State Game Refuge for purposes of exploration and development of oil and gas resources shall be permitted when compatible with the purposes specified in (b) of this section". While we do not directly disagree with this statement, it is our studied opinion that in no case will the stipulation of compatibility prove tenable. The Minto Flats Game Refuge is an area of major ecological and social importance, and the purposes for which it was set aside are not compatible with gas drilling. Thus, HB 527 should not be passed out of committee.

The Minto Flats State Game Refuge was established for the purposes of protecting habitat, conserving fish and wildlife, and guaranteeing fishing, hunting and trapping, when these are compatible with conservation. The Game Refuge is an important area for both subsistence users and sport hunters, with extensive hunting, trapping, and fishing taking place along the Tanana River and smaller waterways. The complex mosaic of forests, rivers, and wetlands that spans the Game Refuge is prime habitat for salmon, moose, black bear, raptors, and waterfowl, and also supports healthy populations of many other species. For moose, this is a crucial area for calving and over-wintering. Chinook, coho, and chum all spawn here. Local residents' concerns center around access issues, hunting pressure, and habitat conservation.

Gas exploration and drilling, even if done with the lowest-impact modern techniques, requires detonation of explosives, significant land clearing, and creation of access routes. These impacts in turn can lead to habitat fragmentation, unprecedented stresses on nesting birds and calving moose, and increased pressure on game species through increased hunter access.

The Northern Center's position is that while gas is a cleaner substitute for fuels such as oil and coal, it should be considered a transitional fuel on the way to much cleaner technology. Whenever gas is developed, the resultant infrastructure should be designed to minimize ecological impacts, and should be kept within existing development corridors. The Minto Flats State Game Refuge contains crucial habitat for many game species which we believe would be significantly impacted by development. In addition, the Refuge has no existing development corridors. Therefore, the Northern Center strongly believes that development should not occur within the Minto Flats State Game Refuge.

For the above reasons, we ask that you reject House Bill 527. Thank you for your attention in this important matter.

Sincerely,


Arthur Hussey, Executive Director

80773 35 1 45 34

TONY KNOWLES, GOVERNOR

DEPARTMENT OF FISH AND GAME

OFFICE OF THE COMMISSIONER

P.O. BOX 25526
JUNEAU, ALASKA 99802-5526
PHONE: (907) 485-4100
FACSIMILE: (907) 485-2332

April 22, 2002

Buzz Otis, Chair
Kara Moriarty, President/CEO
Greater Fairbanks Chamber of Commerce
250 Cushman Street, Suite 2D
Fairbanks, AK 99701-4665

Dear Mr. Otis and Ms. Moriarty:

I recently received a copy of the Greater Fairbanks Chamber of Commerce's Resolution 02-0415A dated April 15, 2002 regarding support for natural gas exploration in the Nenana Basin. The resolution contains a misrepresentation regarding the Alaska Department of Fish and Game's (ADF&G) preliminary position on gas exploration and development in the Minto Flats State Game Refuge (MFSGR). Specifically, the resolution states that "preliminary comment by the State of Alaska's Department of Fish and Game indicates that they intend to deny surface access to ... exploration targets" in the MFSGR. I would like to take this opportunity to correct this misrepresentation for the record.

ADF&G regional staff provided comments to the Alaska Department of Natural Resources (ADNR) on September 13, 2001 and March 15, 2002. We raised issues regarding the compatibility of some aspects of gas development in critical portions of the MFSGR. We did so in order to foster state resource agency discussions in the hope of working through as many issues as possible prior to public release of the Best Interest Finding. Regional staff believed this would provide the highest level of assurances to prospective licensees. However, to address the possibility that ADNR would decide to delay resolution to a later stage when additional, site-specific information becomes available, my staff recommended inclusion of a Licensee Advisory that provided a brief outline of our core refuge areas and concerns. Recommended language was included in regional staff's final response to ADNR prior to public release of the Preliminary Best Interest Finding (memorandum from Al Ott, ADF&G, to Jim Hansen, ADNR, dated March 15, 2002). The recommended advisory did not unilaterally exclude all surface occupancy and use within the core refuge area. Unfortunately, ADF&G's recommended Licensee Advisory was not included in the Preliminary Best Interest Finding.

Habitat and Restoration Division staff informed the Division of Oil and Gas, as well as Doyon Ltd. and Andex Resources LLC, of the omission. My staff has already initiated contact with the project proponents and is committed to working with them through the Best Interest Finding process and subsequent permit approvals to find ways to advance this project consistent with the

Mr. Buzz Otis, Chair
Kara Moriarty, President/CEO

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April 22, 2001

protection of the MFSGR's statutory purposes and public use values. Final decisions regarding the compatibility of gas resource development in the MFSGR will be made on their own merits after project siting and design information is available. Areas of key resource and public use concern will be identified and discussed with project proponents as we continue to maintain an open dialog.

A copy of ADF&G's March 15, 2002 recommended Licensee Advisory is enclosed for your use.

Sincerely,



Frank Rue
Commissioner

Enclosure

cc: Governor Tony Knowles, State of Alaska
Interior Delegation
Mayor Rhonda Boyles, Fairbanks North Star Borough
Mayor Steve Thompson, City of Fairbanks
Mayor Jeff Jacobsen, City of North Pole
Mayor Jason Nayrand, City of Nenana
Mr. Jack Irwin, Minto Tribal Council
Commissioner Pat Pourchot, ADNR
Chip Denerlein, ADF&G, Habitat and Restoration
Mark Meyers, ADNR, Division of Oil and Gas
Jim Hansen, ADNR, Division of Oil and Gas
Al Ott, ADF&G, Habitat and Restoration
Jim Mery, Doyon, 1 Doyon Place, Suite 200, Fairbanks, AK 99701
Jim Dodson, Andex, 1720 S. Bellaire St., Suite 807, Denver, CO 80222

Mr. Buzz Otis, Chair
Kara Moriarty, President/CEO

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April 22, 2001

ADF&G Recommended Licensee Advisory (March 15, 2002)

Licensees are advised that ADNOR and ADF&G have joint management authority of the Minto Flats State Game Refuge (MFSGR). A refuge management plan was adopted by ADF&G under 5 AAC 95 in April 1993. The management plan presents the management goals for the refuge and identifies policies to be used by ADF&G in determining whether proposed activities within the refuge are compatible with the protection of fish and wildlife, their habitats, and public use of the refuge. Habitat and public use values in the MFSGR are high, particularly in the core habitat area within the refuge unit north of the Tanana River (Figure ____). Licensees are advised that ADF&G may require additional mitigation measures for activities within the refuge and may, in some instances, not find all oil and gas development compatible with the refuge's purposes and management plan. Licensees must coordinate closely with the ADF&G early in the exploration and development process to ensure that proposed activities are consistent with the refuge management plan and can be developed in a manner that protects core refuge habitats and public use values.

Jim Hansen

From: Mac McLean [mac_mclean@fishgame.state.ak.us]
 Sent: Saturday, March 16, 2002 1:57 PM
 To: 'Pam Rogers'; Al_Ott@fishgame.state.ak.us; plr@dnr.state.ak.us
 Cc: jim_durst@fishgame.state.ak.us; jim_hansen@dnr.state.ak.us
 Subject: RE: Nenana License Core Area?



NBSA
 CoreRoads.jpg

Pam - the attached map (in color) may be easier than the faxed black and white. It is a jpg that will open in Microsoft Photo Editor. The core area corresponds to Mineral Order #510. The areas we are proposing that may be suitable for Oil/Gas development include all of the southern unit of the MFSGR (south of the Tanana River), all of the Northern unit (north of the Tanana River) south of the common Township 1S and 2S border, Sections 17, 18, 19, 20, 29-31, T1S, R6W, FM, and a number of parcels north of the proposed licensing area. Section 24, T3N, R8W, FM is within the proposed licensing area and is also outside the core area (it was not included in MO #510).

*This is
 all outside
 the core
 area of the
 MFSGR.*

The area proposed to be opened is adjacent to Dunbar and the common boundary of the Alaska Railroad and the Refuge. That provides either direct vertical drilling access to the gravity anomaly or directional drilling access to the most northern portion of the anomaly. It also allows direct pipeline access to the rail corridor without having to snake it south first to Nenana. The map shows the Standard Creek road immediately northwest of Dunbar.

If that is as clear as mud, you can give me a call at home this weekend (488-0729) if you need to. Otherwise I will be in the office Monday.

-----Original Message-----

From: Pam Rogers [mailto:progers@pci.net]
 Sent: Friday, March 15, 2002 9:37 PM
 To: Al_Ott@fishgame.state.ak.us
 Cc: mac_mclean@fishgame.state.ak.us; jim_durst@fishgame.state.ak.us;
 jim_hansen@dnr.state.ak.us
 Subject: Nenana License Core Area?

Al, I have scrutinized your maps with everything but 3-D glasses. Where is your MFSRG core area, and where is the linkage to the ARR ROW? Please respond to me at: plr@dnr.state.ak.us.

If I already have a map, which one is it?

Thanks.

Pam Rogers
 ADN

PS: Good job, especially your side-by-side, on the Nenana Basin exploration license mitigation measures.

