

N A T U R A L

R E S O U R C E S

FINAL

SUPPLEMENTAL
ENVIRONMENTAL
IMPACT
STATEMENT

on the

OIL AND
GAS LEASING
PROGRAM FOR
STATE LANDS

JULY 2005



WASHINGTON STATE DEPARTMENT OF
Natural Resources

Doug Sutherland - Commissioner of Public Lands

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Responsible Official
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July 2005

Dear Interested Parties:

During the past year, the Washington State Department of Natural Resources (DNR) has been examining the Oil and Gas Leasing Program for State Lands, and working to update the 1985 *State Lands Oil and Gas Leasing Program Environmental Impact Statement*. The update was released for a 30-day public comment period on May 24, 2005 as a *Draft Supplemental Environmental Impact Statement on the Oil and Gas Leasing Program for State Lands*.

The resurgence of interest in leasing state-owned land for natural gas exploration in eastern Washington prompted DNR to examine the program and its 1985 *Environmental Impact Statement*. The State Environmental Policy Act (SEPA) action, through this Supplemental EIS, includes a review and update to clarify the phased SEPA process used by the leasing program; to incorporate DNR's authority to lease state land for other agencies; to conduct a regulatory framework analysis; to align the leasing program with current DNR landscape and ecosystem assessments and plans; to restore environmental review for certain ground disturbing activities; to apply measures and mitigation from oil and gas activities consistently across the state; to update information regarding shrub-steppe wildlife, plant, and habitat conditions for the Columbia Basin Ecosystem; and to update the cultural resources review process.

I wish to thank the public, organizations, companies, and agencies that provided insightful comments concerning the Draft Supplemental EIS. The advice and recommendations were extremely useful and fully considered in developing the Final Supplemental EIS for the program. DNR thinks that the Final Preferred Alternative maintains a viable Oil and Gas Leasing Program that provides for possible development and production while conserving and enhancing natural resources.

The Final Supplemental EIS will be released during July, 2005. As part of the Preferred Alternative, four policy recommendations will be submitted to the Board of Natural Resources for review in the near future and, if approved, will provide statewide consistency in environmental protection.

Thank you for your interest in this program.

Sincerely,

Doug Sutherland
Commissioner of Public Lands

Fact Sheet

Title

Final Supplemental Environmental Impact Statement for State Lands Oil and Gas Leasing Program

Proposed Action

The Washington State Department of Natural Resources (DNR) is proposing to update and revise the 1985 DNR Oil and Gas Leasing Program (OGLP) to incorporate changes over the last 19 years.

Tentative Date of Implementation

The Washington State Department of Natural Resources (DNR) (Department) will submit the Final Supplemental Environmental Impact Statement (SEIS) to the Board of Natural Resources after it is released. Implementation will follow Board review and approval, which will occur no sooner than July 2005.

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Lead Agency

Washington State Department of Natural Resources is the lead agency.

Required Licenses

No licenses are required to prepare and implement the Supplemental Environmental Impact Statement proposal.

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Date of Issue

The Draft Supplemental Environmental Impact Statement was released on May 24, 2005. The Final Supplemental Environmental Impact Statement will be released upon Board approval.

Comment Period

The comment period for the Draft Supplemental Environmental Impact Statement was May 24, 2005 through June 23, 2005.

Date of Next Action

DNR expects to present the Supplemental Environmental Impact Statement to the Board of Natural Resources in July 2005 or as soon thereafter as can be scheduled.

Subsequent Environmental Review

Each step of development will be subject to a phased SEPA process. Site-specific proposals requiring on the ground activities — including exploration, drilling and production operations, as well as any infrastructure construction and transportation — are considered separate and require independent SEPA review phases.

Location of Supporting Documentation

Supporting Documentation are the 1985 Oil and Gas Leasing Program, 1985 Final Environmental Impact Statement and incorporated SEPA documents is available at www.dnr.wa.gov/. See contact information.

Availability

Copies of the Draft Supplemental EIS and Final Supplemental EIS are available at www.dnr.wa.gov/. A limited number of print copies and computer discs (CDs) are available at no charge. Requests may be sent to the contact address.

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Glossary and Acronym List

Abandon

To cease producing oil and gas from a well, (generally when it becomes unprofitable). Different steps may be involved in abandonment: Part of the casing may be removed and salvaged; one or more cement plugs are placed in the bore hole to prevent migration of fluids between the different formations penetrated by the bore hole; and the well is abandoned.

Aquatic Lands

State-owned tidelands, shorelands, harbor areas and the beds of navigable water.

BLM

United State Bureau of Land Management.

BNR

Board of Natural Resources. A six-member board that provides policy direction to the Department regarding management of state trust lands, state aquatic lands and natural areas. The board is comprised of the Governor or designee; Commissioner of Public Lands; Superintendent of Public Instruction; the Dean of the College of Agriculture, Washington State University; the Dean of the College of Forest Resources, University of Washington and a member representing the counties that receive financial benefits from State Forest trust lands.

Condensate

The liquid hydrocarbons recovered at the surface that result from reduced pressure or temperature of the hydrocarbons existing in a gaseous phase in the reservoir.

CRP

The Departments' Conservation Reserve Program.

CRPMP

Cultural Resource Protection and Management Plan, which is a forests and fish report addendum issued by the Timber Fish and Wildlife Agreement (TFW) Cultural Resources committee.

CWA

Clean Water Act. A federal statute that regulates water quality standards, planning for water pollution control and pollution discharge. Washington's Forest Practices Rules (WAC 222-22) are constructed accordingly.

Degradation

To wear down by erosion or compaction (soil) or reduce the complexity of (chemical).

Directional Drilling

Intentional deviation of a well bore from the vertical. To drill at an angle from the vertical. Controlled directional drilling makes it possible to reach subsurface areas remote from the point where the bit enters the earth.

DNR

Washington State Department of Natural Resources

DNS

Determination of Non-Significance under State Environmental Policy Act (SEPA)

DS

Determination of Significance under State Environmental Policy Act

Easement

A right held by one person to make use of the land of another for a limited purpose, as right of passage. It is a non-possessory right. Easements are granted across department-managed land under legislative authority for an appurtenance of another piece of property.

Ecoregion

A relatively large area of land or water that contains a geographically distinct assemblage of natural communities with similar broad ecological patterns in vegetation, soils, geology, hydrology, landforms and natural disturbances, such as fire.

EIS

Environmental Impact Statement, under State Environmental Policy Act SEPA. Document prepared to assess effects that a particular action will have on environmental conditions.

Endangered, threatened and sensitive species

Rare plant and animal species are assigned to one of three categories:

- **Endangered:** A vascular plant or wildlife species in danger of becoming extinct or extirpated in Washington within the near future if factors contributing to its decline continue. These are species whose populations are at critically low levels, or whose habitat has been significantly degraded or depleted. (Extinction means the species is gone throughout its range; extirpation means it is gone from part of its range.)
- **Threatened:** A vascular plant or wildlife species likely to become endangered in Washington within the near future if factors continue that contribute to its population decline or to habitat degradation or loss.
- **Sensitive:** (a) A vascular plant species with small populations, or localized distribution that is not now endangered or threatened, but whose populations and habitat will be jeopardized if current land-use practices continue. (b) A uniqueness, rarity, scientific value or vulnerability to human disturbance or land-management activities.

Entry, right of way

Permits to enter state lands for the purpose of conducting operations that are not specific to road use or easement rights of way and are temporary in nature, such as surveys, test core drillings, military maneuvers, environmental impact studies, cutting dangerous trees adjacent to previous grants, etc. Now known as Land Use License.

Environment

The conditions, circumstances, and influences surrounding and affecting the development of an organism or group of organisms.

Environmental checklist

Brief list for analyzing and describing potential impacts to land, water, etc. and the natural environment from activities associated with a proposed project.

ESA

Endangered Species Act. The federal Endangered Species Act of 1973, as amended, is the federal statute that establishes processes by which plant and animal species are designated as threatened or endangered. Two federal agencies, the United States Fish and Wildlife Service and the National Oceanic and Atmospheric Administration–Fisheries Service (the Federal Services), administer this law. Once a species is listed, the act provides that these agencies develop recovery plans for the species, including conserving the ecosystems on which listed species depend. The Department’s *Habitat Conservation Plan* is an example of such a recovery plan.

Exploration

The investigation of oil and gas resources by any geological, geophysical, geochemical or other suitable means such as drilling.

Forest Practices Board

This Washington State board was created under RCW 76.09 as the body and was directed to promulgate forest practice regulations to be administered and enforced by the state Department of Natural Resources.

FRP

Forest Riparian Easement Program.

HCP

Habitat Conservation Plan. An implemental program for the long term protection and benefit of a species in a defined area; required as part of a Section 10 incidental taking permit application under the federal Endangered Species Act. The department has a Habitat Conservation Plan signed in 1997 in agreement with the United States Fish and Wildlife Service and National Oceanic and Atmospheric Administration-Fisheries. The plan covers approximately 1.6 million acres of state trust lands managed by the department within the range of the northern spotted owl.

Herbaceous

Having the characteristics of an herb (a seed-producing annual, biennial or perennial that does not develop persistent woody tissue).

Hydrocarbons

Organic compounds of hydrogen and carbon.

LWD

Large woody debris.

MDNS

Mitigate Determination of Non-Significance.

Native

Indigenous to or originating naturally in Washington; remaining or growing in an unaltered natural condition.

Natural area

Land that is part of Washington State's Natural Areas Program, as either a Natural Resources Conservation Area or Natural Area Preserve. Generally these lands are protected as high quality examples of terrestrial or aquatic ecosystems, habitats and populations or rare or endangered plant and animal species, or unique geologic features.

Natural Area Preserves

The more protective of the two Natural Area designations, the purpose of the preserves is to:

- protect examples of undisturbed terrestrial and aquatic ecosystems, rare plant and animal species and unique geologic features.
- serve as gene pool reserves.
- serve as baselines against which the influences of human activities in similar disturbed ecosystems may be compared.
- provide outdoor laboratories for scientific research and education. (RCW 79.70.010.)

Natural heritage

The native species, plant communities, aquatic types and geologic features in Washington; the natural features of the state; the state's natural diversity.

Natural Heritage Program

A program established under Washington's Department of Natural Resources to assist in the selection, nomination, establishment and management of a system of natural areas.

OAHP

Office of Archeology and Historic Preservation.

OGLP

Oil and Gas Leasing Program. A program established under the state Department of Natural Resources for the Oil and Gas Leasing Program for state-owned lands.

Permeability

A measure of the ability of fluids or gas to diffuse or pass through a porous (rock) material. To diffuse or pass through; pervade; saturate.

Pool

An underground reservoir containing a common accumulation of oil or gas, or both. Each zone of a structure, which, is completely separated from any other zone in the same structure, such that the accumulations of oil or gas are not common with each other, is considered a separate pool and is covered by the term "pool".

Production

Extracting oil and/or gas in paying quantities.

RCW

Revised Code of Washington. Statutes enacted by the legislature are codified in the RCW.

Reclamation

The reasonable protection and rehabilitation of all land subject to disruption from exploration, development, and production of mineral resources, such as oil and gas or surface mining.

Riparian

Stream and riverbanks environmental characteristics and biotic components that set these areas apart from the surrounding ecosystems.

RMZ

Riparian Management Zone. The area immediately adjacent to streams, rivers, swamps, ponds and lakes, which directly affects conditions within the body of water and associated wetlands. It includes all vegetation within the zone.

SEIS

Supplemental environmental impact statement under the State Environmental Policy Act. See EIS for definition.

SEPA

State Environmental Policy Act of 1971 (Ch. 43.21C RCW). All measures necessary for compliance with the Act requirements.

Siltation

The deposition or accumulation of silt onto land from the water. Silt includes particles ranging in size from sand to clay.

State-owned lands

Lands owned by the state of Washington, under the administration of specific state agencies.

Stratigraphic test or well

A hole drilled to obtain information on the thickness lithology, sequence, porosity, permeability and age of the rock penetrated. A stratigraphic test is limited to a 2,000-foot depth.

TES

Threatened, endangered, and sensitive (species). For definition see endangered, threatened, and sensitive species.

TFW

Timber Fish and Wildlife (agreement).

TMDL

Total maximum daily load, referring to total maximum daily load requirements related to fish protection and water quality.

TNC

Acronym for The Nature Conservatory.

Upland ownership

Lands abutting tidal waters or lakes patented by the United States prior to November 11, 1889 extend to the meander line or the mean high water line, whichever is further seaward.

Lands patented by the United States after November 11, 1889 extend to the line of mean high water.

The state has no interest in tidelands or shorelines included within the meander lines of an upland survey abutting tidal water or lakes, where such lands were patented prior to statehood November 11, 1889. (See DNR factsheet: Boundaries of State-owned Aquatic Lands)

USFS

United States Department of Agriculture Forest Service. Commonly known as the United States Forest Service.

WAC

Washington Administrative Code; the rule and regulations adopted pursuant to a chapter within the state statutes (Revised Code of Washington).

Watershed

1. The ridge or crest line dividing two drainage areas; divide.
2. The region or area drained by a river, stream, etc.; drainage area.