MEMORANDUM**State of Alaska
Department of Fish and Game**

To: James Hanson
Chief Petroleum Geologist
Division of Oil and Gas

Date: March 15, 2002

File No:

Telephone Number:

FAX Number:

From: Alvin G. Ott
Regional Supervisor
Habitat and Restoration Division

Subject: Nenana Basin Oil and
Gas Exploration
License - Mitigation
Measures

The Alaska Department of Fish and Game (ADF&G) has reviewed the draft mitigation measures for the Nenana Basin Exploration Licensing Area provided to us on March 1, 2002. The following comments reflect the combined response of our divisions of Habitat and Restoration, Wildlife Conservation, Sport Fish, Commercial Fisheries and Subsistence. These comments must be considered preliminary since the ADF&G has not been provided or had opportunity to review the full preliminary best interest finding. We reserve the right to augment our comments during the public review phase when the full document has been reviewed.

We continue to believe that surface occupancy (facilities, pads, pipelines and roads) within portions of the Minto Flats State Game Refuge (MFSGR) located north of the Tanana River generally is inconsistent with the refuge's statutory purposes and management guidelines. We have, however, carefully considered the geologic and likely exploration and production scenario information provided to us during a March 5th meeting between ADF&G and ADNOR-DOG. Based on the new information, we have concluded that our initial September 13, 2001 response can be refined to potentially allow some oil and gas development, including surface occupancy, within a portion of the refuge unit located north of the Tanana River, without unreasonably compromising core refuge values.

Using a combination of directional drilling, staging from state lands (Tanana Valley State Forest) located on both the east and west sides of the refuge, and staging from non-core MFSGR lands left open to surface occupancy, we believe most, if not all, of the potential oil and gas targets could be developed. The portions of the MFSGR we are identifying to be left open to surface occupancy include a direct linkage to the Alaska Railroad ROW for location of distribution lines to markets in Fairbanks or Nenana (and further south). The identified area also permits direct staging from the all-season Standard Creek road located just east of the MFSGR.

NOTE email clarifies that these portions are not part of the "core area" of the refuge

James Hanson

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March 15, 2002

The remaining core area within the MFSGR which we believe should remain closed to surface occupancy predates the refuge's enabling legislation and was set aside in the 1985 Tanana Basin Area Plan as the single highest-value fish and wildlife habitat area in the planning unit and proposed for legislative designation. This core area was closed to mineral entry in 1985 under Mineral Order #510. While this closure does not extend to oil and gas development, it does underscore the significant importance of this area for fish and wildlife, their habitat, and public use of those resources. The mosaic of water bodies, wetlands, and wet shrub habitats contained within this core area supports one of the largest (in terms of harvest numbers and user days) waterfowl hunting areas in Alaska. It also supports significant large game hunting, trapping, and sport and subsistence fisheries.

The MFSGR's enabling legislation extended the refuge's boundaries beyond the original 1985 core habitat area to include additional fish and wildlife habitat and public use areas. While these additional areas remain important, the even greater significance of the core area underscores our conviction that the state's best interests are served by placing the core area off limits to surface occupancy; particularly since the target oil and gas deposits can still be developed from other refuge and adjacent state and private lands without compromising the core area.

We would also like to voice our support for your proposal to require the use of ice roads as opposed to winter roads (as that term is used in interior Alaska); most particularly within the MFSGR. Properly constructed ice roads with ice and ice aggregate overlying vegetation are a proven technique for avoiding or minimizing adverse impacts to surface vegetation. Winter roads on the other hand often involve surface disturbance and can result in thermal degradation, alteration of surface hydrology, and changes in vegetative communities.

Our remaining recommendations are presented as markups on the attached draft "Mitigation Measures and Licensee Advisory". The Licensee Advisory would be modified if our recommendation for excluding surface occupancy within the core MFSGR area is included in the draft Best Interest Finding.

If there are any questions, please contact Mac McLean (459-7281) or Jim Durst (459-7254).

Attachments

1. ADF&G markup of draft "Mitigation Measures and Licensee Advisory"
2. Identification of MFSGR core area
3. Comparison of proposed ADF&G mitigation measures for the NBSA, MFSGR, and MFSGR core area

cc: Chip Dennerlein, ADF&G, Anchorage
Wayne Regelin, ADF&G, Juneau
Kelly Hepler, ADF&G, Juneau

Attachments to F&C memo
dated 3-15-02

Attachment 1

Mitigation Measures and Licensee Advisory

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 license-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), ADNOR has authority to apply the following mitigation measures for the Nenana Basin Exploration License, to all oil and gas activities performed to access the state's mineral interest, regardless of the ownership status of the land from which the licensee seeks access.

Licensees 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, and end-of-use plans to be employed to comply with the restrictions listed below. It must also address any potential geohazards that may exist at the site.

The measures presented in this preliminary best interest finding were developed after considering measures imposed in state oil and gas lease sales and other exploration license areas; fish and wildlife resource and harvest data submitted by ADI&G; and environmental data relating to air and water quality, solid and liquid waste disposal, and oil spills submitted by ADEC. Measures were also developed or modified after considering comments submitted by the public, industry, federal and state agencies, and local government. Additional project-specific mitigation measures may be imposed if and when licensees submit plans of exploration, operation, or development.

In addition to compliance with these mitigation measures, licensees must comply with all applicable local, state and federal codes, statutes and regulations, and any subsequent amendments. Portions of the exploration license area are located within the Minto Flats State Game Refuge. All activities within the refuge that might affect fish and wildlife, their habitats, and public use of the refuge require authorization from ADI&G under AS 16.20 and 5 AAC 95 in addition to ADNOR authorization. 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" in Chapter One of this finding. Additionally, some applicable federal and state statutes and regulations are presented in Appendix B.

The Licensee Advisory section contains important information to licensees and operators regarding the study area.

The following abbreviations are used in these mitigation measures:) Alaska Department of Environmental Conservation (ADEC), Alaska Department of Fish and Game (ADF&G), Nenana Basin Study Area NBSA), Minto Flats State Game Refuge (MFSGR), Alaska Department of Natural Resources (ADNR), Division of Mining, Land and Water (DMLW), Director of the Division of Oil and Gas (Director), Division of Parks and Outdoor Recreation (DPOR), National Pollutant Discharge Elimination System (NPDES), State Historic Preservation Officer (SHPO), and Spill Prevention Control and Countermeasure (SPCC).

Except as indicated, the restrictions listed below do not apply to geophysical exploration on state lands; geophysical exploration activities are governed by 11 AAC 96.

General

1. Oil and Hazardous Substance Pollution Control:

Pursuant to regulations 18 AAC 75 administered by ADEC, licensees are required to have an approved oil discharge prevention and contingency plan (c-Plan) prior to commencing operations. The plan must include a response action plan to describe how a spill response would occur, a prevention plan to describe the spill prevention measures taken at the facility, and supplemental information to provide background and verification information.

- 2 Detonation of explosives within, ~~beneath~~ or in close proximity to fish-bearing waters ~~must~~ should not ~~produce instantaneous pressure changes that exceed 2.7 pounds per square inch in the swim bladder of a fish, or produce a~~ unless the water body, including its substrate, is frozen solid. ~~Peak particle velocity greater than stemming from explosive detonation should not exceed 0.5 inches per second in a fish spawning bed during the early stages of egg incubation. Explosives must not be detonated~~

beneath the bed of fish-bearing waterbodies. Blasting criteria have been developed by ADF&G and are available on request.

3. a. Except for approved off-road travel, exploration activities ~~must~~ should be supported only by ice roads, winter trails, existing road systems or air or boat service. Wintertime off-road travel ~~must~~ should be approved only for areas where snow and ice depth are sufficient to protect the ground surface. Exceptions may be granted by the director of the DMLW, and the Director, if an emergency condition exists, or, if it is determined, after consulting with ADF&G, that travel can be accomplished without damaging vegetation or the ground surface. Summertime off-road travel ~~must~~ should be authorized only if it can be accomplished without damaging vegetation or the ground surface, including stream banks that may be crossed.
- b. Exploration facilities, including roads and pads, ~~must~~ should be temporary and constructed on ice pads. Exceptions, including the use of gravel, may also be granted by the Director on a site-specific basis, if it is determined, after consulting with ADF&G, that no feasible and prudent alternatives exist.
4. Winter ice bridge crossings of all anadromous and resident fish streams will require prior ADF&G permit authorization under AS 16.05.840 and AS 16.05.870. Summer ford crossings of anadromous fish streams will require prior ADF&G permit authorization under AS 16.05.870. All upland and in-water activities within the MFSGR will require authorization under AS 16.20 and 5 AAC 95 in addition to any authorizations required by ADNR.
5. Water withdrawal from fish-bearing waters ~~is~~ shall be subject to prior written approval by DMLW and —ADF&G, and ~~must~~ shall reserve adequate flow to support indigenous aquatic life and the watercourse must not be blocked to the passage of fish. Each water intake directly accessible by fish ~~must~~ shall be designed to prevent the intake, impingement, or entrapment of fish. Maximum screen mesh size and approach velocities for various fish species is available from ADF&G.
6. Within the MFSGR, all seismic exploration activities must be helicopter supported and must minimize surface disturbance. The clearing of seismic grid lines within the MFSGR is prohibited.