WDFW

Washington State Department of Fish and Wildlife.

WDG

Washington State Department of Game.

Wetlands

Areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation

typically adapted for life in saturated soil conditions such as swamps, bogs, fens and similar areas.

WFFA

Washington Farm Foresters Association.

WFPA

Washington Forest Protection Association.

Wildcat well

An exploratory well drilled for oil or gas on a geologic feature not yet proven to be productive, in an unproven territory or to a zone that has never produced or has not been known to be productive in the general area.

WQMA

Water Quality Management Area.

YTC

Yakima Training Center.

Summary

In 1985, the Washington Department of Natural Resources (DNR) ([department](#)) issued an Oil and Gas Leasing Program Final Environmental Impact Statement. Since that time, numerous changes have been implemented for the protection of surface waters, wetlands, cultural resources, and terrestrial and aquatic species; these include DNR's Environmental Impact Statements for the:

- 1992 DNR Forest Resource Plan (statewide);
- 1997 DNR Habitat Conservation Plan (HCP) for forested state trust lands, mostly in Western Washington;
- 1988 Supplemental Forest Practices Rules and Regulations (for riparian zones, and for Eastern Washington RMZs);
- 2002 Forest Practices Rules and Regulations (wetlands, cumulative effects, stream temperatures, forest chemicals, wildlife reserve trees, harvest size and timing);
- 2001 Alternatives for Forest Practice Rules for Aquatic and Riparian Resources;
- 2004 Lake Whatcom Landscape Plan; and
- 2004 Alternatives for Sustainable Forest Management. In addition, new information has been developed regarding natural resources.

Therefore, there is a need to update and supplement the 1985 State of Washington DNR Oil and Gas Leasing Program to incorporate changes during the last 20 years.

DNR is authorized to maintain a viable oil and gas leasing program for state lands (RCW 79.14.020, RCW 80.40.060 and WAC 332-12-150). The Oil and Gas Leasing Program (OGLP) covers preliminary exploratory and investigative actions and lease auctioning for state lands for possible development and production, with the purpose of maintaining a viable oil and gas leasing program for all state lands while conserving and enhancing natural resources.

On November 10, 2004 a Determination of Significance and Request for Comments on the scope of the Supplemental Environmental Impact Statement (EIS) was published and distributed (see Appendix I for Threshold Determination/Scoping Notice). The November 2004 scoping process did not raise any additional issues, and no scoping comments were received.

Statewide objectives have not changed since 1985 and this Supplemental EIS covers the state of Washington. However, this document presents specific conditions in the Columbia Basin region of southeast Washington, where the majority of recent leasing activity has occurred and is expected to occur in the future.

The proposed action covered by this Supplemental EIS is to review and update the DNR's 1985 Oil and Gas Leasing Program for oil and gas preliminary investigation and exploratory drilling so that the following eight program objectives are achieved.

- 1) Clarify the phased SEPA review process for the Oil and Gas Leasing Program;
- 2) Incorporate into the Oil and Gas Leasing Program, both the 1988 WAC 332-12-150 authorizing DNR to lease state lands for other state agencies, and the associated 2003 Memorandum of Understanding with Washington Department of Fish and Wildlife;
- 3) Conduct a current regulatory framework analysis for the Oil and Gas Leasing Program;
- 4) Align the Oil and Gas Leasing Program with broad DNR landscape and ecosystem assessments and plans approved since 1985, such as the 1992 Forest Resource Plan; Plans for Natural Area Preserves and Natural Resource Conservation Areas; the 1997 DNR Multi-species Habitat Conservation Plan (HCP); and the 1994 House Bill 1309, Ecosystem Standards for State-Owned Agricultural and Grazing Lands;
- 5) Restore through a policy change the environmental review for all types of ground-disturbing activities in Phase 3 of the SEPA process (see section titled Oil and Gas Phased SEPA Process, below);
- 6) Apply measures for assessing and mitigating potential environmental impacts, identified in the current Forest Practices Rules and Best Management Practices, consistently on leased lands for activities resulting from oil and gas exploration only, both forested and non-forested;
- 7) Update shrub-steppe wildlife and plant knowledge and habitat conditions for the Columbia Basin Ecosystem in the area of likely gas exploration activities,
- 8) Update the cultural resources review process for oil and gas activities.

Three alternatives were developed to meet the program objectives:

- Under Alternative 1, No Action, the Oil and Gas Leasing Program would be updated, but would generally continue as it currently exists.
- Alternative 2, the Preferred Alternative, would also update the Oil and Gas Leasing Program, but it would also incorporate three new policies related to Objectives 4, 5, and 6.
- Alternative 3 would implement the Preferred Alternative on a delayed time schedule. Initially, implementing Alternative 3 would be the same as implementing Alternative 1. However, at some point in the future, all changes described above under Alternative 2 would also occur under Alternative 3.

The four policies that form the major basis for the differences among the alternatives include one related to additional SEPA review requirements, one relating to policies of the Forest Resources Plan to oil and gas activities on non-forested lands; and two relating to the Forest Practices Rules and Best Management Practices to oil and gas activities on non-forested lands.

Potential impacts and associated mitigation measures for each of the affected environments discussed in this document are similar under all alternatives. However, because of the proposed new policies, Alternative 2 (the Preferred alternative) offers relatively more protection than Alternative 1 through application of the SEPA review process during oil and

gas seismic and exploratory activities and application of Forest Resources Plan policies and Forest Practices Rules and Best Management Practices to oil and gas activities only on non-forested lands (e.g., road construction specifications, and riparian and wetland protection), including agricultural and grazing lands in Eastern Washington.

Chapter 1. Background and Objectives

History of Exploratory Drilling and Production in Washington

The right to drill for natural gas in Washington is controlled by mineral estate owners. The mineral estate may be owned by the surface owner or by another party such as the descendants of homesteaders, the state or federal government, large timber companies, or previous landowners who chose to retain the mineral rights when they sold their land. Companies prefer to lease rather than purchase the right to explore a mineral estate. If a company purchases the mineral estate and subsequently drills an unsuccessful wildcat well (a production test well), large amounts of capital would be frozen in a mineral estate that had diminished in value owing to the dry well. Commonly, companies that have drilled many discoveries gather a following of mineral estate speculators who attempt to lease minerals at a low cost and sell them to the successful company or a competitor at a higher price. In order to reduce competition from speculators, successful companies commonly retain a small leasing company to do their land work.

Potential gas plays (areas with petroleum potential) are known to exist in the state of Washington and prior to the end of the 1980s, about 600 exploratory wells have been drilled. At that time, cost-effective, commercial production was problematic, considering the depth of the gas-bearing geologic formations and prevailing market conditions (McFarland, 1983). Small amounts of gas have been produced from the Bellingham Gas Field, east of Ferndale, and the Rattlesnake Hills Gas Field, north of Richland (McFarland, 1983). The most recent production, which was from the Ocean City Gas and Oil Field, west of Hoquiam, ceased in 1962. No producing wells, oil or gas, have been brought in since that time. Much of the Puget Lowland and Columbia River basin have some potential for natural gas production (Johnson and others, 1997; Lingley, 1995; Lingley and von der Dick, 1991; Lingley and Walsh, 1986; McFarland, 1983; Walsh and Lingley, 1991), but oil exploration is of relatively little importance in Washington because coastal areas north of Grayland are the only parts of the state with reasonable potential for oil discoveries (Palmer and Lingley, 1989; Snavely and Kvenvolden, 1989).

Agency records for previous Oil and Gas Lease Auctions show no auction records prior to 1947. Lease auctions have been held periodically; first in 1947 and 1948, then in 1979, 1986-90, 1992-95, 1997-98, 2001 and 2004. Number of parcels auctioned for lease ranged from 50 in 1947-48 to more than 600 in 2004. Search of archived materials files on hand indicates no commercial production on state lands to 2004. The last exploratory well drilled on a state lease was by Hunt Oil Co. during 1996 near Morton, Lewis County. Prior to 1996, two wells were drilled during 1989 (one each in Lewis and Clallam counties.) There have been no wells drilled in eastern Washington on state leases.

The Department's Legal Obligations

The DNR is authorized to implement an oil and gas leasing program for state lands (RCW 79.14.020, RCW 80.40.060, and WAC 332-12-150). Therefore, as addressed in the 1985 EIS

a general non-leasing policy is not an option. The trust mandate to generate revenue from state lands has not changed since 1985.

New State Agency Roles and Cooperation

DNR is the designated Lead for leasing of all state-owned land. WAC 332-12-150 authorizes the Commissioner of Public Lands to lease state-owned lands not managed by DNR.

Oil and Gas Leasing Program (OGLP) Roles

Commissioner of Public Lands

The Commissioner of Public Lands (Commissioner) determines which lands are to be leased and which lands are to be withheld from leasing. As Administrator of the state Department of Natural Resources, and pursuant to RCW 78.52.037, the Commissioner designates the State Oil and Gas Supervisor and delegates all powers necessary to carry out the regulation of oil and gas activities on all lands in the state, both public and private.

The Oil and Gas Supervisor Role

On appointment by the Commissioner of Public Lands, Chapter RCW 78.52 gives the Oil and Gas Supervisor the authority to administer and enforce the Oil and Gas Conservation Act. This authority includes but is not limited to, issuing permits and taking enforcement actions.

The Board of Natural Resources

The Board of Natural Resources reviews goals and policies, and comments on plans submitted by all DNR trust land management programs. This includes approving and implementing policy changes for the Oil and Gas Leasing Program. (The Board of Natural Resources role has not changed since 1985.)

Location of Proposal

Statewide objectives have not changed since 1985 and this Supplemental EIS covers the state of Washington. However, this document presents specific conditions in the Columbia Basin region of Southeast Washington, because all recent and expected leasing activity is in this region.

Purpose and Need

Purpose

The purpose of DNR's Oil and Gas Leasing Program is to satisfy goals identified in the 1985 Oil and Gas Leasing Program Final EIS. In general, the purpose is to maintain a viable oil and gas leasing program for all state lands that covers preliminary exploratory and investigative actions and provides for possible development and production while conserving and enhancing natural resources.

Need

The Oil and Gas Leasing Program Final EIS was prepared 20 years ago and many changes have occurred in state and federal regulations since then. In addition, new information has been developed regarding natural resources. Therefore, there is a need to update and supplement the 1985 State of Washington DNR Oil and Gas Leasing Program to incorporate changes over the last 20 years.

Proposed Action and Program Objectives

The proposed action covered by this Supplemental EIS is to review and update DNR's 1985 Oil and Gas Leasing Program for preliminary investigation and exploratory drilling for oil and gas on state-owned lands so that the following eight program objectives are achieved:

- 1) Clarify the phased SEPA review process for the Oil and Gas Leasing Program;
- 2) Incorporate the 1988 WAC 332-12-150 authorization for the DNR to lease state lands for other state agencies and the associated 2003 Memorandum of Understanding (MOU) with Washington Department of Fish and Wildlife into the Oil and Gas Leasing Program;
- 3) Conduct a current regulatory framework analysis for the Oil and Gas Leasing Program;
- 4) Align the Oil and Gas Leasing Program with broad DNR landscape and ecosystem assessments and plans since 1985, such as the 1992 Forest Resource Plan; Natural Area Preserves and Natural Resource Conservation Areas; the 1997 DNR Multi-species Habitat Conservation Plan (HCP); and the 1994 House Bill 1309, Ecosystem Standards for State-Owned Agricultural and Grazing Lands;
- 5) Restore the environmental review for all types of ground-disturbing activities in Phase 3 of the SEPA process (see section titled Oil and Gas Phased SEPA Process, below) through a policy change;
- 6) Apply measures for assessing and mitigating potential environmental impacts from oil and gas activities only identified in the current Forest Practices Rules and Best Management Practices, consistently on all lands leased for oil and gas by DNR.
- 7) Update shrub-steppe wildlife and plant knowledge and habitat conditions for the Columbia Basin Ecosystem in the area of likely gas exploration activities,
- 8) Update the cultural resources review process for oil and gas activities.

Scoping

On November 10, 2004 a Determination of Significance and Request for Comments on the scope of the Supplemental EIS was published and distributed (see Appendix I for Threshold Determination/Scoping Notice). The November 2004 scoping process did not raise any additional issues, and no scoping comments were received.

Changes in Policies, Statutory Law, and Board of Natural Resources Direction

Lands Available for Lease

No change has occurred in the lands available for lease from the 1985 Oil and Gas Leasing Program Final EIS that was based on Commissioner and Board of Natural Resources review.

Leasing of Aquatic Lands

No change has occurred from the 1985 Oil and Gas Leasing Program Final EIS in terms of leasing of aquatic lands. The proposed action not to lease was based on Commissioner and Board of Natural Resources review and drilling is prohibited by statute (RCW 90.58.160). Leasing of lands under fresh water is allowed, surface drilling is prohibited, but directional drilling 200 feet beyond the ordinary high water mark is permitted by DNR policy.