Facilities and Structures

6.7. Licensees ~~must~~ should minimize the impact of development on key wetlands. Key wetlands are those that are important to fish, waterfowl, shorebirds, and other wildlife species because of their high value or scarcity in the region. The DO&G ~~shall~~ should consult with the ADF&G to identify the least sensitive areas within the study area during the course of its review of the licensees' plan of operation.

~~Facilities and structures must~~ should not be located within the MFSGR core area, depicted in Figure _____. This does not preclude developing oil and gas resources underlying the MFSGR core area through directional drilling from adjacent refuge or non-refuge lands that are open to surface occupancy within the exploration licensing area.

8. Pipelines ~~must~~ should be located so as to facilitate the containment and cleanup of spilled hydrocarbons. Where feasible and prudent, pipelines must be located on the upslope side of roadways and construction pads unless the director, DMLW, determines that an alternative site is environmentally acceptable. Wherever possible, pipelines must utilize existing transportation corridors. Consideration ~~may~~ should be given to burying pipelines where soil and geophysical conditions permit. Within the MFSGR, proposals to bury pipelines must include an engineering analysis and mitigation measures adequate to prevent alterations of surface hydrology, sub-surface drainage (French drain), and interception of groundwater upwelling. Licensees are advised that most of the exploration license area is underlain by discontinuous permafrost that is highly susceptible to thermal degradation.

All pipelines, including flow and gathering lines, ~~must~~ should be designed and constructed to provide adequate protection from water currents, storm and ice scouring, subfreezing conditions, and other hazards as determined on a case-by-case basis.

Pipelines must not be located within the MFSGR core area north of the Tanana River, depicted in Figure _____.

9. Elevated pipelines ~~must~~ shall be designed and constructed to avoid significant alteration of ~~caribou and moose and other wildlife~~ movement and migration patterns. Licensees ~~must~~ shall consider increased snow depth in the study area in relation to pipe elevation to ensure adequate clearance for wildlife.

ADF&G recommends a minimum height of ten feet from the ground to the bottom of the pipe, except at those points where the pipeline intersects a road, pad, or is constructed within 100 feet (30 m) of an existing pipeline that is elevated less than ten feet.

10. Impermeable lining and diking, or equivalent measures such as double-walled tanks, will be required for oil storage facilities (with a total above ground capacity greater than 1,320 gallons, provided no single tank exceeds 660 gallons) and for sewage ponds. Additional site-specific measures may be required as determined by ADNRC, 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 oil storage facilities and sewage ponds from freshwater supplies, streams, lakes, and key wetlands. Sumps and reserve pits must be impermeable and otherwise fully contained through diking or other means.

11. Upon abandonment of material sites, drilling sites, roads, buildings, airstrips or other facilities, such facilities must be removed and the site rehabilitated, unless the Director, after consultation with ADF&G, DEC, and the Department of Law, determines that such removal and rehabilitation is not in the state's best interest. In the MFSGR, this decision will be made jointly by the commissioners of ADF&G and DNR.

Gravel Mining and Use

12. Gravel mining required for exploration, development and production activities ~~must~~ be restricted to the minimum necessary to develop the field efficiently and with minimal environmental damage. Gravel mine sites ~~must~~ not be located within the active floodplain of a watercourse unless the Division of Mining, Land, and Water, after consultation with ADF&G, determines that there is no feasible and prudent alternative, or that a floodplain mine site would enhance fish and/or wildlife habitat after mining operations are completed and the site is closed.

— Mine site development and rehabilitation within floodplains ~~must~~ follow the general procedures and guidelines outlined in McLean, R.F. 1993, *North Slope Gravel Pit Performance Guidelines*, ADF&G Habitat and Restoration Division Technical Report 93-9. These guidelines were developed for North Slope Alaska industrial and infrastructure development but are equally applicable in Interior Alaska.

Gravel mining is prohibited within the MFSGR core area identified in Figure _____.

Prehistoric, Historic, and Archeological Sites

4213. Prior to any ground disturbing activity resulting from exploration, development or production activities, the licensee must conduct an inventory of prehistoric, historic and archeological sites within the area affected by activity. The inventory must include consideration of literature provided by Doyon, Ltd., Toghottahle Village Corporation and local residents, documentation of oral history regarding historic and prehistoric 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 potential effects that might result from the activity. The inventory must be submitted to the Director for distribution to DPOR for review and comment. In the event that an archeological, prehistoric or historical site or area may be adversely affected by an activity, the Director, after consulting DPOR, will direct the licensee as to what course of action will be necessary to avoid or minimize the adverse effect.

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 licensee must immediately report such findings to the Director and the licensee must make every reasonable effort to preserve and protect such site, structure, or object from damage until the Director, after consulting the SHPO, has given directions as to its preservation.

Local Hire

4214. To the extent they are available and qualified, the licensee is encouraged to employ local and Alaska residents and contractors for work performed on the license area. Licensees shall submit, as part of the plan of operations, a proposal detailing the means by which the licensee 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 licensee 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

4415. Licensee 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.

Subsistence Harvest Protection

4516. a. Exploration, ~~development~~ or production operations ~~must~~ be conducted in a manner that prevents unreasonable conflicts between lease-related activities and subsistence activities. In enforcing this mitigation measure the DO&G, during review of plans of operations, ~~shall~~ work with other agencies and the public to assure that potential conflicts are identified and avoided to the fullest extent possible. Available options include alternative site selection, requiring directional drilling, seismic and threshold depth restrictions, seasonal drilling restrictions, and the use of other technologies deemed appropriate by DO&G.
- b. No restriction of public access to, or use of, the lease area ~~may~~ be permitted as a consequence of the licensee's activities except in the immediate vicinity of drill sites, buildings, and other related facilities.

Title 16 Streams

4617. Under Title 16 of the Alaska Statutes, the measures listed below will be imposed by ADF&G for all activities below the ordinary high water mark in designated anadromous fish streams and for activities in fish-bearing waters that could block fish passage. Exceptions to these requirements, including exceptions for the use of spill containment and recovery equipment, may be allowed on a case-by-case basis. Specific information on the locations of anadromous waters in and near the area may be obtained from ADF&G.

- a. Alteration of river, stream or lake banks or beds, except for approved permanent crossings, will be prohibited.
- b. The operation of equipment, excluding boats, in open water areas of rivers and streams will be prohibited. (Note: Certain exceptions may be authorized by ADF&G as noted under Measures 21 and 22).
- c. Bridges are the preferred watercourse crossings in 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

1718. Solid Waste Disposal:

- a. Garbage and domestic combustible refuse must be incinerated. Nonburnable wastes must be disposed of at an approved upland site.
- b. The preferred method for disposal of muds and cuttings from oil and gas activities is by underground injection. Injection of non-hazardous oil field wastes generated during development is regulated by AOGCC through its Underground Injection Control (UIC) Program for oil and gas wells. Annular disposal of muds and cuttings associated with drilling an exploratory well is permitted by AOGCC. Surface 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 the Director, in consultation with ADEC, determines that alternative disposal methods are not feasible and prudent. 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.
- c. Proper disposal of garbage and putrescible waste is essential to minimize attraction to wildlife. The licensee must use the most appropriate and efficient method to achieve this goal. The primary method of garbage and putrescible waste disposal is prompt, on-site incineration in compliance with state of Alaska air quality regulations in 18 AAC 50. The secondary method of disposal is on-site frozen storage in animal-proof containers with backhaul to an approved waste disposal facility. The tertiary

method of disposal is on-site non-frozen storage in animal proof containers with backhaul to an approved waste disposal facility. Daily backhauling of non-frozen waste only must be achieved unless safety considerations prevent this.

1819. Wastewater Disposal:

- a. Unless authorized by NPDES or state permit, disposal of wastewater into freshwater bodies, including Class III, IV, VI, and VIII wetlands, is prohibited.
- b. Surface discharge of reserve pit fluids will be prohibited unless authorized by ADEC permit and approved by DMLW.
- c. Disposal of produced waters in upland areas, including wetlands, will be by subsurface disposal techniques. ADEC may permit alternate disposal methods if the licensee demonstrates that subsurface disposal is not feasible or prudent.

Wildlife/Human Interaction

20. Surface entry will be prohibited within one-quarter mile of trumpeter swan nesting sites from April 1 through August 31. Permanent facilities, including roads, material sites, storage areas, powerlines, and above-ground pipelines will be prohibited within one-quarter mile of known nesting sites. ADF&G will identify trumpeter swan nesting sites at the request of the licensee. The licensee is advised to contact the U.S. Fish and Wildlife Service for information on locations of, and recommended measures to accommodate, bald eagle and peregrine falcon nest sites.

~~1921.~~ Proper disposal of garbage and putrescible waste is essential to minimize attraction to wildlife. The licensee must should use the most appropriate and efficient method to achieve this goal. The primary method of garbage and putrescible waste disposal is prompt, on-site incineration in compliance with State of Alaska air quality regulations in 18 AAC 50. The secondary method of disposal is on-site frozen storage in animal-proof containers with backhaul to an approved waste disposal facility. The tertiary method of disposal is on-site non-frozen storage in animal -proof containers with backhaul to an approved waste disposal facility. Daily backhauling of non-frozen waste only must should be achieved unless safety considerations prevent this.

~~20-22.~~ Exploration and production activities must should not be conducted within one-half mile of occupied grizzly and black bear dens, unless alternative mitigation measures are approved by ADF&G. Known den sites must should be obtained from ADF&G's Division of Wildlife Conservation, phone 459-7313, prior to commencement of any

activities. Occupied dens encountered in the field ~~must~~^{should} be reported to the above, and subsequently avoided by one-half mile.

~~21-23.~~ For projects in close proximity to areas frequented by bears, licensees ~~must~~^{should} prepare and implement bear interaction plans to minimize conflicts between bears and humans. These plans ~~must~~^{should} include measures to: (a) minimize attraction of bears to the 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 or cannot be deterred by authorized personnel; (f) discuss proper storage and disposal of materials that may be toxic to bears; and (g) provide a systematic record of bears on the site and in the immediate area. The ADF&G offers to assist licensees in developing educational programs and camp layout and management plans as licensees prepare their operations plans.

Waterbody Buffers

~~22-24.~~ To the extent feasible and prudent, facilities other than docks, or road and pipeline crossings, ~~must~~^{should} not be sited within 500 feet of fish-bearing water bodies streams. Essential facility siting may be allowed in buffer areas in those instances where no other suitable sites are available. Facilities ~~must~~^{should} not be sited within buffers unless the DO&G, after consultation with ADF&G, determines that such facility restrictions are not feasible or prudent. Road and pipeline crossings ~~must~~^{should} be aligned perpendicular or near perpendicular to watercourses.

~~23-25.~~ No surface occupancy ~~may~~^{should} be allowed within one-quarter mile of anadromous fish~~salmon~~ spawning areas, such as those located on the Nenana River, Tetlanika River, Chatanika River, Tolovana River, Kantishna River, Toklat River, Swannock Slough, Lost Slough, Glacier Creek, Julius Creek, Clear Creek (Clear/Anderson Area), and Seventeen Mile Slough. Additional spring upwelling water bodies within these areas that support anadromous fish species may be included in this restriction as they are identified through ongoing field evaluation. Additional restrictions may be required by the Director, after consultation with ADF&G, for high value resident fish spawning habitat.

NOTR: All setback distances ~~must~~^{should} be developed in such a manner that (1) water use from streams to support drilling and (2) ADF&G-approved floodplain material sites that benefit fish and wildlife are not outright prohibited.

2426. Plans of operation submitted for review and approval must describe the licensee's efforts to communicate with local communities, and interested local community groups, if any, in the development of such plans.

LICENSEE ADVISORY

1. Licensees are advised that ADNR and ADF&G have joint management authority of the Minto Flats State Game Refuge (MSFGR), ~~and that ADF&G has stated that there is a "...high probability that surface occupancy for development within the northern unit MSFGR likely would not be authorized by ADF&G."~~ A refuge management plan was adopted by ADF&G under 5 AAC 95 in April 1993. The management plan presents the management goals for the refuge and identifies policies to be used by ADF&G in determining whether proposed activities within the refuge are compatible with the protection of fish and wildlife, their habitats, and public use of the refuge. Habitat and public use values in the MSFGR are high, particularly in the core habitat area within the refuge unit north of the Tanana River (Figure ____). Licensees are advised that ADF&G may require additional mitigation measures for activities within the refuge and may, in some instances, not find all oil and gas development compatible with the refuge's purposes and management plan. Licensees must~~should~~coordinate closely with the ADF&G early in the exploration and development process to ensure that proposed activities are consistent with the refuge management plan and can be developed in a manner that protects core refuge habitats and public use values.

Attachment 2

Attachments 3

Comparison of Proposed ADF&G Mitigation Measures for the NBSA, MFSGR, and MFSGR Core Area
Bold cells indicate major ADF&G-proposed edits.

Mitigation Measure	<u>Nenana Basin Study Area</u>	<u>Portion of NBSA Within Minto Flats State Game Refuge</u>	<u>Portions of NBSA Within Core Area of Minto Flats SGR</u>
1	ADEC-approved oil discharge prevention and contingency plan	Same as for NBSA	Same as for NBSA
2	Limits on explosives near fish-bearing waterbodies	Same as for NBSA	Same as for NBSA
3	Winter exploration using ice roads	Same as for NBSA	Same as for NBSA
4	ADF&G authorizations for fish stream crossings	Same as for NBSA, plus Special Area Permit for upland activities	Same as for MFSGR
5	Water withdrawal approvals and methods	Same as for NBSA	Same as for NBSA
6	None	Helicopter-based seismic only, with no clearing of lines	Same as for MFSGR
7	Minimize impact on key wetlands with high fish and wildlife habitat value	Same as for NBSA	No facilities or structures
8	Pipelines located to facilitate cleanup, use existing transportation corridors, and protect from hazards; consider burying pipelines	Same as for NBSA, plus additional engineering analysis before burying pipelines	No pipelines
9	Pipelines constructed to avoid wildlife interference and consider snow depth; minimum of 10 ft height from ground	Same as for NBSA	No pipelines

Comparison of Proposed ADF&G Mitigation Measures for the NBSA, MFSGR, and MFSGR Core Area
Bold cells indicate major ADF&G-proposed edits.

Mitigation Measure	<u>Nenana Basin Study Area</u>	<u>Portion of NBSA Within Minto Flats State Game Refuge</u>	<u>Portions of NBSA Within Core Area of Minto Flats SGR</u>
10	Oil storage and sewage requirements; 500 ft separation from waterbodies, wetlands, and water sources	Same as for NBSA	Same as for NBSA
11	Rehabilitation of abandoned facilities	Same as for NBSA, plus joint decision by DNR and ADF&G	Same as for MFSGR
12	Gravel mining to be minimized and use ADF&G gravel guidelines	Same as for NBSA	Gravel mining prohibited
13	Cultural resources inventory prior to any ground disturbance	Same as for NBSA	Same as for NBSA
14	Local hire encouraged	Same as for NBSA	Same as for NBSA
15	Worker training for environmental, social, and cultural concerns	Same as for NBSA	Same as for NBSA
16	Conflicts with subsistence uses to be minimized, including few public access restrictions	Same as for NBSA	Same as for NBSA
17	Activities requiring a Title 16 (Fish Habitat) Permit from ADF&G	Same as for NBSA	Same as for NBSA
18	Solid waste disposal guidelines	Same as for NBSA	Same as for NBSA
19	Wastewater disposal guidelines	Same as for NBSA	Same as for NBSA
20	Bird nesting area restrictions	Same as for NBSA	Same as for NBSA
21	Garbage disposal methods to minimize wildlife attraction	Same as for NBSA	Same as for NBSA
22	Occupied bear dens to be avoided	Same as for NBSA	Same as for NBSA

Comparison of Proposed ADF&G Mitigation Measures for the NBSA, MFSGR, and MFSGR Core Area
Bold cells indicate major ADF&G-proposed edits.

Mitigation Measure	<u>Nenana Basin Study Area</u>	<u>Portion of NBSA Within Minto Flats State Game Refuge</u>	<u>Portions of NBSA Within Core Area of Minto Flats SGR</u>
23	Bear interaction plans to be developed	Same as for NBSA	Same as for NBSA
24	Facilities set back from fish-bearing waterbodies	Same as for NBSA	Same as for NBSA
25	Surface occupancy setbacks from salmon spawning areas	Same as for NBSA	Same as for NBSA
26	Plans of operation to describe communication with local communities and groups	Same as for NBSA	Same as for NBSA

MEMORANDUM

State of Alaska
Department of Fish and Game

To: James J. Hansen, Lease Sales Manager
Division of Oil and Gas
Department of Natural Resources
Anchorage

Date: September 13, 2001

File No:

Telephone: 459-7289

Fax: 456-3091

RECEIVED

SEP 20 2001

DIV. OF OIL & GAS
DIRECTOR'S OFFICE

From:  Alvin G. Ott, Regional Supervisor
Habitat and Restoration Division
Department of Fish and Game
Fairbanks

Subject: Agency Information Request
Nenana Basin Oil & Gas
Exploration License

The Alaska Department of Fish and Game (ADF&G) has received the Alaska Department of Natural Resources' May 17, 2001 Notice of Intent to evaluate a proposal for an oil and gas exploration license in the Nenana Basin Study Area and the July 3, 2001 Request for Agency Information for the study area. The Nenana Basin Study Area (NBSA) encompasses about 1.4 million acres located west and southwest of Fairbanks. The following comments were prepared in consultation with ADF&G's divisions of Commercial Fisheries, Sport Fish, Subsistence, and Wildlife Conservation to assist the ADNDR Division of Oil and Gas (DO&G) in developing a preliminary best interest finding.