Water and Wetland Areas

The 2005 no-action alternative (described below) would result in no change from the 1985 Oil and Gas Leasing Program Final EIS. The 2005 preferred alternative, through a policy change, would apply the Forest Practices Rules and the Forest Practices Board Manual Best Management Practices to all lands of the state, including non-forested lands, for impacts from oil and gas exploration and development. The preferred alternative would require that new roads, drill pads, or surface disturbance not be located within 200 feet of any stream or Type A or B wetland. Forested wetlands protection and mitigation would also follow Forest Practices Rules and the Board Manual for oil and gas activities statewide (see Appendix S-2).

Lake Whatcom Watershed

The 2005 no-action alternative includes Board of Natural Resources Resolution 1141. Directional drilling beneath the hydrographic boundary of Lake Whatcom watershed is temporarily suspended.

Department-initiated Oil and Gas Leasing Applications

These are removed from the 2005 alternatives. The proposed 1985 actions are procedural and not policy or based in statute. This procedure is included in the lands available for lease section.

Notification of Oil and Gas Leasing

No change has occurred from the 1985 Oil and Gas Leasing Program Final EIS. The proposed action is based on procedural guidelines and by rule (WAC 332-12-265).

Plan of Operations

No change has occurred from the 1985 Oil and Gas Leasing Program Final EIS. The proposed action is based in rule (WAC 332-12-360) for state-managed lands. On the regulatory side, an application to drill, re-drill, or deepen a well requires a detailed plan that is

submitted to the State Oil and Gas Supervisor as per rule (WAC 344-12-050) and processed through SEPA (WAC 344-18).

Land Use License

This was formerly known as a Right-of-Entry permit. The 2005 no-action alternative is set in policy from the 1985 Oil and Gas Leasing Program Final EIS. Where ground disturbance is anticipated, the 2005 preferred alternative a plan of operations and SEPA check list would be required, through policy change (see Appendix S-3).

Seismic Exploration Permits

Amendments of rule (WAC 344-12-050) changed in 1988 from a required permit to one of notification by operator to the Oil and Gas Supervisor. The 2005 no-action alternative has no change from the 1985 Oil and Gas Leasing Program Final EIS. Where ground disturbance is anticipated, the 2005 preferred alternative requires, through policy change, a plan of operations, SEPA checklist, and a land use license (if not under lease) (see Appendix S-3).

Resource Protection, Plants and Animals

The 1992 Forest Resource Plan Policies 22 and 23 are consistent with the 1985 Oil and Gas Leasing Program Final EIS and are the 2005 SEIS *no-action alternative* for forest lands. Currently, Policy 22 directs the DNR to develop wildlife habitat objectives and Policy 23 directs the DNR to voluntarily participate in efforts to recover and restore endangered and threatened species. These policies may be modified during the Forest Resource Plan revision process. The 2005 *preferred alternative* would apply Policies 22 and 23, through policy change, to all state-managed lands leased for oil and gas exploration (see Appendix S-1).

Resource Protection, Natural Heritage Plan

There are no changes from the 1985 Oil and Gas Leasing Program Final EIS, except to add Natural Resource Conservation Areas. Natural Area Preserves are established under statutory authority (RCW 79.70, WAC 332-60) and Natural Resources Conservation Areas as per RCW 79.71.100.

Resource Protection, Cultural Resources

The no-action alternative is the 1985 Oil and Gas Leasing Program Final EIS as affirmed by Department Tribal Policy in 1991 and Commissioner's Order No. 200407 dated April 26, 2004. Archeological sites are protected by statute (RCW 27.53) and Native American graves, cairns, and glyptic records by statute (RCW 27.44). The 1992 Forest Resource Plan Policy 24 was expanded in 1996 to include all state-managed land through Policy PO06-001 and further clarified in 2003 to include agricultural and grazing lands by Policy PO08-034.

Road Construction

Under the *no-action alternative*, there would be no change from the 1985 Final EIS. The 2005 *preferred alternative* would require, through policy change, application of Forest Practices rules (WAC 222-24) and Section 3 of the Forest Practices Board manual to road construction resulting from oil and gas activities on forested and non-forested lands leased for oil and gas (see Appendix S-4).

Preliminary Investigations

Under the *no-action alternative*, there would be no change from the 1985 Oil and Gas Leasing Program Final EIS. The 2005 *preferred alternative* would require, through policy change, a plan of operations, SEPA checklist, and a land use license (if not under lease) for preliminary investigations where ground disturbance is anticipated. A Right-of-Entry Permit is now called a Land Use License and guided by policy.

Seismic Exploration

(Covered above under Preliminary Investigations.)

Stratigraphic and Exploratory Drilling

No change has occurred from the 1985 Oil and Gas Leasing Program Final EIS. Requirements are established by rule (WAC 332.12.360) and regulatory rules are enforced by the Oil and Gas Supervisor (WAC 344.12.050 and WAC 344.18).

Oil and Gas Phased SEPA Process

The Board of Natural Resources adopted the Oil and Gas Leasing Program ([leasing program](#)) in June 1985 after adoption of the Final EIS for the leasing program. The 1985 Oil and Gas Leasing Program requires discrete phases of environmental review for oil and gas exploration and production on state lands. The 1985 Programmatic Final EIS was the first phase, and will continue to provide the first phase of environmental review once it is updated by adding this Supplemental EIS. The Supplemental EIS for DNR's leasing program will update this first phase of SEPA review (programmatic review) in a few areas. The phased SEPA approach described in 1985 has not changed in this Program update. This explanation of the phased SEPA process is intended to help clarify and add details to the limited discussion of this topic in the 1985 document.

The second phase of SEPA environmental review occurs when sections of state land are proposed for exploration lease auctions. Subsequent phases of SEPA environmental review (e.g., Phases 3, 4, and 5) address specific activities identified in a Plan of Operations by the lessee. These activities include:

- Seismic surveys
- Exploratory drilling
- Oil or gas well development
- Well production
- Product storage
- Site reclamation and abandonment

Leasing for exploration does not necessarily lead to any exploration. Drilling, development, and production is much less likely, even though hundreds of sections may be leased. Considerable time may elapse between phases, should they ever occur. Environmental review under SEPA may be phased when some issues are not ready for review or decision (WAC 197-11-060(5)). Phasing helps to focus on those issues ready for decision and excludes those

already decided, by reliance on existing environmental analysis. The sequence is from broad environmental review to narrower more focused documents, from non-project proposals to site-specific projects, or from early project stages such as site selection, to later stages such as the final project design, or a reclamation plan.

Each phase of environmental review requires an independent SEPA threshold determination. The threshold is the likelihood of significant adverse environmental impacts. Each additional SEPA phase relies on the previous environmental analysis, but also assesses new information and new proposal details. A SEPA checklist is usually completed for the threshold determination required at each subsequent phase of SEPA review. A new EIS or a Supplemental EIS (SEIS) can be required at any phase if there is a threshold determination of significance (DS). If a Final EIS or final SEIS concludes that there will be significant adverse environmental impacts that cannot be reasonably mitigated, a permit may be denied.

Once DNR updates the first phase of SEPA review with this Supplemental EIS for the Oil and Gas Leasing Program, DNR will then continue to sequentially address the environmental impacts on any future proposals in discrete phases. Each of the following stages of oil and gas activities will require another phase of SEPA review as new information becomes available:

- Leasing land for oil and gas exploration
- Site exploration and test drilling
- Well development
- Production, storage, and site reclamation and abandonment

During the term of a lease, each stage of site investigation, site development and production, and any other activities that meet the definition of a SEPA action, requires completion of a new SEPA threshold determination and new public involvement. The following actions all require environmental analysis under SEPA:

- Temporary use authorization for on-the-ground surveys prior to lease
- Proposed lease auction or lease application [WAC 332-22-040]
- Approval of a Plan of Operations (preliminary investigations prior to drilling) [WAC 344-12-360]
- Shallow wells for geological data [WAC 344-12-050(3)]
- Notification of Seismic Survey [WAC 344-12-050(4)]
- Permit for drilling (in search of gas or oil) [WAC 344-12-050(1)]
- Significant changes to a Plan of Operations (reformulations for development, production and additional reclamation) [WAC 332-12-360]

Programmatic SEPA (Phase 1)

The 1985 programmatic Final EIS for the DNR Oil and Gas Leasing Program, and any updates, such as this Supplemental EIS, constitute the first phase of a planned SEPA environmental review process. At this phase, the primary considerations are whether state lands should be explored for oil and gas production, where should such activities occur, and what restrictions are appropriate. This phase considers the process for reviewing and

providing adequate safeguards for all preliminary oil and gas investigation activities, including exploratory drilling.

The programmatic phase of environmental review is a type of non-project SEPA review. It is used to help guide the DNR Oil and Gas Leasing Program decisions and establish sideboards for reviewing leasing or exploration proposals. This programmatic phase of SEPA review occurs prior to the consideration of actual lease proposals and prior to the consideration of any site-specific exploration proposals or plans of operation. Lease proposals and plans of operation trigger the next two independent phases (Phases 2 and 3) of SEPA review.

Lease Auction SEPA Phase (Phase 2)

A DNR proposal for a state-land lease auction is an action that requires completion of a SEPA checklist and a SEPA threshold determination. Several activities precede the auction. These include consolidation of proposed lease areas, land records check, environmental checklist completion/site inspection, SEPA threshold determination, public notice, and lease contract development.

Interested parties, other state agencies, or DNR may propose state-land lease areas that are then grouped geographically for consolidated environmental review. Grouping proposed lease areas reduces the initial number of checklists and threshold determinations in keeping with the plan to conduct more site-specific analysis in a later phase, if and when any Plans of Operations are submitted for survey or seismic exploration work, or if drilling is ever proposed on a specific section. Unique environmental attributes of a proposed site may preclude combining it with other sites, however. The land records check determines if the land is available for lease and any encumbrances such as surface rights, endangered species or habitat, or archaeological/historic sites, which must be evaluated prior to auction.

The applicant or the DNR may complete the environmental checklist, but the DNR SEPA responsible official must ensure the checklist information is adequate for the SEPA threshold determination. For a mitigated determination of non-significance (MDNS), any required mitigation must also be required in the lease contract with the successful lessee. A threshold determination of significance (DS) would require DNR to prepare an EIS covering any programmatic concerns or leasing/exploration policies prior to lease awards. When leases are auctioned any future EIS requirements from later SEPA phases would be charged to the lessee. Supplemental EIS work need not address subjects already covered in the programmatic EIS or other previous environmental documents, other than to adopt or incorporate them by reference.

Public notice is issued after the SEPA threshold determination(s) on the proposed auction parcels. The public comment period runs for at least 14 days after a determination of non-significance (DNS) or for a mitigated DNS. Comments may result in changes to the auction proposal, such as withdrawal of a lease parcel, or in changes to the terms of the lease contract to add mitigation requirements for a particular parcel.

Plan of Operation SEPA Phase (Phase 3)

This phase occurs when a lessee decides to proceed with active site investigation and exploration. It sometimes involves seismic surveys and possibly exploratory drilling. Under current rules, the lessee must submit a Plan of Operations to DNR prior to on-site work, other

than for seismic geophysical surveys. Seismic surveys can be conducted, following only notification by the operator; SEPA review is not required. DNR approval of the Plan of Operations for other ground-disturbing activities is a DNR action that requires prior SEPA review. The Plan of Operations may or may not include any drilling activities. When drilling is proposed the drilling permit approval and the Plan of Operations approval are addressed in a single SEPA environmental checklist, SEPA threshold determination, and public comment period.

Any mitigation requirements identified in the environmental review need to be included in the DNR lease contract. If a DS is issued the DNR will require an EIS to be prepared by a qualified consultant and the lessee will bear the cost. The *DNS, MDNS, or EIS is limited to the scope of activities in the Plan of Operations. It will not cover any subjects already addressed in previous environmental documents that can be adopted or incorporated by reference. Any subsequent major changes to the Plan of Operations by the lessee will require additional SEPA review, threshold determination, and public review, prior to DNR approval.

Drilling Permit SEPA Phase (Phase 4)

For leased sites with an approved Plan of Operations and for exploration that are now proposing exploratory drilling, the next step is a well drilling permit. DNR issues the drilling permit. This permit can cover several exploratory wells, wells for seismic testing, or shallow wells drilled for geology. The drilling permit requires a SEPA environmental checklist, threshold determination, and public comment period. Any necessary mitigation identified in the SEPA process for a determination of non-significance (DNS), or for a mitigated DNS, must be included in the lessee's drilling permit requirements. If a DS is issued, an EIS or a Supplemental EIS must be prepared for the lessee (at lessee's expense). The new DNS, MDNS, EIS or SEIS is limited to the scope of proposed activities, but does include reclamation and site restoration. The EIS (or SEIS) should adopt or incorporate by reference any subjects already assessed in previous environmental documents, but must assess the environmental impacts of any changes to the proposal.

It should also be noted that leasing of state lands under freshwater is allowed, but surface drilling and seismic surveys are prohibited within 200 feet of the ordinary high water mark. An EIS may be required if a lessee proposes directional drilling under freshwater from more than 200 feet away. The Department of Ecology is responsible for this EIS completion (at lessee's expense). Ecology must report to DNR on the anticipated environmental impacts at least 120 days prior to drilling. DNR may reject the drilling permit application based on any significant adverse impacts identified in Ecology's EIS that cannot be reasonably mitigated (RCW 78.52.125).

Production and Reclamation SEPA Phase (Phase 5)

Once a well has been drilled and demonstrates the capacity to produce commercial quantities of oil and/or gas the lessee must then apply for a permit for oil and gas well development and production. Another SEPA environmental checklist, SEPA threshold determination, and public review is required based on the specifics of the planned well development and product storage facilities. If any significant impacts are identified that cannot be reasonably mitigated a DS will be issued. In this case the lessee would bear the cost of the EIS that must be completed prior to the DNR permit decision on the development proposal. If an EIS is required it will be limited to the scope of the new proposal. Final reclamation and site

restoration requirements would be addressed in the Plan of Operations and in the EIS, if an EIS were required. *An applicant may elect to consolidate development and production phases for environmental review under SEPA.*

Chapter 2. Description of the Proposal and the Alternatives

This chapter describes the proposal and the alternatives under consideration. In the process, it compares each alternative against the eight program objectives described in Chapter 1.

Alternative 1 – 2005 No-action Alternative

Under the No Action Alternative, the Oil and Gas Leasing Program would be updated as described in Table 2-1 for each program objective. *While identified as ‘No-action,’ Alternative 1 in fact supplements the 1985 EIS and the 1985 Oil and Gas Leasing Program by adding and making reference to current environmental studies, regulations and programs, thereby significantly enhancing environmental review of the Oil and Gas Program and leases undertaken pursuant to the EIS and the Oil and Gas Program.* The major changes among the alternatives relate to Objectives 4, 5, and 6, which are described in more detail in the following paragraph.

Generally, under Alternative 1, the Oil and Gas Leasing Program would continue, as it currently exists. The phased SEPA process for oil and gas exploration and development activities would continue as described in Chapter 1; SEPA review would not be required for seismic geophysical surveys for oil and gas exploration under this alternative. Forest Resource Plan policies 22 and 23 would only apply to forested lands in the areas of potential oil and gas exploration and development, as would mitigation measures specified under the current Forest Practices Rules and Forest Practices Board Manual Best Management Practices. Consequently, under the No Action alternative, activities such as road building would not be conducted under the same standards that apply to other state-owned lands.

Alternative 2 – 2005 Preferred Alternative

Under the Preferred Alternative, the Oil and Gas Leasing Program would be updated as described in Table 2-2 for each program objective. The major changes among the alternatives relate to Objectives 4, 5, and 6, which are described in more detail in the following paragraph.

The Preferred Alternative updates the 1985 Oil and Gas Leasing Program and incorporates four new policies. The first policy requires an operating plan subject to SEPA review when seismic surveys and other exploratory activities requiring ground disturbance are anticipated. Currently, only notification by the operator is required and these surveys are not subject to SEPA review. The second policy relates to the protection of animal and plant resources. Under this policy, the DNR would apply Forest Resource Plan policies 22 and 23 of the 1992 Forest Resource Plan to oil and gas activities on non-forested lands (e.g., agricultural and grazing) that have been leased for oil and gas in eastern Washington. The third policy relates to the protection of surface waters, wetlands, and aquatic species. *The third policy, if adopted, would apply WAC 222-16-035 and Best Management Practices in Forest Practices Board Manual Sections 8 and 9 to non-forested lands for oil and gas activities.* The fourth policy requires the application of 2001 Forest Practices Rules and Best Management Practices described in the Forest Practices Board Manual to road building related to oil and gas

exploration on leased state lands, both forested and non-forested (e.g., agricultural and grazing). *The fourth policy, if adopted, would apply WAC 222-24 (excluding WAC 222-24-050 and WAC 222-24-051) and Forest Practices Board Manual Section 3, Parts 1, 2, and 5 to non-forested lands for oil and gas activities.* Appendix S provides a draft of each policy.

Alternative 3 – Implement Preferred Alternative in the Future

Alternative 3 would implement the Preferred Alternative on a delayed time schedule. Initially, implementing Alternative 3 would be the same as implementing Alternative 1. However, at some point in the future, all changes described above under Alternative 2 would also occur under Alternative 3.

Table 2-1. Alternative 1 (No-Action) Compliance with Eight Program Objectives

| # | Objective Description | Alternative 1 Objective Compliance |
|---|--|--|
| 1 | Clarify the phased SEPA review process for the Oil and Gas Leasing Program | Alternative 1 would clarify the existing phased SEPA review process by incorporating the description in Chapter 1 of this SEIS. |
| 2 | Incorporate WAC 332-12-150 and the associated 2003 MOU between the WDFW and the DNR into the Oil and Gas Leasing Program | Alternative 1 would incorporate WAC 332-12-150 and the associated 2003 MOU between WDFW and the DNR into the Oil and Gas Leasing Program. |
| 3 | Conduct a current regulatory framework analysis for the Oil and Gas Leasing Program | A current regulatory framework analysis was conducted for this SEIS (see Appendix T). Alternative 1 would incorporate the appropriate findings into the Oil and Gas Leasing Program. |
| 4 | Align the Oil and Gas Leasing Program with current DNR assessments and plans | Under Alternative 1, the Oil and Gas Leasing Program would be aligned with many aspects of DNR assessments and plans produced since 1985, including the Forest Resource Plan, Natural Area Preserves and Natural Resource Conservation Areas, the State Lands HCP, and House Bill 1309. However, Forest Resource Plan policies 22 and 23 would not be applied to non-forested DNR-managed oil and gas lands. |
| 5 | Restore the environmental review for all types of ground-disturbing activities in Phase 3 of the SEPA process through a policy change | The phased SEPA review process is required under Alternative 1 for oil and gas development activities. However, seismic geophysical surveys do not require the development of a Plan of Operations or SEPA review. |
| 6 | Apply measures for assessing and mitigating potential environmental impacts, identified in the current Forest Practices Rules and related Best Management Practices, consistently on all DNR-managed oil and gas lands, both forested and non-forested | Under Alternative 1, there is no statewide consistency for identifying and mitigating environmental impacts on oil and gas leasing lands. Forest Practices Rules and related Best Management Practices apply to forested lands, but no similar protection is specified for agricultural and grazing lands in eastern Washington from oil and gas activities. |
| 7 | Update shrub-steppe wildlife and plant knowledge and habitat conditions for the Columbia Basin Ecosystem in the area of likely gas exploration activities | The SEIS provides updated information on shrub-steppe wildlife, plants, and their habitats for the Columbia Basin. Discussions of impacts on shrub-steppe species of concern and appropriate mitigation measures are based on recovery plans and research conducted post-1985. |
| 8 | Update the cultural resources review process for oil and gas activities | The cultural review process specified in the 1985 Oil and Gas Leasing Program would be updated under Alternative 1 to include Forest Resource Policy 24 and appropriate statutes. |

Table 2-2. Alternative 2 (Preferred Alternative) Compliance with Eight Program Objectives.

| # | Objective Description | Alternative 2 Objective Compliance |
|---|--|---|
| 1 | Clarify the phased SEPA review process for the Oil and Gas Leasing Program | Alternative 2 would clarify the phased SEPA review process by incorporating the description in Chapter 1 of this SEIS, with edits to cover the policy change discussed below under Objective #5. |
| 2 | Incorporate WAC 332-12-150 and the associated 2003 MOU between the WDFW and the DNR into the Oil and Gas Leasing Program | Alternative 2 would incorporate WAC 332-12-150 and the associated 2003 MOU between WDFW and the DNR into the Oil and Gas Leasing Program. |
| 3 | Conduct a current regulatory framework analysis for the Oil and Gas Leasing Program | A current regulatory framework analysis was conducted for this SEIS (see Appendix T). Alternative 2 would incorporate the appropriate findings into the Oil and Gas Leasing Program. |
| 4 | Align the Oil and Gas Leasing Program with current DNR assessments and plans | Under Alternative 2, the Oil and Gas Leasing Program would be aligned with many aspects of DNR assessments and plans produced since 1985, including the Forest Resource Plan, Natural Area Preserves and Natural Resource Conservation Areas, the State Lands HCP, and House Bill 1309. In addition, Forest Resource Plan policies 22 and 23 would be applied to oil and gas activities on non-forested lands. (see Appendix S) |
| 5 | Restore the environmental review for all types of ground-disturbing activities in Phase 3 of the SEPA process through a policy change | The existing phased SEPA review process is required under Alternative 2 for oil and gas development activities. In addition, Alternative 2 would require the development of a Plan of Operations by the operator and the completion of a SEPA checklist for seismic geophysical surveys. (see Appendix S) |
| 6 | Apply measures for assessing and mitigating potential environmental impacts, identified in the current Forest Practices Rules and related Best Management Practices, consistently on all DNR-managed oil and gas lands, both forested and non-forested | Under Alternative 2, the current Forest Practices Rules and Best Management Practices for assessing and mitigating potential environmental impacts from oil and gas activities would be applied consistently to both forested and non-forested DNR-managed oil and gas lands, including agricultural and grazing lands in eastern Washington. |
| 7 | Update shrub-steppe wildlife and plant knowledge and habitat conditions for the Columbia Basin Ecosystem in area of likely gas exploration interest | The SEIS provides updated information on shrub-steppe wildlife, plants, and their habitats for the Columbia Basin. Discussions of impacts on shrub-steppe species of concern and appropriate mitigation measures are based on recovery plans and research conducted post-1985. |
| 8 | Update the cultural resources review process for oil and gas activities | The cultural review process specified in the 1985 Oil and Gas Leasing Program would be updated under Alternative 2 to include Forest Resource Policy 24 and appropriate statutes. Also, Alternative 2, would require additional SEPA review (see Objective #5). |

Table 2-3. Alternative 3 Compliance with Eight Program Objectives.

| # | Objective Description | Alternative 3 Objective Compliance |
|---|--|--|
| 1 | Clarify the phased SEPA review process for the Oil and Gas Leasing Program | Alternative 3 would clarify the phased SEPA review process by incorporating the description in Chapter 1 of this SEIS. At some point in the future, it would again be revised to cover the policy changes discussed below under Objective #5. |
| 2 | Incorporate WAC 332-12-150 and the associated 2003 MOU between the WDFW and the DNR into the Oil and Gas Leasing Program | Alternative 3 would incorporate WAC 332-12-150 and the associated 2003 MOU between WDFW and the DNR into the 1985 OGLP. |
| 3 | Conduct a current regulatory framework analysis for the Oil and Gas Leasing Program | A current regulatory framework analysis was conducted for this SEIS (see Appendix T). Alternative 1 would incorporate the appropriate findings into the Oil and Gas Leasing Program. |
| 4 | Align the Oil and Gas Leasing Program with current DNR assessments and plans | Under Alternative 3, the Oil and Gas Leasing Program would be aligned with many aspects of DNR assessments and plans produced since 1985, including the Forest Resource Plan, Natural Area Preserves and Natural Resource Conservation Areas, the State Lands HCP, and House Bill 1309. In addition, Forest Resource Plan policies 22 and 23 would be applied to oil and gas activities on non-forested DNR-managed oil and gas lands at some point in the future. |
| 5 | Restore the environmental review for all types of ground-disturbing activities in Phase 3 of the SEPA process through a policy change | The existing phased SEPA review process is required under Alternative 3 for oil and gas development activities. In addition, Alternative 3 would require the development of a Plan of Operations by the operator and the completion of a SEPA checklist at some point in the future. |
| 6 | Apply measures for assessing and mitigating potential environmental impacts, identified in the current Forest Practices Rules and related Best Management Practices, consistently on all DNR-managed oil and gas lands, both forested and non-forested | Under Alternative 3, the current Forest Practices Rules and Best Management Practices for assessing and mitigating potential environmental impacts would be applied to forested lands. At some point in the future, they would be also be applied non-forested DNR-managed oil and gas lands, including agricultural and grazing lands in eastern Washington for oil and gas activities. |
| 7 | Update shrub-steppe wildlife and plant knowledge and habitat conditions for the Columbia Basin Ecosystem in area of likely gas exploration interest | The SEIS provides updated information on shrub-steppe wildlife, plants, and their habitats for the Columbia Basin. Discussions of impacts on shrub-steppe species of concern and appropriate mitigation measures are based on recovery plans and research conducted post-1985. |
| 8 | Update the cultural resources review process for oil and gas activities | The cultural review process specified in the 1985 Oil and Gas Leasing Program would be updated under Alternative 3 to include Forest Resource Policy 24 and appropriate statutes. Also, at some point in the future, Alternative 3, would require additional SEPA review (see Objective #5). |

Chapter 3. Supplement to Affected Environment

This section provides new information concerning some of the environmental elements related to oil and gas exploration, or how they have changed since the 1985 DNR Oil and Gas Leasing Program (OGLP) Environmental Impact Statement (1985 OGLP EIS) was written. Those environmental elements determined by the November 2004 SEPA threshold determination process to require an updated environmental assessment are discussed here (see Appendix I for Threshold Determination/Scoping Notice). The November-December 2004 scoping process did not raise any additional issues, and no scoping comments were received. A section on the 2005 regulatory framework follows the affected environment discussion.