RESOURCE CONCERNS

Several areas of high value fish and wildlife habitat occur in the NBSA, and the area is used for subsistence, personal use, recreational, and commercial purposes. Water bodies (rivers, streams, and lakes) within the study area provide extensive spawning, rearing, and migration habitat for anadromous and resident fish populations. The Minto Flats area is one of the highest quality waterfowl habitats in Alaska, supporting high density duck and trumpeter swan nesting as well as spring and fall staging. Fish, furbearer, and big game populations are also important. Minto Flats provides hunting, fishing, and trapping, and is one of the most popular waterfowl hunting areas in the state. In conjunction with the flats in the southern portion of the NBSA, the Minto Flats area is heavily used by urban and rural residents of the Interior for recreational activities and harvesting renewable resources. Extensive areas of open water and aulais are present in the winter.

Minto Flats State Game Refuge

The Nenana Basin Study Area encompasses all but the northernmost portion of the Minto Flats State Game Refuge (MFSGR). The MFSGR was established by the Alaska Legislature to (1) ensure the protection and enhancement of habitat; (2) ensure the conservation of fish and wildlife; and (3) guarantee the continuation of hunting, fishing,

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trapping, and other uses by the public compatible with the protection and enhancement of habitat and the conservation of fish and wildlife (AS 16.20.037(b)).

Management goals and policies for the MFSGR area are outlined in the March 1992 Minto Flats State Game Refuge Management Plan which has been adopted by reference under 5 AAC 95.530. In its Policies section, the Plan provides the following guidance for Oil and Gas Exploration and Development:

Oil and gas leasing for exploration and development may be allowed in the refuge on a case-by-case basis if it is determined by the department to be compatible with the purposes for which the refuge was established. Specifically, AS 16.20.037(b)(3) guarantees the continuation of hunting, fishing, trapping, and other uses by the public compatible with the protection and enhancement of habitat and the conservation of fish and wildlife. Authorized activities shall be subject to permit terms and conditions necessary to maintain the purposes for which the refuge was established, shall require minimal surface use and may be seasonally restricted.

A Special Area Permit (5 AAC 95.410--.440) from ADF&G is required for any activity that alters or potentially alters fish or wildlife habitat within the MFSGR. A list of typical activities requiring a Special Area Permit can be found at 5 AAC 95.420(a).

Fish

The NBSA is ringed and crossed by rivers and streams that provide habitat for anadromous fish species. All or part of the Tanana River, Nenana River, Seventeenmile Slough, Lost Slough, Teklanika River, Swanneck Slough, Tolovana River, Chatanika River, Kantishna River, and Toklat River have been specified as anadromous fish water bodies. These waters provide habitat for coho salmon, chinook salmon, summer chum salmon, and fall chum salmon.

The southeastern portion of the NBSA contains a stream complex that contains important chinook, coho, and chum salmon spawning areas. The numerous shifting channels and clear-water upwelling areas in the Nenana River, Teklanika River, Seventeenmile Slough, Julius Creek, and Lost Slough area are routinely surveyed in the fall as index streams for spawning salmon.

In the southwest portion of the NBSA, the Toklat River and its tributaries provide important chinook, chum, and coho salmon spawning habitat. The Toklat Springs spawning area, upstream of the proposed southern boundary of the license proposal, is an extremely productive fall chum salmon spawning area that is very important to the subsistence and commercial fisheries along the Tanana and Yukon rivers. The area is also heavily used by grizzly bears, furbearers, raptors, overwintering mallards, and other wildlife. The Toklat Springs area has been designated under the Tanana Basin Area Plan (TBAP) as a candidate for legislative designation as a Critical Habitat Area under AS 16.20. Clear Creek, southwest of the Toklat River and just outside the NBSA boundary, also provides important chinook and coho salmon habitat.

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Consult current editions of ADF&G's Atlas and Catalog of Waters Important for Spawning, Rearing or Migration of Anadromous Fishes for more complete water body information.

High value resident fish species (including Arctic grayling, burbot, northern pike, round whitefish, and sheefish) are also important for sport and subsistence users. All water bodies that provide anadromous fish habitat also provide resident fish habitat. In addition, several areas within the NBSA provide high quality habitat for resident fish only. The Nenana River/Seventeenmile Slough/Lost Slough area is important for Arctic grayling and round whitefish spawning and rearing, burbot, northern pike, and likely humpback whitefish. The Kantishna River is an important migratory route for whitefish and sheefish, and is a major producer of burbot and northern pike. Rock Creek, at the lower end of the Kantishna, is the site of an important spring and summer northern pike fishery.

The Tolovana River and lower Minto Flats provide spawning, rearing, and limited overwintering habitat for northern pike, while the Chatanika River, upper Minto Flats, and lower Goldstream Creek are important for pike spawning, rearing, and overwintering. Upper Goldstream Creek within the NBSA provides seasonal habitat for Arctic grayling and round whitefish. The Minto Lakes are important seasonally for northern pike and round whitefish. Longnose suckers and lake chub are present in varying numbers in most water bodies connected at least seasonally to rivers or streams. Alaska blackfish are present in many smaller, landlocked lakes throughout the study area.

Two lakes within the NBSA have been stocked with rainbow trout by ADF&G's Division of Sport Fish. Dune Lake (T6W, R12W) supports an active sport fishery, and "Oblique" or "Tschute" Lake (T2S, R13W) lies within the Tanana Valley State Forest's Oblique Lake Research Natural Area.

Subsistence

Several rural communities and the areas they have long used to harvest fish, wildlife, and plant resources for subsistence purposes are located within or near the study area. The primary sources of documentation of subsistence use patterns for these communities are listed in Attachment 1. Although much of the existing subsistence documentation is dated, we have no reason to believe that uses of the Nenana Basin Study Area for subsistence purposes has declined. The ADF&G strongly recommends that consultation with the affected communities and special interest groups be initiated as soon as possible. Because the subsistence use documentation in the sources cited above is dated, local residents and the local Fish and Game Advisory Committees (FGACs) representing the Minto-Nenana, Middle Nenana River, and Fairbanks areas must be afforded the opportunity to update and revise it—and to provide additional input for consideration in the decision making process.

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Wildlife

The complicated pattern of vegetation types in Minto Flats provides a variety of habitats for fish and wildlife populations using the area. The proximity to one another of complimentary vegetation types tends to make for rich values for a number of species. The mosaic of ponds, oxbows, stream channels, and various wetland and upland vegetation types provides excellent habitat for waterfowl, big game and furbearers.

The MFSGR Management Plan notes that Minto Flats constitutes one of the highest quality waterfowl nesting and staging habitats in Alaska, and possibly in North America. The Minto Flats region is considered to be one of the best migratory waterfowl habitats in Alaska, especially along its eastern edge around Big Minto Lakes. Minto Flats has long been a popular destination for waterfowl hunters in the fall.

The Nenana Basin Study Area is within Game Management Unit 20, Fairbanks-Central Tanana. Portions of the study area north of the Tanana River are in Subunit 20B, and portions south of the Tanana are in 20A (east of the Nenana River) or 20C (west of the Nenana River). Much of the available wildlife population information is compiled and available at the unit and subunit level. Harvest data are tabulated at the universal coding unit (UCU) level, with several UCUs comprising each subunit. Because boundaries of these management areas generally follow watershed boundaries, the NBSA encloses portions of many different UCUs.

That portion of the NBSA north of the Tanana River is approximately the same area as ADF&G Division of Wildlife Conservation's approximately 900 mi² Minto Flats Management Area (MFMA). Data below for the MFMA include Uniform Coding Units (UCUs) 0201, 0205, 0210, and are of necessity preliminary. Although the boundaries of the MFMA and UCUs do not precisely coincide, the "fit" between the two areas is reasonably good and the results reliable.

Big game animals hunted in Minto Flats include moose, black bear, wolf, and brown bear, although most hunting is for moose and black bear. The Minto Flats provides exceptional year round habitat for moose. It is an important calving area and typically has higher calf:cow ratios than the adjacent Tanana Flats. In addition, the areas numerous lakes, ponds and wetlands vegetation provides excellent summer forage. Because of the preponderance of willow-dominated shrub fields, the Minto Flats are an important wintering area for moose and other wildlife species dependant on early seral stage vegetation. Surveys conducted in late October, 2000 resulted in an estimated 2200 moose or 2.4 moose/mi² in the MFMA.

Because of the large number of moose and relatively high bull:cow ratios, the MFMA is a popular moose hunting area. In regulatory year (RY) 2000 (same period as Fiscal Year 2000), 169 hunters reported harvesting 47 bull moose during the general hunt period (September 11-20). In addition, 100 Tier II subsistence permits for bull or cow moose were issued and 28 bulls and 25 cows were reported taken during the September 1-20 and January 10-February 28 seasons.

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Black bear are common and widely distributed in the Minto Flats, taking advantage of the varied vegetation types and the abundance of other wildlife species, especially in riparian and wetland areas. Black bear hunting on rivers and lakes of Minto Flats is popular with urban hunters during the spring and summer, while fall hunting is more productive in upland areas surrounding the flats. During RY 1999, 26 black bears were reported taken in the MFMA.

The mix of aquatic, wetland, and upland landcover types in the Minto Flats supports a full compliment of furbearer species, including wolf, coyote, red fox, lynx, wolverine, river otter, marten, weasels, mink, beaver, and muskrat. Trappers from urban areas use Minto Flats, accessing their sets largely via snowmachine and aircraft. In RY 1999, 29 beaver, 52 lynx, 13 wolves, and 1 wolverine were reported taken in the MFMA.

The southwest corner of the NBSA contains important habitat for moose, furbearers, and grizzly bears in conjunction with the area's substantial fish resources. This area includes the Toklat River, Clear Creek, and a major unnamed tributary to the Toklat River.

RECOMMENDATIONS

In terms of biological resources, human use, and their compatibility with oil and gas exploration and potential development, ADF&G believes the NBSA can be broken into three sub-areas. The southern portion of the NBSA, south of the MFSGR, is predominantly a large upland flats and has some history of oil and gas exploration activity. Areas with significant hydrologic and fish resource concerns exist on the western, southern, and eastern edges. The ADF&G conceptually believes oil and gas exploration and subsequent development could be accomplished in this portion of the NBSA with adequate and appropriate conditions and stipulations.

The middle portion of the NBSA, located south of the Tanana River and within the southern portion of the MFSGR, has high resources values. Some seismic exploration and other activities associated with land clearing have occurred to date, but the character of the area remains essentially wild. Any exploration or development activities in the middle portion generally would require stricter stipulations than in the southern portion, and significantly greater restrictions on surface disturbance and the location/extent of utility and transportation corridors. Dependent upon the actual location of a discovery, clustered development from a limited number of drill sites with limited surface disturbance (e.g. the Alpine model) conceivably could be found compatible with the management objectives for this portion of the MFSGR.

North of the Tanana River, the northern portion of the NBSA includes most of the northern unit of the MFSGR and is an area with very high resource values and well-established patterns of human use of those resources. Because it is unlikely that ADF&G could find oil and gas development within this portion of the MFSGR compatible with the refuge's legislative purposes, we recommend that the northern portion of the NBSA within the northern unit of the MFSGR either be withdrawn from

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further consideration or lessees notified of the high probability that surface occupancy for development within the northern unit MFSGR likely would not be authorized by ADF&G. This recommendation does not preclude the possibility of developing infrastructure outside the boundaries of the northern unit MFSGR and tapping subsurface resources underlying the MFSGR via directional drilling.

Additional general recommendations include:

The NBSA contains land with varied and significant fish and wildlife resource values. These lands are currently managed under management plans including the MFSGR Management Plan, the Tanana Valley State Forest Management Plan, and the Tanana Basin Area Plan. Besides direct effects on resource values noted in the previous sections, the ADF&G is concerned by potential issues of water use, spill response, and land clearing and access.

Water is plentiful throughout much of the NBSA, although both summer and winter water withdrawals have the potential to affect a variety of fish resources. Availability of water, presence or absence of fish, and type of intake screening will all bear on ADF&G's position regarding any specific water withdrawal proposal.

The ability of a lessee to contain and clean up any spills that might occur is a concern to the ADF&G. With high resource values present, little to no infrastructure in place for much of the area, seasonal flooding common in many places, and seasonal variations, adequate contingency planning would be an important component of any final lease determination.

Much of the NBSA currently has little or no established access other than watercraft and air in summer months and snow and ice travel in the winter. Clearing to facilitate exploration activities such as seismic lines or travel routes have the potential to significantly increase habitat fragmentation and human use of some resources, and to permanently alter the character of the landscape. ADF&G recommends that all exploration activities off the existing road system be limited to the winter period when frozen waterbodies and adequate snow cover can minimize negative effects from such activities. Extensive clearing as might be needed for an intensive seismic program would be inappropriate in much of the NBSA, particularly within the MFSGR.

If the decision is made to proceed with issuance of an oil and gas exploration license for a portion or all of the NBSA, the ADF&G recommends the following mitigation measures be included in general lease terms and conditions. Essentially the same measures were adopted in the final findings for Shallow Natural Gas Lease Applications (November 6, 2000) and the North Slope Foothills Areawide 2001 Oil and Gas Lease Sale (February 7, 2001).

General Measures

1. Detonation of explosives within, beneath or in close proximity to fish-bearing waters should not exceed 2.7 pounds per square inch unless the water body, including its

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substrate, is frozen solid. Peak particle velocity stemming from explosive detonation should not exceed 0.5 inches per second during the early stages of egg incubation. Blasting criteria have been developed by ADF&G and are available on request.

2. Except for approved off-road travel, exploration activities should be supported only by ice roads, winter trails, existing road systems or air or boat service. Wintertime off-road travel should be approved only for areas where snow and ice depth are sufficient to protect the ground surface. Summertime off-road travel should be authorized only if it can be accomplished without damaging vegetation or the ground surface, including stream banks that may be crossed.
3. Winter ice bridge crossings of all anadromous and resident fish streams will require prior ADF&G permit authorization under AS 16.05.840 and AS 16.05.870. Summer ford crossings of anadromous fish streams will require prior ADF&G permit authorization under AS 16.05.870. All upland and in-water activities within the MFSGR will require authorization under AS 16.20 and 5 AAC 95 in addition to any authorizations required by ADNR.
4. Water withdrawal from fish-bearing waters shall be subject to prior written approval by DMLW and ADF&G, and shall reserve adequate flow to support indigenous aquatic life and the watercourse must not be blocked to the passage of fish. Each water intake directly accessible by fish shall be designed to prevent the intake, impingement, or entrapment of fish. Maximum screen mesh size and approach velocities for various fish species is available from ADF&G.

Facilities and Structures

5. Lessees should minimize the impact of development on key wetlands. Key wetlands are those that are important to fish, waterfowl, shorebirds, and other wildlife species because of their high value or scarcity in the region. The DO&G should consult with the ADF&G to identify the least sensitive areas within the NBSA during the course of its review of the lessees' plan of operation.
6. Exploration facilities should be temporary and constructed on ice pads unless the DO&G determines that no feasible and prudent alternative exists.
7. Pipelines should be located to facilitate the containment and cleanup of hydrocarbons. All pipelines should be designed and constructed to provide adequate protection from water currents, storm and ice scouring, subfreezing conditions, and other hazards as determined on a case-by-case basis.
8. Pipelines should be designed and constructed to avoid significant alteration of moose and other wildlife movement and migration patterns. At a minimum, above ground pipelines shall be elevated a minimum of ten feet, as measured from the ground to the bottom of the pipe, except where the pipeline intercepts a road, pad, or ramp installed to facilitate wildlife passage. Increased snow depth in the area should be considered in relation to pipe elevation to ensure adequate clearance for wildlife.

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Gravel Mining and Use

9. Gravel mining required for exploration, development and production activities should be restricted to the minimum necessary to develop the field efficiently and with minimal environmental damage. Gravel mine sites should not be located within the active floodplain of a watercourse unless the Division of Mining, Land, and Water, after consultation with ADF&G, determines that there is no feasible and prudent alternative, or that a floodplain mine site would enhance fish and/or wildlife habitat after mining operations are completed and the site is closed.

Mine site development and rehabilitation within floodplains should follow the general procedures and guidelines outlined in McLean, R.F. 1993, *North Slope Gravel Pit Performance Guidelines*, ADF&G Habitat and Restoration Division Technical Report 93-9. These guidelines were developed for North Slope Alaska industrial and infrastructure development but are equally applicable in Interior Alaska.

Subsistence Harvest Protection

10. Exploration, development or production operations should be conducted in a manner that prevents unreasonable conflicts between lease-related activities and subsistence activities. In enforcing this mitigation measure the DO&G, during review of plans of operations, should work with other agencies and the public to assure that potential conflicts are identified and avoided to the fullest extent possible. Available options include alternative site selection, requiring directional drilling, seismic and threshold depth restrictions, seasonal drilling restrictions, and the use of other technologies deemed appropriate by DO&G.
11. No restriction of public access to, or use of, the lease area should be permitted as a consequence of the lessee's activities except in the immediate vicinity of drill sites, buildings, and other related facilities.

Title 16 Streams

12. Under Title 16 of the Alaska Statutes, the measures listed below will be imposed by ADF&G for all activities below the ordinary high water mark in designated anadromous fish streams and for activities in fish-bearing waters that could block fish passage. Exceptions to these requirements, including exceptions for the use of spill containment and recovery equipment, may be allowed on a case-by-case basis. Specific information on the locations of anadromous waters in and near the area may be obtained from ADF&G.
- A. Alteration of river, stream or lake banks or beds, except for approved permanent crossings, will be prohibited.
 - B. The operation of equipment, excluding boats, in open water areas of rivers and streams will be prohibited. (Note: Certain exceptions may be authorized by ADF&G as noted under Measures 16 and 17).

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- C. Bridges are the preferred watercourse crossings in 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.