The features of the affected environment, which are most likely to be affected by the proposal or by the no-action alternative, include new federal Endangered Species Act (ESA) listings since 1985, as well as several state ESA listings, and new Candidate species. Knowledge of and concern for the shrinking of the shrub-steppe habitat and its associated species in the Columbia Plateau ecoregion has grown since 1985. These changes in status and knowledge of the existing environment are the primary focus of this section.

Knowledge of water quality problems has also grown since 1985. This environmental feature was addressed in the 1985 EIS and is well protected by the 1985 OGLP, but new Clean Water Act Section 303d listings, new Endangered Species Act fish listings, and new laws, regulations and ordinances for riparian protection warrant a new a new look for any potential water quality impacts.

There has also been a somewhat heightened awareness and new DNR policies concerning the cultural uses element of the environment since 1985. Consequently, the description of this feature of the environment is also updated in this supplement to the 1985 OGLP EIS.

The 1985 OGLP EIS have, already addressed other features of the existing environment, and there is also more recent environmental analysis for management activities on forested lands in Washington State. A brief discussion of these more recent environmental documents related to current agency programs and plans follow. It helps to frame the focus of this document on those elements of the existing environment in the Columbia Basin most in need of additional assessment for oil and gas leasing and exploration proposals, while ensuring consistency with current agency policies.

Existing Plant and Animal Conditions (Natural Environment)

Forested Habitat and Wildlife

Federal and state ESA species listings since 1985 (such as the marbled murrelet and northern spotted owl), and the associated cumulative changes to the existing environment on Washington forest lands have been well documented in more recent environmental review for DNR's forest management planning. These include the Environmental Impact Statements for DNR's 1992 DNR Forest Resource Plan (statewide); the 1997 DNR Habitat Conservation

Plan (HCP, range of northern spotted owl); the 1988 Supplemental Forest Practices Rules and Regulations (for riparian zones, and for Eastern Washington RMZs); the 2002 Forest Practices Rules and Regulations (wetlands, cumulative effects, stream temperatures, forest chemicals, wildlife reserve trees, harvest size and timing); the 2001 Alternatives for Forest Practice Rules for Aquatic and Riparian Resources; the 2004 Lake Whatcom Landscape Plan; and the 2004 Alternatives for Sustainable Forest Management.

The Threatened and Endangered Species (TES) for oil and gas exploration activities on state forest land are the same species assessed by the DNR for potential forest practices or forest management impacts. The science-based forest practices regulations and associated environmental analysis documents apply to oil and gas activities on all forest lands. The EIS analysis (noted above) for DNR forest lands provides additional protection within the range of the northern spotted owl, and in the Lake Whatcom area, where the Engrossed Second Substitute Senate Bill 6731 required additional riparian zone buffering and unstable slope protection. Any oil or gas exploration on forest land must comply with forest practices regulations and any DNR plans and policies for those lands.

All threatened, endangered, and sensitive species of forested habitats, including those listed after the 1985 Oil and Gas Leasing Program Final EIS, are protected under the above policies, regulations, and habitat conservation plans on DNR-owned lands, and are adequately covered in the 1985 Final EIS.

The focus of this document is to address an area of the state where a greater level of leasing of state lands is occurring or expected to occur, the Columbia Basin. Therefore, the following subsections relate to shrub-steppe habitats and the TES species that are either shrub-steppe obligates, or strongly associated with this habitat type.

Shrub-Steppe Habitat

The Columbia Plateau ecoregion includes the area in eastern Washington bounded by the Cascade, Okanogan, Blue and Rocky Mountains. It extends south in eastern Oregon to the Nevada border and then east to the Snake River Plain in Idaho. Approximately one-third of Washington is in this ecoregion.

Over 50 percent of the ecoregion is primarily agriculture with scattered urban environments. There are 595,111 acres of DNR-managed lands within the Columbia Plateau ecoregion, of which approximately 18,117 acres are forested.

The primary, nearly exclusive, bedrock of this ecoregion is Columbia River basalt. Windblown silts and volcanic ash cover extensive areas, having created rolling, deep, productive soils. Ice-age floods carved deep canyons and coulees through the basalt. The floods also scoured some areas of soils and vegetation, leaving the basalt exposed on the surface and depositing silt, sand, and gravel in some areas. The ecoregion's dominant landforms include the Palouse Hills, the Channeled Scablands, the Yakima Fold Hills and the Pasco Basin. Elevations range from 160 feet above sea level along the Columbia River in the southwestern corner to nearly 4,000 feet above sea level on isolated hills (Badger and Tekoa mountains).

This ecoregion is most often characterized as shrub-steppe dominated by various species of sagebrush and bunchgrasses. Most of the ecoregion's remaining native vegetation occurs on

steep canyon sides and on the shallower soils of basalt scablands. Bitterbrush and three-tip sagebrush steppe appear along the foothills of the Cascades. Douglas-fir and ponderosa pine forests occur on the moister sites near the foothills of the surrounding mountains. Special habitats include sand dunes, gravelly areas, basalt cliffs, steep canyons, alkali lakes and vernal pools.

Many grassland and shrub-steppe species in this ecoregion are declining. Isolation and fragmentation of intact habitat is a primary factor. Non-native, weedy plant species are also a factor; they are a persistent and increasing feature of the limited semi-natural and natural landscape.

Vegetation communities consisting of one or more layers of perennial grass is termed “steppe.” Steppe occurring with a conspicuous but discontinuous overstory layer of shrubs is termed “shrub steppe.” In Washington, these communities usually contain sagebrush (*Artemisia* species) or bitterbrush (*Purshia tridentata*) in association with bunchgrasses (typically bluebunch wheatgrass and/or Idaho fescue). Shrub-steppe communities once covered most dryland areas of eastern Washington and Oregon below the forests of the Cascade slope to the steppe or prairies of the Palouse. The average cover of sagebrush was about 10 percent prior to introduction of livestock and control of wildfire. Introduced annual grasses readily invade disturbed sites after fire or overgrazing, but can be present on even the best sites. The interior Columbia River Basin project in Washington, Oregon, Idaho, northern Utah and northern Nevada estimates 35 percent of shrub steppe has been converted to agriculture, urban or other uses.

The following five vegetation communities/classifications offer additional detail on the habitats and species typically found within the Columbia Plateau (NatureServe 2005).

Inter-Mountain Basins Big Sagebrush Steppe

This widespread matrix-forming ecological system occurs throughout much of the Columbia Plateau and northern Great Basin and Wyoming and is found at slightly higher elevations farther south. Soils are typically deep and non-saline, often with a microphytic crust. This shrub-steppe is dominated by perennial grasses and forbs (>25% cover) with *Artemisia tridentata* ssp. *tridentata*, *Artemisia tridentata* ssp. *xericensis*, *Artemisia tridentata* ssp. *wyomingensis*, *Artemisia tripartita* ssp. *tripartita*, and/or *Purshia tridentata* dominating or codominating the open to moderately dense (10-40% cover) shrub layer. *Atriplex confertifolia*, *Chrysothamnus viscidiflorus*, *Ericameria nauseosa*, *Tetradymia* spp., or *Artemisia frigida* may be common especially in disturbed stands. Associated graminoids include *Achnatherum hymenoides*, *Calamagrostis montanensis*, *Elymus lanceolatus* ssp. *lanceolatus*, *Festuca idahoensis*, *Festuca campestris*, *Koeleria macrantha*, *Poa secunda*, and *Pseudoroegneria spicata*. Common forbs are *Phlox hoodii*, *Arenaria* spp., and *Astragalus* spp. Areas with deeper soils more commonly support *Artemisia tridentata* ssp. *tridentata* but have largely been converted for other land uses. The natural fire regime of this ecological system likely maintains a patchy distribution of shrubs, so the general aspect of the vegetation is grassland. Shrubs may increase following heavy grazing and/or with fire suppression, particularly in moist portions of the northern Columbia Plateau where it forms a landscape mosaic pattern with shallow-soil scabland shrub lands. Where fire frequency has allowed for shifts to a native grassland condition, maintained without significant shrub invasion over a 50-

to 70-year interval, the area would be considered Columbia Basin Foothill and Canyon Dry Grassland (CES304.993).

Columbia Plateau Scabland Shrubland

This ecological system is found in the Columbia Plateau region and forms extensive low shrublands. These xeric shrublands occur under relatively extreme soil-moisture conditions. Substrates are typically shallow lithic soils with limited water-holding capacity over fractured basalt. Because of poor drainage through basalt, these soils are often saturated from fall to spring by winter precipitation but typically dry out completely to bedrock by midsummer. Vegetation is characterized by an open dwarf-shrub canopy dominated by *Artemisia rigida* along with other shrub and dwarf-shrub species, particularly *Eriogonum* spp. Low cover of perennial bunch grasses such as *Danthonia unispicata*, *Elymus elymoides*, *Festuca idahoensis*, or primarily *Poa secunda*, as well as scattered forbs including species of *Allium*, *Antennaria*, *Balsamorhiza*, *Lomatium*, *Phlox*, and *Sedum*, characterize these sites. Individual sites can be dominated by grasses and semi-woody forbs, such as *Stenotus stenophyllus*. Annuals may be seasonally abundant, and cover of moss and lichen is often high in undisturbed areas (1-60% cover).

Inter-Mountain Basins Active and Stabilized Dune

This ecological system occurs in Intermountain West basins and is composed of unvegetated to moderately vegetated (<10-30% plant cover) active and stabilized dunes and sandsheets. Species occupying these environments are often adapted to shifting, coarse-textured substrates (usually quartz sand) and form patchy or open grasslands, shrublands or steppe composed of *Achnatherum hymenoides*, *Artemisia tridentata* ssp. *tridentata*, *Ericameria nauseosa*, *Leymus flavescens*, *Prunus virginiana*, *Psoralidium lanceolatum*, *Purshia tridentata*.

Columbia Plateau Steppe and Grassland

These grasslands are similar floristically to Inter-Mountain Basins Big Sagebrush Steppe (CES304.778) but are defined by a more frequent fire regime and the absence or low cover of shrubs over large areas, occasionally entire landforms. These are extensive grasslands, not grass-dominated patches within the sagebrush shrub-steppe ecological system. This system occurs throughout much of the Columbia Plateau and is found at slightly higher elevations farther south. Soils are variable, ranging from relatively deep, fine-textured often with coarse fragments, and non-saline often with a microphytic crust, to stony volcanic-derived clays to alluvial sands. This grassland is dominated by perennial bunch grasses and forbs (>25% cover) sometimes with a sparse (<10% cover) shrub layer; *Chrysothamnus viscidiflorus*, *Ericameria nauseosa*, *Tetradymia* spp., or *Artemisia* spp. may be present in disturbed stands. Associated graminoids include *Achnatherum hymenoides*, *Elymus elymoides*, *Elymus lanceolatus* ssp. *lanceolatus*, *Hesperostipa comata*, *Festuca idahoensis*, *Festuca campestris*, *Koeleria macrantha*, *Poa secunda*, and *Pseudoroegneria spicata*. Common forbs are *Phlox hoodii*, *Arenaria* spp., and *Astragalus* spp. Areas with deeper soils are rare because of conversion to other land uses. The rapid fire-return regime of this ecological system maintains a grassland by retarding shrub invasion, and landscape isolation and fragmentation limit seed dispersal of native shrub species. Fire frequency is presumed to be less than 20 years. Through isolation from a seed source, combined with repeated burning, these are "permanently" converted to grassland.

Northern Rocky Mountain Ponderosa Pine Woodland and Savanna

This inland Pacific Northwest ecological system occurs in the foothills of the northern Rocky Mountains on the Columbia Plateau region and west along the foothills of the Modoc Plateau and eastern Cascades into southern interior British Columbia. These woodlands occur at the lower treeline/ecotone between grassland or shrub land and more mesic coniferous forests typically in warm, dry, exposed sites. Elevations range from less than 1,640 feet in British Columbia to 6,560 feet in the mountains. Occurrences are found on all slopes and aspects; however, moderately steep to very steep slopes or ridge tops are most common. This ecological system generally occurs on glacial till, glacio-fluvial sand and gravel, dune, bedrock rubble, colluvium, to deep loess or volcanic ash derived soils, with characteristic features of good aeration and drainage, coarse textures, circumneutral to slightly acid pH, an abundance of mineral material, rockiness, and periods of drought during the growing season. These woodlands in the eastern Cascades, Okanogan and northern Rockies regions receive winter and spring rains, and thus have a greater spring "green-up" than the drier woodlands in the central Rockies. *Pinus ponderosa* (primarily var. *ponderosa*) is the predominant conifer; *Pseudotsuga menziesii* may be codominant to dominant in the tree canopy in the more northern expressions. The understory can be shrubby, with *Artemisia tridentata*, *Arctostaphylos patula*, *Arctostaphylos uva-ursi*, *Cercocarpus ledifolius*, *Purshia tridentata*, *Symphoricarpos oreophilus* or *Symphoricarpos albus*, and *Rosa* spp. common species. More open stands support grasses such as *Pseudoroegneria spicata*, *Hesperostipa* spp., *Achnatherum* spp., *Festuca idahoensis*, or *Festuca campestris*. Mixed fire regimes and ground fires of variable return intervals maintain these woodlands, depending on climate, degree of soil development, and understory density. This includes the Northern race of Interior Ponderosa Pine old growth (USFS Region 6, USFS Region 1). The hot, dry Douglas-fir types with grass are included here. In the interior Pacific Northwest (Washington, British Columbia, Oregon, Idaho) ponderosa pine savannas are either in a cliff, rock outcrop and canyon system, an artifact of timber management, or very small patches, so northern Rockies ponderosa savannas are included here. In the central and southern Rockies, ponderosa pine savannas are more extensive with different fire regimes and floristics from the woodlands, and so are maintained in a different system. Ecol System 306.827 and 306.826 are mostly *P. ponderosa* vars *scopulorum* and *arizonica*.