Bear/Human Interaction

13. Proper disposal of garbage and putrescible waste is essential to minimize attraction to wildlife. The lessee should use the most appropriate and efficient method to achieve this goal. The primary method of garbage and putrescible waste disposal is prompt, on-site incineration in compliance with State of Alaska air quality regulations in 18 AAC 50. The secondary method of disposal is on-site frozen storage in animal-proof containers with backhaul to an approved waste disposal facility. The tertiary method of disposal is on-site non-frozen storage in animal-proof containers with backhaul to an approved waste disposal facility. Daily backhauling of non-frozen waste only should be achieved unless safety considerations prevent this.
14. Exploration and production activities should not be conducted within one-half mile of occupied grizzly and black bear dens, unless alternative mitigation measures are approved by ADF&G. Known den sites should be obtained from ADF&G's Division of Wildlife Conservation, phone 459-7313, prior to commencement of any activities. Occupied dens encountered in the field should be reported to the above, and subsequently avoided by one-half mile.
15. For projects in close proximity to areas frequented by bears, lessees should be required to prepare and implement bear interaction plans to minimize conflicts between bears and humans. These plans should include measures to: (a) minimize attraction of bears to the 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 or cannot be deterred by authorized personnel; (f) discuss proper storage and disposal of materials that may be toxic to bears; and (g) provide a systematic record of bears on the site and in the immediate area. The ADF&G offers to assist lessees in developing educational programs and camp layout and management plans as lessees prepare their lease operations plans.

Waterbody Buffers

16. To the extent feasible and prudent, facilities other than docks, or road and pipeline crossings, should not be sited within 500 feet of fish-bearing streams. Essential facility siting may be allowed in buffer areas in those instances where no other suitable sites are available. Facilities should not be sited within buffers unless the DO&G, after consultation with ADF&G, determines that such facility restrictions are not feasible or prudent. Road and pipeline crossings should be aligned perpendicular or near perpendicular to watercourses.
17. No surface occupancy should be allowed within one-quarter mile of salmon spawning areas located on the Nenana River, Tetlanika River, Chatanika River, Kantishna River, Toklat River, Swanneck Slough, Lost Slough, Glacier Creek, Julius Creek, Clear Creek (Clear/Anderson Area), and Seventeen Mile Slough.

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Additional spring upwelling water bodies within these areas that support anadromous fish species may be included in this restriction as they are identified thorough ongoing field evaluation.

NOTE: All setback distances should be developed in such a manner that (1) water use from streams to support drilling and (2) ADF&G-approved floodplain material sites that benefit fish and wildlife are not outright prohibited, subject to the mitigation measures outlined under #4 and #11.

One issue/concern not addressed by our recommended lease terms and mitigation measures relates to the as-yet poorly understood surface- and ground-water interactions in the vicinity of upwelling areas located in the Nenana River and Toklat springs areas. These upwellings provide critically important spawning, rearing, and over-wintering habitat for coho and fall chum salmon as well as Arctic grayling and other resident fish species. While some research has been done to better define the origin of these ground water upwellings, in large part they remain poorly understood. Until more is known about the surface water/groundwater interface and the controlling mechanisms for the upwelling areas, we urge a conservative approach to any development in near proximity to these critically important areas. Similar spawning habitats for coho and fall chum salmon are extremely limited in the Yukon River watershed.

It is our understanding that detailed stipulations/mitigation measures would be developed during a later-phase review of this exploration lease sale. We look forward to working with you in the development of specific stipulations to protect fish and wildlife resources and their use by subsistence, personal use, sport, and commercial users.

If you have questions, please contact Jim Durst (459-7254) or me.

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cc: Fred Bue, ADF&G CF, Fairbanks*
Mac Minard, ADF&G SF, Fairbanks*
Mike Doxey, ADF&G SF, Fairbanks*
Terry Haynes, ADF&G SUBS, Fairbanks*
David James, ADF&G WC, Fairbanks*
Don Young, ADF&G WC, Fairbanks*
Harry Bader, ADNR DMLW, Fairbanks
Jeanne Hanson, NMFS, Anchorage
Pat Sousa, USFWS, Fairbanks
Ron Silas, Minto, Minto-Nenana FGAC
Mike Tinker, Fairbanks, Fairbanks FGAC
Brent Kelth, Healy, Middle Nenana River FGAC

*email copy

AGO/jdd

Chapter Eight: Conclusion and Request for Comments

DO&G is required by AS 38.05.133, and AS 38.05.035(e) and (g), to determine whether an exploration license serves the state's best interests. As the director of DO&G, my responsibility is to make that determination for the proposed Nenana Basin Exploration License. In making this decision for the final finding, I will balance the reasonably foreseeable positive and negative effects to determine whether the potential benefits exceed the potential negative effects and whether issuing the proposed Nenana Basin Exploration License is in the best interests of the state.

In this preliminary finding analysis, DO&G considered the reasonably foreseeable potential effects, both negative and positive, that this license could have on fish, wildlife, and human users of these resources, on the local economy and well being, and on state revenue. DO&G analyzed the available socioeconomic, and environmental data submitted by ADF&G and other government agencies. The division has also considered the cumulative effects of development in the area.

A. Reasonably Foreseeable Effects of Exploration Licensing and their Mitigation

The discussion throughout this finding and the record reflect the analysis of the issues. Below is a summary of this analysis.

1. Statewide Fiscal Effects

The primary source of state revenues is North Slope oil production. In FY 2001 oil and revenues comprised approximately 82 percent of the state's general fund unrestricted revenue. North Slope fields hold 98 percent of the state's known oil reserves and 90 percent of the state's known gas reserves. The remaining state oil and gas reserves are found in Cook Inlet fields. However, oil and gas reserves are finite resources and North Slope and Cook Inlet production is declining. Regardless of the price of crude oil, general fund receipts will continue to decline (see Chapter Five). The discovery and development of smaller, but still significant, oil and gas fields may temper the anticipated decline in revenues to the state treasury. Additionally, new discoveries, particularly natural gas, are needed to meet growing local energy demand.

Most revenues generated from oil and gas activities go into the state's general fund, while some are set aside for the state Permanent Fund. Many funds, including oil and gas property taxes, are passed directly through to borough and municipal governments. Statewide, Alaskans receive direct and indirect benefits derived from General Fund spending. General Fund receipts are allocated to local governments and all state agencies, including the University of Alaska. Funds can be passed directly to local governments through programs, while others are authorized specifically by the state legislature.

If the exploration license is issued, there will be a one-time increase in state income from the \$1 per acre licensing fee. The potential for additional revenue from rentals, royalties and taxes is unpredictable, because at the time the license is issued no one knows what reserves may be found in the area. The overall petroleum potential for the area is estimated to be low to moderate. As exploration takes place, the license would add jobs to the state and regional economy. These jobs would not be limited to the petroleum industry

but would be spread throughout the trade, transportation, service, and construction industries. The number of jobs produced would depend on whether commercial quantities of oil or gas are discovered, and whether projects to develop those resources go forward. Discovery and development of commercial quantities of petroleum or natural gas as a result of an exploration license in the study area would bring economic benefits to the region in the form of additional employment opportunities and lower energy costs. Additionally, industry investment in environmental studies, planning and design activities, materials acquisition, facility construction, seismic surveys, drilling, transportation, and logistics contribute to the well being of both the state and local economy.

2. Effects on Municipalities and Communities

Oil and gas activities may include project development in already developed areas and in areas that do not have an existing infrastructure, roads or utility right-of-ways. There would be no direct (non-fiscal) impact to Fairbanks North Star Borough or the Denali Borough or community operating expenses, aside from normal planning and zoning responsibilities. Development projects would provide revenue to the boroughs and improve infrastructure. There may be additional employment opportunities during the exploration phase and more during development and production phases. The long-term employment benefits to boroughs and local communities would depend on the subsequent production of commercial quantities of petroleum, the hiring of local residents, and use of local service providers. Residents may have access to natural gas, a lower cost alternative to fuel oil and electricity for heating. Local utilities may be able to generate electricity from natural gas, which is more efficient, less expensive, and less polluting than coal.

Local residents' use of the area requires access to it, and any activity, facility or structure that restricts access can have an adverse impact on local residents. Other effects include disturbance due to increased air traffic, drilling and construction machinery noise and loss of privacy due to the presence of project workers and construction camps. The extent of these effects depends on the size of development projects and the proximity of facilities, and utility, pipeline, and transportation corridors to the potentially affected community. Most disturbance effects would be temporary during development and construction. Other financial and infrastructure impacts would be more long term. Employment effects could be both short and long-term.

B. Cumulative Effects and their Mitigation

1. Effects on Fish and Wildlife Habitats, Populations, and Uses

Fish: Potential impacts in the exploration phase include degradation of streambanks and overwintering areas due to erosion and sedimentation. Potential impacts in future phases include habitat loss due to gravel displacement and facilities siting; interference with migration and movement from onshore structures and impoundments; and fish kills due to industrial water use, oil spills, unregulated discharge, and seismic activities. Long term impacts may include habitat improvement due to restoration and rehabilitation of impacted sites.