Shrub-steppe Wildlife

The Washington Department of Fish and Wildlife (WDFW) State Species of Concern include more than those listed as State or Federal Endangered, Threatened, or Sensitive. The WDFW State Species of Concern include State Candidate species, and species proposed for listing by the U.S. Fish and Wildlife Service or the National Marine Fisheries Service. The WDFW State Species of Concern are all considered by the WDFW to be Priority Species. The WDFW's Priority Habitats and Species (PHS) Program is the WDFW's primary means of transferring fish and wildlife information from their resource experts to those who can protect habitat. The PHS Program provides comprehensive information on important fish, wildlife,

and habitat resources in Washington. The WDFW considers the PHS Program to be its highest priority.

Today, the PHS Program (initiated in 1989) serves as the backbone of WDFW's strategy to conserve fish and wildlife. WDFW uses the PHS Program to provide important fish, wildlife, and habitat information to local governments, state and federal agencies, private landowners and consultants, and tribal biologists for land use planning. In addition to the PHS program information, the Washington Natural Heritage Program maintains a list of threatened, endangered, and sensitive (TES) plant species known to occur in each county. The list is derived from a comprehensive GIS database. These programs provide essential affected-environment information on those species in the Columbia Plateau ecoregion of Washington that might potentially be impacted by oil and gas exploration or drilling, as well as current science-based best management strategies and practices. Table 3-1 provides a list of TES wildlife and plant species known or expected to occur within the Columbia Basin.

State Candidate species need protection and/or management to ensure their survival as free-ranging populations in Washington. They include fish and wildlife species that WDFW will review for possible listing as State Endangered, Threatened, or Sensitive (WAC 232-12-297 State Listing). A species will be considered for designation as a State Candidate if sufficient evidence suggests that its status may meet the listing criteria defined for State Endangered, Threatened, or Sensitive. There may not be enough scientific data (or funding for the necessary studies) to officially list State Candidate species as State Threatened, Endangered, or Sensitive. This does not mean their survival is not at risk. But State Candidate species do not have the same legal protection as federal or State Endangered, Threatened or Sensitive species.

There are a number of State Candidate species that are associated with the shrub-steppe habitat of the Columbia Plateau ecoregion in eastern Washington. Some of the State Candidate species are also federal Candidates (FC) for listing, federal Species of Concern (FSC), or federal Threatened (FT) or Endangered (FE) species. Washington State Threatened Endangered and Sensitive species are discussed first, followed by other State Candidate species that are dependent at least in part on the shrub-steppe habitat in eastern Washington for survival. Much of the following information for all of these WDFW State Species of Concern is based on information provided by the WDFW PHS Program.

Most of the Threatened, Endangered, and Sensitive Species that are native to state-managed shrub-steppe lands are not covered by existing DNR EIS assessments. (See Map B, in back of this document, for all state-managed lands and Map A for shrub-steppe). Fish and wildlife species have been assessed on some forested as well as some non-forested, shrub-steppe sections of WDFW ownership by WDFW EISs. These EISs covered oil and gas exploration on lands in the L.T. Murray Habitat Management Area of Kittitas County, the Colockum Wildlife Area in Chelan and Kittitas Counties, the Lake Terrell State Game Reserve in Whatcom County, and units of the Columbia Basin Wildlife Area in Grant County, and the Quilomene Wildlife Area in Kittitas County.

The WDFW EISs were written for specific oil and gas leases before DNR took over the lease auctioning in 1988 for all state-managed lands. These WDFW (formerly WDG and WDW) EISs include the 1981 Oil and Gas Leasing on Department of Game Lands in Washington State, and the supplemental 1983 Proposed Oil and Gas Leasing on Department of Game Lands in Washington State, and supplemental 1988 Oil and Gas Leasing on Department of Wildlife Lands. Protection strategies for some of these species have not changed much, but there is newer information. These WDFW EISs can still provide some good information if the same parcels are auctioned again, both at the time of auction and at each of the next SEPA review phases, should any exploration or exploratory drilling be proposed in one of these areas.

Shrub-steppe provides important habitat for many wildlife species in eastern Washington such as the State Threatened sage grouse, sharp-tailed grouse, and the Ferruginous hawk, and the State Endangered pygmy rabbit (currently endangered with extinction). Shrub-steppe vegetation consists mainly of sagebrush and bunchgrasses. By 1993, shrub-steppe landcover had shrunk from approximately 60 percent of eastern Washington (historically) to only 30 percent (Jacobson and Snyder 2000).

The conversion of land to residential, commercial, industrial, agricultural use, and excessive grazing in the Columbia Plateau ecoregion since the 1840's, has impacted several plant and animal species dependent on shrub-steppe habitat. Survival of several species in this mostly non-forested region depends on the existence of, or the quality and lack of fragmentation of shrub-steppe habitat. The fish and wildlife species of most concern were not listed as State or Federal Threatened or Endangered until after 1985. There is much more information now regarding Threatened Endangered and Sensitive plant and animal species in the Columbia Plateau. The Columbia Basin represents the largest part of Washington with potential gas exploration interest, though the northern and eastern-most parts of the basin do not have any gas potential (see Map C, in the back of this document).

Additional information is provided for the following five species: sandhill crane, pygmy rabbit, Ferruginous hawk, greater sage-grouse, and the Columbian sharp-tailed grouse, and these species are analyzed further under this Supplemental EIS.

Sandhill Crane

The sandhill crane is a State Endangered species. *Greater* Sandhill cranes are in jeopardy of extinction in Washington because of their limited distribution, low numbers, poor breeding success and young crane survival, and loss of shallow marshes or wet meadows for feeding and nesting (Safina 1993). In addition, a large percentage of their wintering habitat is privately owned and subject to potential alteration (Lewis 1980, Pogson and Lindstedt 1991).

Of the six recognized subspecies of sandhill cranes, only the greater sandhill crane breeds in Washington. Based on 1997 Gap Analysis, the only known sandhill crane nesting locations in Washington State are located at Conboy Lake National Wildlife Refuge (Klickitat County) and on the Yakima Indian Reservation (Yakima County). *Also, there is a nesting pair of greater sandhill cranes on DNR lands on Deer Creek in Klickitat County.* Migration corridors used by birds traveling to and from breeding areas in British Columbia overlap potential areas of oil and gas development within the Columbia basin. Of the approximately 21,000 to 23,000 migrants that

pass through eastern Washington the largest concentrations are found in agricultural fields and wetlands in the central Columbia Basin. Staging areas are located near Moses Lake and Ephrata in Grant County and near Mansfield in Douglas County (Littlefield and Thompson 1981, Kramer et al. 1983). A small number of sandhill cranes also stage near Waukon and Othello. Spring migrants occur in eastern Washington between February and April, with fall migrants returning from late September to early October. The only wintering area for sandhill cranes in Washington is the lower Columbia bottomlands area.

Cranes are very susceptible to disturbance during the breeding season (March to September). Road and foot travel within 400 m (1,312 ft) of nests, and logging operations within 800 m (2,625 ft) of crane nests can cause problem during the breeding season (Schlorff et al. 1983). Low aircraft activity is also disruptive, unless planes fly at high altitudes over areas used by cranes (Kramer et al. 1983). In addition, construction and development within 1.2 km (0.75 mi) of nest sites can also affect breeding success or crane survival. (Joe Engler, U.S. Fish and Wildlife, personal communication).

Pygmy Rabbit

The Columbia Basin pygmy rabbit is both state (1993) and federally listed (2003) as Endangered. These are the smallest known rabbits in world and the only rabbits that dig their own burrows. A state recovery plan for the species was written in 1995, and updated with a 2001 addendum on emergency measures for survival of the species; a second addendum in 2003 summarized 2002 recovery efforts and outlined recovery initiatives for 2003. Recovery objectives are to increase pygmy rabbit numbers and distribution and manage habitat for long-term protection of features that support pygmy rabbits.

Pygmy rabbits require sagebrush-dominated habitat and deep soils. The WDFW Sagebrush Flats Wildlife Area is believed to hold the last remaining population. This area is about thirty miles east of Wenatchee and ten miles NE of Soap Lake. As of 2003, there were less than 30 Columbia Basin pygmy rabbits believed to remain in the wild (WDFW 2003a). Surveys conducted during winter 2001-2002 at Sagebrush Flat Wildlife Area located 23 active burrows in three general areas; one of these areas contained active burrows in winter 2002-2003. Intensive surveys were conducted at Sagebrush Flats in the fall 2003 through spring 2004 and no active burrows were documented. It is thought that there are no wild populations remaining in Washington State, but adjacent private lands have not been surveyed (pers comm. Beau Patterson, WDFW Region 2 District Biologist, April 27, 2005). However, the Sagebrush Flat Wildlife Area continues to be a potential site for reintroduction. Ongoing pygmy rabbit recovery efforts include the continuation of the captive breeding program, including experimental cross-breeding of Columbia Basin pygmy rabbits with those from Idaho, expanding current captive breeding facilities at Northwest Trek Wildlife Park in Washington, and developing agreements with private landowners for conducting population surveys.

The DNR owns a block of adjacent sections of land to the west of the Sagebrush Flat Wildlife Area. The broad area of the Columbia Basin with higher gas exploration potential does not include this area, but starts about 2 miles southeast and runs south of the Columbia River about 10 miles into northern Oregon (see Map D).

Ferruginous Hawk

The Ferruginous hawk, was already on the WDFW State Threatened species list in 1983 [before the 1985 OGLP was created](#) but there has been much additional research by WDFW including the 1996 Washington State Recovery Plan for Ferruginous Hawk (WDFW 1996), and the 2001 and 2003 Migration and Winter Ranges of Ferruginous Hawks From Washington (Watson and Pierce 2001, and Watson 2003). The Ferruginous hawk exists in low numbers in shrub-steppe and grassland regions of several eastern Washington Counties. The predicted range of the Ferruginous hawk in Washington based on gap analysis (Smith et al. 1997) is largely within the Columbia Plateau ecoregion. They arrive on Washington breeding grounds in February and March. They nest on isolated trees, rock outcrops, and other platforms with unobstructed views. Conversion of shrub-steppe habitat for agriculture or grazing has reduced nesting opportunities, and lowered the diversity and abundance of prey species. Human activities in traditional breeding areas reduce nesting areas and can limit breeding success or re-occupancy of territories. There was a 100 percent return rate of adults to breeding territories in Washington in the 2003 satellite telemetry monitoring study by Watson. This was in spite of drought conditions and declining productivity. Adults are known to exhibit high fidelity to breeding sites. The diet of Washington Ferruginous hawks consists mainly of small to medium-sized mammals, such as pocket gophers, mice, and ground squirrels, but often includes birds, reptiles and insects.

Greater Sage-Grouse

Greater sage grouse (*Centrocercus urophasianus*) are closely tied to the distribution of big sagebrush (*Artemisia tridentata*) throughout much of their range and historically occurred throughout the shrub-steppe communities of the central Columbia Basin (Yocom, 1956; Schroeder et al., 1999, 2000). In Washington, sage grouse populations and distribution have been reduced due to the conversion of shrub-steppe habitats to agriculture, overgrazing, and over hunting in the early 1900s (Connelly and Braun, 1997). Currently sage grouse occupy approximately 8 percent of their historic range in the state (WDFW, 2003b). The State of Washington listed the sage grouse as a threatened species in 1998 and in 2001 the Washington population became a Candidate for listing under the federal Endangered Species Act. Additional research since the 1985 OGLP includes the Washington State Management Plan for Sage Grouse (Tirhi, 1995) and the Washington State Status Report for the Sage Grouse (Hays et al. 1998a).

Currently, the state has two relatively isolated breeding populations, one in Douglas and Grant Counties (estimated 624 grouse), and one in Kittitas and Yakima Counties (estimated 387 grouse) (Stinson, et.al. 2004). Sporadic sightings outside the primary distribution have been reported in Benton, Yakima, Kittitas, Grant, Lincoln, and Okanogan Counties. Major threats to these populations include fires, continued conversion of shrub-steppe habitat to agriculture or development, and grazing. Long –term persistence of this species in Washington depends on protecting and enhancing suitable shrub-steppe habitat and population recovery efforts.

Appendix G provides a more extensive body of research on the obligate relationship between sage-grouse and shrub-steppe habitat. This species can serve as a possible indicator species

for what is happening to the shrub-steppe habitat or as a surrogate for habitat protection needs for the other species that may also be partially or wholly reliant on shrub-steppe habitat. Management practices sensitive to sage-grouse habitat needs may well protect multiple species in a holistic landscape-wide and habitat-sensitive ecosystem approach to land management.

Sharp-Tailed Grouse

The sharp-tailed grouse is currently listed as a state Threatened species (Hays et al., 1998b). The species was petitioned for Federal listing under the ESA, but the petition was rejected by the U.S. Fish and Wildlife Service (USFWS) after it was determined that populations in southeastern Idaho, north central Utah, and northwestern Colorado were relatively robust (Warren, 2000). Sharp-tailed grouse (*Tympanuchus phasianellus*) were originally found throughout substantial portions of central and western North America, including a large portion of Canada and Alaska (Hays et al., 1998b). Of the six recognized subspecies in North America, the Columbian sharp-tailed grouse (*T. p. columbianus*) is the rarest and is the only subspecies found in Washington. Historically, the subspecies was abundant in the Columbia Basin, ranging from the Canadian border at Oroville, south to the Oregon border, west to the eastern Cascade foothills, and east to the Idaho border in Whitman County (Hays et al. 1998b). However, over the last century the distribution of sharp-tailed grouse in Washington has severely decreased due to the conversion of native shrub-steppe habitat to cropland and to the degradation and fragmentation of remaining shrub and grass-dominated habitats (Schroeder et al., 2000).

The current range of sharp-tailed grouse in Washington is restricted to eight small, isolated populations in the north-central portion of the state (WDFW, 1995; Hays et al., 1998b; Schroeder et al., 2000). The largest of these remaining populations is near the Swanson Lakes Wildlife Area in Lincoln County, Nespelem in Okanogan County, and the Tunk-Siwash valleys in the Okanogan River valley (Schroeder et al., 2000). Sporadic sightings outside these primary distribution areas have been reported in Lincoln, Douglas, Okanogan, and Asotin Counties (Schroeder et al., 2000). Sharp-tailed grouse management areas have been designated by WDFW that include portions of Okanogan, Lincoln, Douglas, Chelan and Grant Counties (Hays et al., 1998b; see also WDFW, 1995).

During spring, males congregate on display sites (leks) to breed with females (Connelly et al., 1998). Nests are constructed on the ground, usually in areas with relatively dense cover provided by clumps of shrubs, grasses, and/or forbs (Ammann, 1963; Hillman and Jackson, 1973; Meints et al., 1992). Fields enrolled in agricultural set-aside programs (e.g., Federal Conservation Reserve Program [CRP]) are often used by nesting grouse (Schroeder et al., 2000). In late summer, riparian areas and mountain-shrub communities are preferred (Giesen, 1987). Throughout winter, patches of deciduous trees and shrubs in upland and riparian areas provide food and protective cover (Zeigler, 1979; Marks and Marks, 1988; Meints, 1991; Giesen and Connelly, 1993).

Table 3-1. Animals, insects, and plant species of concern that are either known or may be expected to occur in the vicinity of the Columbia Basin.

| Animals | | | | | |
|---|-------------------------|--------------------|-------------------|-----------------------|---------------------|
| Birds | | | | | |
| Scientific Name | Common Name | Global Rank | State Rank | Federal Status | State Status |
| <i>Podiceps nigricollis</i> | Eared grebe | G5 | S2B,S4N | | |
| <i>Aechmophorus occidentalis</i> | Western grebe | G5 | S3B,S3N | | C |
| <i>Aechmophorus clarkia</i> | Clark's grebe | G5 | S2B,SNA | | M |
| <i>Pelecanus erythrorhynchos</i> | American white pelican | G3 | S1B,SNA | | E |
| <i>Haliaeetus leucocephalus</i> | Bald eagle | G4 | S4B,S4N | LT | T |
| <i>Buteo regalis</i> | Ferruginous hawk | G4 | S2B,SNA | | T |
| <i>Aquila chrysaetos</i> | Golden eagle | G5 | S3 | | C |
| <i>Centrocercus urophasianus phaios</i> | Western sage grouse | G4T3Q | S1 | C | T |
| <i>Grus Canadensis</i> | Sandhill crane | G5 | S1B,S3N | | E |
| <i>Himantopus mexicanus</i> | Black-necked stilt | G5 | S3B,SNA | | M |
| <i>Numerius americanus</i> | Long-billed curlew | G5 | S2S3B,S2N | | M |
| <i>Coccyzus americanus</i> | Yellow-billed cuckoo | G5 | SH | C | C |
| <i>Otus flammeolus</i> | Flammulated owl | G4 | S3B,SNA | | C |
| <i>Athene cunicularia</i> | Burrowing owl | G4 | S2S3B,SNA | | C |
| <i>Strix occidentalis</i> | Spotted owl | G3 | S1 | LT | E |
| <i>Chaetura vauxi</i> | Vaux's swift | G5 | S3S4B,SNA | | C |
| <i>Melanerpes lewis</i> | Lewis' woodpecker | G4 | S3B,SNA | | C |
| <i>Picoides albolarvatus</i> | White-headed woodpecker | G4 | S2S3 | | C |
| <i>Empidonax traillii</i> | Willow flycatcher | G5 | S4S5B,SNA | SC | |
| <i>Empidonax wrightii</i> | Gray flycatcher | G5 | S2S3B,SNA | | M |
| <i>Myiarchus cinerascens</i> | Ash-throated flycatcher | G5 | S2B,SNA | | M |
| <i>Oreoscoptes montanus</i> | Sage thrasher | G5 | S3B,SNA | | C |
| <i>Lanius ludovicianus</i> | Loggerhead shrike | G4 | S3B,SNA | SC | C |
| <i>Amphispiza bilineata</i> | Black-throated sparrow | G5 | S1B | | |
| <i>Amphispiza belli</i> | Sage sparrow | G5 | S3B,SNA | | C |
| <i>Ammodramus savannarum</i> | Grasshopper sparrow | G5 | S3B,SNA | | M |

Table 3-1. Cont'd

| Scientific Name | Common Name | Global Rank | State Rank | Federal Status | State Status |
|---------------------------------|----------------------------|-------------|------------|----------------|--------------|
| Fish | | | | | |
| <i>Lampetra ayresi</i> | River lamprey | G4 | S2 | | C |
| <i>Oncorhynchus kisutch</i> | Coho salmon | G4 | S3 | C,NL | |
| <i>Oncorhynchus nerka</i> | Sockeye salmon | G5 | S2S3 | LE,LT,NL | |
| <i>Oncorhynchus tshawytscha</i> | Chinook salmon | G5 | S3S4 | LE,LT,NL | |
| <i>Oncorhynchus clarki</i> | Cutthroat trout | G4T3 | SNR | | |
| <i>Oncorhynchus mykiss</i> | Steelhead | G5 | SNR | LE | C |
| <i>Salvelinus confluentus</i> | Bull trout | G3 | SNR | LT | |
| <i>Gila bicolor</i> | Tui chub | G4 | S2S3 | | |
| <i>Rhinichthys falcatus</i> | Leopard dace | G4 | S2S3 | | C |
| <i>Rhinichthys umatilla</i> | Umatilla dace | G4 | S2 | | C |
| <i>Catostomus platyrhynchus</i> | Mountain sucker | G5 | S2S3 | | C |
| Mammals | | | | | |
| <i>Sorex merriami</i> | Merriam's shrew | G5 | S3S4 | | C |
| <i>Corynorhinus townsendii</i> | Townsend's big-eared bat | G4 | S3 | SC | C |
| <i>Lepus townsendii</i> | White-tailed jackrabbit | G5 | S2S3 | | C |
| <i>Lepus californicus</i> | Black-tailed jackrabbit | G5 | S2S3 | | C |
| <i>Brachylagus idahoensis</i> | Pygmy rabbit | G4 | S1 | LE | E |
| <i>Spermophilus townsendii</i> | Townsend's ground squirrel | G4 | S3 | | C |
| <i>Spermophilus washingtoni</i> | Washington ground squirrel | G2 | S2 | C | C |
| <i>Sciurus griseus</i> | Western gray squirrel | G5 | S2 | | T |
| Reptiles | | | | | |
| <i>Sceloporus graciosus</i> | Sagebrush lizard | G5 | S2 | | C |
| <i>Uta stansburiana</i> | Side-blotched lizard | G5 | S2S3 | | |
| <i>Contia tenuis</i> | Sharptail snake | G5 | S2 | | C |
| <i>Hypsiglena torquata</i> | Night snake | G5 | S2 | | M |
| <i>Masticophis taeniatus</i> | Striped whipsnake | G5 | S1 | | C |
| | | | | | |

Table 3-1. Cont'd

| Insects | | | | | |
|---------------------------------------|-----------------------------|-------------|------------|----------------|--------------|
| Scientific Name | Common Name | Global Rank | State Rank | Federal Status | State Status |
| Beetles | | | | | |
| <i>Cicindela columbica</i> | Columbia River tiger beetle | G2 | SH | | C |
| <i>Butterflies</i> | | | | | |
| <i>Erynnis pacuvius</i> | Dyar's duskywing | G5 | S2 | | M |
| <i>Hesperia nevada</i> | Nevada skipper | G5 | S2 | | M |
| <i>Ochlodes yuma</i> | Yuma skipper | G5 | S1 | | C |
| <i>Callophrys gryneus barryi</i> | Barry's hairstreak | G5TU | S2? | | C |
| <i>Boloria selene</i> | Silver-bordered fritillary | G5 | S3 | | C |
| Dragonflies | | | | | |
| <i>Erpetogomphus compositus</i> | White-belted ringtail | G5 | S1 | | |
| <i>Gomphus lynnae</i> | Columbia clubtail | G2 | S1 | | |
| Mollusks | | | | | |
| <i>Anodonta californiensis</i> | California floater | G3 | S1S2 | | C |
| <i>Gonidea angulata</i> | Western ridgemussel | G3 | S2 | | M |
| <i>Oreohelix junii</i> | Grand Coulee mountainsnail | G1 | S2 | | |
| <i>Fluminicola fuscus</i> | Columbia pebblesnail | G3 | S2 | | C |
| <i>Fisherola nuttalli</i> | Shortface lanx | G2 | S2 | | C |
| Plants | | | | | |
| Mosses | | | | | |
| <i>Bryoerythrophyllum columbianum</i> | A Moss | G2G4 | S2 | | |
| <i>Orthotrichum praemorsum</i> | A Moss | G2 | S1 | LE | |
| <i>Scouleria marginata</i> | A Moss | G3 | S2 | LT | |
| <i>Lichens</i> | | | | | |
| <i>Ahtiana pallidula</i> | A Lichen | G3G5 | SNR | P2 | |
| <i>Bryoria tortuosa</i> | A Lichen | G5 | S3 | P2 | |
| <i>Texosporium sancti-jacobi</i> | Woven-spored Lichen | G2 | S1? | LT | |
| <i>Dermatocarpon luridum</i> | A Lichen | G4G5 | S2 | P1 | |

Table 3-1. Cont'd

| Vascular | | | | | |
|---|------------------------------|-------------|------------|----------------|--------------|
| Scientific Name | Common Name | Global Rank | State Rank | Federal Status | State Status |
| <i>Lomatium serpentinum</i> | Snake Canyon Desert-parsley | G4 | S2 | S | |
| <i>Lomatium tuberosum</i> | Hoover's Desert-parsley | G2G3 | S2S3 | S | SC |
| <i>Tauschia hooveri</i> | Hoover's Tauschia | G2 | S2 | LT | SC |
| <i>Agoseris elata</i> | Tall Agoseris | G4 | S3 | S | |
| <i>Artemisia campestris ssp. borealis</i> <i>var. wormskioldii</i> | Northern Wormwood | G5T1 | S1 | LE | C |
| <i>Chaenactis thompsonii</i> | Thompson's Chaenactis | G2G3 | S2S3 | S | |
| <i>Eatonella nivea</i> | White Eatonella | G4G5 | S1 | LT | |
| <i>Erigeron basalticus</i> | Basalt Daisy | G2 | S2 | LT | C |
| <i>Erigeron piperianus</i> | Piper's Daisy | G3 | S3 | S | |
| <i>Haplopappus hirtus var. sonchifolius</i> | Sticky Goldenweed | G4G5T3 | S1 | R1 | |
| <i>Haplopappus liatrifolius</i> | Palouse Goldenweed | G2 | S2 | LT | SC |
| <i>Impatiens aurella</i> | Orange Balsam | G4? | S3? | R2 | |
| <i>Cryptantha gracilis</i> | Narrow-stem Cryptantha | G5 | S2 | S | |
| <i>Cryptantha leucophaea</i> | Gray Cryptantha | G2G3 | S2S3 | S | SC |
| <i>Cryptantha rostellata</i> | Beaked Cryptantha | G4 | S2 | LT | |
| <i>Cryptantha scoparia</i> | Miner's Candle | G4? | S1 | S | |
| <i>Cryptantha spiculifera</i> | Snake River Cryptantha | G4? | S2? | S | |
| <i>Hackelia hispida var. disjuncta</i> | Sagebrush Stickseed | G4T2T3 | S2S3 | S | |
| <i>Lesquerella tuplashensis</i> | White Bluffs Bladderpod | G2 | S2 | LT | C |
| <i>Rorippa columbiae</i> | Persistent-sepal Yellowcress | G3 | S1S2 | LE | SC |
| <i>Thelypodium howellii ssp. howellii</i> | Howell's Thelypody | G2T2 | SNR | R1 | |
| <i>Thelypodium sagittatum ssp. sagittatum</i> | Arrow Thelypody | G4T4 | S1 | S | |
| <i>Pediocactus simpsonii var. robustior</i> | Hedgehog Cactus | G4T4 | SNR | R1 | |
| <i>Lobelia kalmii</i> | Kalm's Lobelia | G5 | S1 | LE | |
| <i>Arenaria franklinii var. thompsonii</i> | Thompson's Sandwort | G4THQ | SU | R2 | |
| <i>Loeflingia squarrosa var. squarrosa</i> | Loeflingia | G5T4? | S1 | LT | |
| <i>Minuartia nuttallii ssp. fragilis</i> | Nuttall's Sandwort | G5T4 | S1 | LT | |
| <i>Minuartia pusilla var. pusilla</i> | Annual Sandwort | G5TNR | SNR | R1 | |