Title 16 of Alaska Statutes regulates all activities that may affect anadromous fish streams or that may result in blockage of fish passage. Mitigation measures specify that alteration of river banks and use of in-stream equipment is prohibited. Bridges or non-bottom-founded structures will be required for crossing fish spawning and important rearing habitats. Discharge of drilling muds and cuttings into lakes, streams, rivers, and high value wetlands is prohibited. Disposal of produced waters will be by subsurface disposal techniques. Unless authorized by a state permit, disposal of wastewater into freshwater bodies is prohibited. Gravel mining

within an active floodplain is prohibited unless no feasible or prudent alternative exists. Removal of water from fishbearing rivers, streams, and natural lakes shall be subject to prior written approval by DMLW and ADF&G. Water intake pipes must be designed to prevent harm to fish. Use of explosives is prohibited in open water areas of fishbearing streams and lakes.

Birds: Potential impacts include habitat loss, barriers to movement, disturbance during nesting and brooding, and oil spills. In order to minimize the possibility of these impacts, the following mitigation measures will apply. The siting of new facilities in key wetlands and sensitive habitat areas may be restricted. Surface entry may be prohibited within ¼ mile of trumpeter swan nesting sites during summer. The siting of permanent facilities within ¼ mile of known nesting sites may be prohibited.

Moose: Alteration or loss of moose calving and wintering habitat could induce or contribute to a decline in moose populations. In order to minimize the possibility of these impacts, the following mitigation measures will apply. Exploration facilities, including roads and pads, must be temporary and constructed of ice, though, the construction of winter roads will also be allowed. Exceptions, including the use of gravel may be allowed. Wherever possible, pipelines must use 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 other terrestrial animals.

Brown Bear and Black Bear: During exploration, these bear species are most likely to be affected by disturbances during denning. During development and production, human activity may attract foraging bears to facilities, especially refuse disposal sites. This may pose a threat to human safety and the potential need to shoot "problem" animals. Oil spills could contaminate some local food sources. Mitigation measures specify that garbage must be incinerated. Facilities may not be sited within 500 ft. of anadromous streams or within 1/2 mile of major rivers. Permanent roads will not be approved for exploration activities. Exploration facilities, including roads and pads, must be temporary and constructed of ice, though, the construction of winter roads will also be allowed. Exceptions, including the use of gravel may be allowed. For projects in close proximity to areas frequented by bears, licensees should to prepare and implement bear interaction plans to minimize conflicts between bears and humans. Prior to commencement of any activities, bear den location information must be obtained by ADF&G and occupied dens avoided by ½-mile.

2. Effects on Subsistence

Effects on subsistence activities in the study area could include increased access to limited resources by competing users, land use limitations and restrictions on access to subsistence, and the immediate effects of oil spills. Potential benefits from oil and gas activity include a potential increase in wage earning opportunities to supplement subsistence activities. Workers must be educated about the land and its people. The licensee, including any contractors and subcontractors, must train employees about the environmental, social, and cultural values of the people of this area. Employees must understand how to avoid damaging biological and archaeological resources. They should have an increased sensitivity and understanding of community values, customs, and lifestyles of local residents. Public access to, or use of, the licensed area may not be restricted except within the immediate vicinity of drill sites, buildings, and other related structures. No license facilities or operations may be located so as to block public access to or along navigable and public waters as defined by state law. During review of plans of operation or development, DO&G will work with other agencies and the public to assure that potential conflicts are identified and avoided. License related activity will be restricted if the ADNRC commissioner determines it is necessary to prevent unreasonable conflicts with local subsistence harvests. Plans of operation submitted for review and approval must describe the licensee's efforts to communicate with local communities, and interested local community groups, if any, in the development of such plans. Additional, site-specific and project-specific mitigation measures may be imposed as necessary to protect subsistence access.

3. Effects on Cultural and Historic Resources

There are more than 31 known historic and archaeological sites within the study area and the potential for the discovery of additional sites is high. To prevent damage and insure preservation, an inventory of prehistoric, historic, and archeological sites must be conducted prior to the construction or placement of any structure, road, or facility. The inventory must include consideration of literature provided by 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. In the event any site, structure, or object of prehistoric, historic, or archaeological significance is discovered during license operations, the licensee must immediately report such findings to the Director. These proposed measures will insure these resources are protected and preserved. Additionally, state laws prohibit the removal of historic and cultural resources. Violators are subject to criminal (misdemeanor) penalties and civil penalties, including fines up to \$100,000.

C. Specific Issues Related To Oil And Gas Exploration, Development, Production, and Transportation

1. Geophysical Hazards

The primary geophysical hazards within the Nenana basin study area include earthquakes, faulting, seasonal flooding, and sediment hazards. These geophysical hazards could impose constraints to exploration, production, and transportation activities and should be considered prior to any siting, design, or construction of facilities. Structures in the study area must be built to meet or exceed the Uniform Building Code requirements for zone 4, areas of high earthquake probability. Pre-development planning should include surveys of spring break-up activity, as well as flood-frequency analyses. Structural failure can be avoided by proper facility setbacks from rivers and main tributaries. Containment dikes and berms can be installed to reduce flood damage. Mechanisms for blowout prevention and well control must be employed in the event over pressured shallow gas deposits are encountered.

2. Likely methods of Transportation

Elevated or buried flow, gathering, and common carrier pipelines would carry petroleum or natural gas from wellheads to processing centers. Elevated pipelines can restrict wildlife movements, especially if accompanied by a road with regular vehicle traffic. Buried pipelines have little impact on wildlife, but cannot be visually inspected and spill response is more difficult. Elevated oil pipelines are typically used in Alaska to prevent heat transfer from the hot oil in the pipeline to frozen soils, since heat would degrade the permafrost. Elevated pipelines are easy to maintain and visually inspect for leaks. However, mitigation measures require that pipelines be designed and constructed to allow free movement of moose and other terrestrial animals.

Gas pipelines are generally buried since there is not a heat transfer or spill problem. Under proposed Mitigation Measure 8, wherever possible, pipelines must utilize existing transportation corridors and be buried where soil and geophysical conditions permit. Buried pipelines are feasible as long as the integrity of the frozen soils is maintained, but buried pipe is more difficult to monitor and maintain and can result in some habitat loss from gravel fill. On the other hand, buried oil pipelines are sometimes not feasible from an engineering standpoint because of the thermal instability of fill and underlying substrate.

D. Summary and Signature

No activity may occur without proper authorization from the appropriate permitting agencies. When specific activities are proposed, more detailed information such as site, type, and size of facilities will be known, in addition to the historical project data. Except for some very limited types of proprietary information, permit applications are public information and most permitting processes include public comment periods. DO&G will give public notice for any plans of operation for development. Additional terms may be imposed in any subsequent permits when applied for if additional issues are identified at that time.

Developing the state's petroleum resources is vital to the state economy and the well-being of its citizens. With the proposed mitigation measures presented in this preliminary finding imposed on licenses and plans of operation, and additional project-specific and site-specific mitigation measures imposed in response to specific proposals, the petroleum resources of the study area can most likely be explored and developed without significantly affecting fish and wildlife populations or traditional human uses. The state has sufficient authority from general constitutional, statutory and regulatory empowerments, the terms of the license agreement, and plan of operations permit terms to ensure that licensees conduct their activities safely and in a manner that protects the integrity of the environment and maintains opportunities for subsistence uses.

On the basis of the facts and issues presented at this time, the foregoing findings, applicable laws and regulations, and the documents reviewed during preparations of this preliminary finding, I conclude, as a preliminary matter, that the potential benefits of the exploration license, as conditioned, outweigh the possible adverse impacts, and that this proposed Nenana Basin Exploration License, will best serve the interests of the state of Alaska.

The preliminary conclusion is subject to revision based on comments to DO&G. Government agencies, members of the public, environmental organizations, and industry are invited to comment on any part of this document. Comments must be received by May 31, 2000 in order to be considered and should be sent to the following address:

Division of Oil and Gas
550 W. 7th Ave. Suite 800
Anchorage, AK 99501-3560
ATTN: James Hansen, Lease Sales Manager

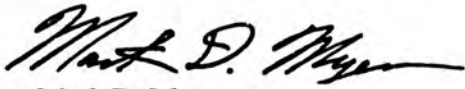
Comments may also be submitted via courier (Suite 800, 550 W. 7th Ave, Anchorage), by FAX (907-269-8938), or by email (Jim_Hansen@dnr.state.ak.us).

Following review of comments on this document and any additional available information, the Director will determine if the proposed license is in the state's best interests and issue a final finding and decision. If a finding is made that the license serves the best interests of the state, the final finding and decision document will list mitigation measures to be imposed on licensee, indicate the term of the licenses, and the extent of the license area.

Any decision regarding whether to issue the proposed exploration licenses will be made with the advance knowledge and concurrence of the commissioner, ADNR. A decision by the director, with concurrence by the commissioner of ADNR, whether or not to proceed with this license will be issued August 2002.

In commenting on this preliminary finding please be as specific as possible. In accordance with AS 38.05.035, a person is eligible to file a request for reconsideration and subsequently an appeal to the

superior court of a Best Interest Finding decision if they have meaningfully participated in the process by either submitting written comment during the public comment period or presenting testimony at a public hearing.



Mark D. Myers
Director

April 12, 2002