Table 3-1. Cont'd

| Scientific Name | Common Name | Global Rank | State Rank | Federal Status | State Status |
|--|-----------------------------------|-------------|------------|----------------|--------------|
| <i>Corispermum pallidum</i> | Pale Bugseed | GH | SH | X | |
| <i>Monolepis pusilla</i> | Red Poverty-weed | G5 | S1 | LT | |
| <i>Hypericum majus</i> | Canadian St. John's-wort | G5 | S2 | S | |
| <i>Cuscuta denticulata</i> | Desert Dodder | G4 | S1 | LT | |
| <i>Astragalus arrectus</i> | Palouse Milk-vetch | G2G4 | S2 | LT | |
| <i>Astragalus columbianus</i> | Columbia Milk-vetch | G3 | S3 | S | SC |
| <i>Astragalus geyeri</i> | Geyer's Milk-vetch | G4 | S1 | LT | |
| <i>Astragalus misellus</i> var. <i>pauper</i> | Pauper Milk-vetch | G4T3 | S3 | S | |
| <i>Astragalus sinuatus</i> | Whited's Milk-vetch | G1 | S1 | LE | SC |
| <i>Oxytropis campestris</i> var. <i>wanapum</i> | Wanapum Crazyweed | G5T1 | S1 | LE | SC |
| <i>Trifolium thompsonii</i> | Thompson's Clover | G2 | S2 | LT | SC |
| <i>Phacelia lenta</i> | Sticky Phacelia | G2 | S2 | LT | SC |
| <i>Phacelia minutissima</i> | Least Phacelia | G3 | S1 | LE | SC |
| <i>Phacelia tetramera</i> | Dwarf Phacelia | G4 | S1 | S | |
| <i>Ammannia robusta</i> | Grand Redstem | G5 | S1 | LT | |
| <i>Rotala ramosior</i> | Lowland Toothcup | G5 | S1 | LT | |
| <i>Iliamna longisepala</i> | Longsepal Globemallow | G3 | S3 | S | |
| <i>Sidalcea oregana</i> var. <i>calva</i> | Wenatchee Mountain Checker-mallow | G5T1 | S1 | LE | LE |
| <i>Camissonia minor</i> | Small-flower Evening-primrose | G4 | S2 | S | |
| <i>Camissonia pygmaea</i> | Dwarf Evening-primrose | G3 | S3 | S | |
| <i>Camissonia scapoidea</i> | Naked-stemmed Evening-primrose | G5 | S1 | S | |
| <i>Oenothera caespitosa</i> ssp. <i>caespitosa</i> | Cespitose Evening-primrose | G5T5 | S2 | S | |
| <i>Oenothera flava</i> | Long-tubed Evening-primrose | G5 | SH | X | |
| <i>Eriogonum codium</i> | Umtanum Desert Buckwheat | G1 | S1 | LE | C |
| <i>Polygonum austinae</i> | Austin's Knotweed | G4 | S1 | LT | |
| <i>Collomia macrocalyx</i> | Bristle-flowered Collomia | G3G4 | S1 | S | |
| <i>Gilia leptomeria</i> | Great Basin Gilia | G5 | S1 | LT | |
| <i>Polemonium pectinatum</i> | Washington Polemonium | G2 | S2 | LT | SC |

Table 3-1. Cont'd

| Scientific Name | Common Name | Global Rank | State Rank | Federal Status | State Status |
|---|--|--------------------|-------------------|-----------------------|---------------------|
| <i>Calyptidium roseum</i> | Rosy Pussypaws | G5 | S1 | LT | |
| <i>Centunculus minimus</i> | Chaffweed | G5 | SNR | R1 | |
| <i>Anemone nuttalliana</i> | Pasqueflower | G4 | S1 | LT | |
| <i>Delphinium viridescens</i> | Wenatchee Larkspur | G2 | S2 | LT | SC |
| <i>Petrophyton cinerascens</i> | Chelan Rockmat | G1 | S1 | LE | SC |
| <i>Mimulus suksdorfii</i> | Suksdorf's Monkey-flower | G4 | S2 | S | |
| <i>Mimulus washingtonensis</i> | Washington Monkey-flower | G4 | SX | X | |
| <i>Penstemon deustus</i> var. <i>variabilis</i> | Hot-rock Penstemon | G5T1T2 | S1S2 | LT | |
| <i>Penstemon eriantherus</i> var. <i>whitedii</i> | Fuzzytongue Penstemon | G4T2 | S2 | S | |
| <i>Nicotiana attenuata</i> | Coyote Tobacco | G4 | S2 | S | |
| <i>Carex comosa</i> | Bristly Sedge | G5 | S2 | S | |
| <i>Carex xerantica</i> | White-scaled Sedge | G5 | SNR | R2 | |
| <i>Eleocharis rostellata</i> | Beaked Spike-rush | G5 | S2 | S | |
| <i>Lipocarpa aristulata</i> | Awned Halfchaff Sedge | G5? | S1 | LT | |
| <i>Calochortus longebarbatus</i> var. <i>longebarbatus</i> | Long-bearded Segoe Lily | G4T4 | S2S3 | S | SC |
| <i>Cypripedium fasciculatum</i> | Clustered Lady's-slipper | G4 | S3 | S | SC |
| <i>Hierochloe odorata</i> | Common Northern Sweet Grass | G5T5 | SNR | R1 | |
| <i>Schizachyrium scoparium</i> var. <i>scoparium</i> | Little Bluestem | G5T5 | S1S2 | LT | |
| <i>Potamogeton filiformis</i> var. <i>occidentalis</i> | Western Fineleaf Pondweed | G5T5 | S1S2 | R1 | |
| Ferns | | | | | |
| <i>Cryptogramma stelleri</i> | Steller's Rockbrake | G5 | S1S2 | S | |
| <i>Ophioglossum pusillum</i> | Adder's-tongue | G5 | S1S2 | LT | |
| Plant Communities | | | | | |
| <i>Populus balsamifera</i> ssp. <i>trichocarpa</i> / <i>salix exigua</i> forest | Black Cottonwood / Sandbar Willow | G1 | S1 | | |
| <i>Purshia tridentata</i> / <i>oryzopsis hymenoides</i> shrubland | Bitterbrush / Indian Ricegrass | G1 | S1 | | |
| <i>Elymus lanceolatus</i> - <i>stipa comata</i> herbaceous vegetation | Streamside Wildrye - Needle-and-thread | G1 | S1 | | |

Table 3-1. Cont'd

| Scientific Names | Common Name | Global Rank | State Rank | Federal Status | State Status |
|--|--|--------------------|-------------------|-----------------------|---------------------|
| <i>Grayia spinosa / poa secunda shrubland</i> | Spiny Hopsage / Sandberg's Bluegrass | G1 | S2 | | |
| <i>Quercus garryana / elymus glaucus woodland</i> | Oregon White Oak / Blue Wildrye | G1G2 | S1 | | |
| <i>Quercus garryana / carex geyeri woodland</i> | Oregon White Oak / Geyer's Sedge | G1G2 | S2 | | |
| <i>Salix amygdaloides / salix exigua woodland</i> | Peach-leaf Willow / Sandbar Willow | G1Q | S1 | | |
| <i>Artemisia tripartita / stipa comata shrub herbaceous vegetation</i> | Threetip Sagebrush / Needle-and-thread | G1Q | S1 | | |
| <i>Low elevation freshwater wetland, Columbia Basin</i> | Low Elevation Freshwater Wetland, Columbia Basin | G2 | S1 | | |
| <i>Pinus ponderosa / symphoricarpos albus temporarily flooded woodland</i> | Ponderosa Pine - Common Snowberry | G2 | S1 | | |
| <i>Artemisia tridentata ssp. wyomingensis / stipa comata shrubland</i> | Wyoming Big Sagebrush / Needle-and-thread | G2 | S1 | | |
| <i>rataegus douglasii / rosa woodsii shrubland</i> | Black Hawthorn / Wood's Rose | G2 | S1 | | |
| <i>Purshia tridentata / stipa comata shrub herbaceous vegetation</i> | Bitterbrush / Needle-and-thread | G2 | S1 | | |
| <i>Philadelphus lewisii intermittently flooded shrubland</i> | Mock Orange | G2 | S1S2 | | |
| <i>Sporobolus cryptandrus - poa secunda herbaceous vegetation</i> | Sand Dropseed - Sandberg's Bluegrass | G2 | S1S2 | | |
| <i>Artemisia tripartita / pseudoroegneria spicata shrub</i> | Threetip Sagebrush / Bluebunch Wheatgrass | G2G3 | S1 | | |
| Herbaceous Vegetation | | | | | |
| <i>Quercus garryana forest (provisional)</i> | Oregon White Oak | G2G4 | S1 | | |
| <i>Eriogonum sphaerocephalum / poa secunda dwarf-shrub herbaceous vegetation</i> | Rock Buckwheat / Sandberg's Bluegrass | G3 | S2 | | |

Table 3-1. Cont'd

| Scientific Names | Common Name | Global Rank | State Rank | Federal Status | State Status |
|---|---|--------------------|-------------------|-----------------------|---------------------|
| <i>Pseudoroegneria spicata - festuca idahoensis canyon herbaceous vegetation</i> | Bluebunch Wheatgrass - Idaho Fescue Canyon | G3 | S2 | | |
| <i>Quercus garryana - pinus ponderosa cover type</i> | Oregon White Oak - Ponderosa Pine Forest | G3 | S2 | | |
| <i>Quercus garryana forest (provisional)</i> | Oregon White Oak | G2G4 | S1 | | |
| <i>Eriogonum sphaerocephalum / poa secunda dwarf-shrub herbaceous vegetation</i> | Rock Buckwheat / Sandberg's Bluegrass | G3 | S2 | | |
| <i>Pseudoroegneria spicata - festuca idahoensis canyon herbaceous vegetation</i> | Bluebunch Wheatgrass - Idaho Fescue Canyon | G3 | S2 | | |
| <i>Quercus garryana - pinus ponderosa cover type</i> | Oregon White Oak - Ponderosa Pine Forest | G3 | S2 | | |
| <i>Krascheninnikovia lanata / poa secunda dwarf-shrubland</i> | Winter-fat / Sandberg's Bluegrass | G3? | S2 | | |
| <i>Eriogonum douglasii / poa secunda dwarf-shrub herbaceous vegetation</i> | Douglas' Buckwheat / Sandberg's Bluegrass | G4 | S2 | | |
| <i>Sarcobatus vermiculatus / distichlis spicata shrubland</i> | Greasewood / Saltgrass | G4 | S2? | | |
| <i>Pseudoroegneria spicata - poa secunda herbaceous vegetation</i> | Bluebunch Wheatgrass - Sandberg's Bluegrass | G4? | S2 | | |
| <i>Artemisia arbuscula / festuca idahoensis dwarf-shrub herbaceous vegetation</i> | Low Sagebrush / Idaho Fescue | G5 | S1 | | |
| <i>Distichlis spicata herbaceous vegetation</i> | Saltgrass | G5 | S1? | | |
| <i>Juniperus occidentalis cover type</i> | Western Juniper Forest | GNR | S1? | | |
| <i>Betula occidentalis cover type</i> | Water Birch Forest | GNR | S2 | | |

Source: Washington Natural Heritage Database, 2005

Ranks are based on the number of locations at which a species is found, the total number of individuals, population trends, and threats to the species. Ranks are preceded by a G (global), T (subspecies), N (national), or S (state) as appropriate. Ranks are defined as follows:

Description of Rank Codes

Global Rank (GRank)

Global Rank characterizes the relative rarity or endangerment of the element world-wide. Two codes (e.g. G1G2) represent an intermediate rank. G1 = Critically imperiled globally (5 or fewer occurrences).

G2 = Imperiled globally (6 to 20 occurrences).

G3 = Either very rare and local throughout its range or found locally in a restricted range (21 to 100 occurrences).

G4 = Apparently secure globally.

G5 = Demonstrably secure globally.

GH = Of historical occurrence throughout its range.

GU = Possibly in peril range-wide but status uncertain.

GX = Believed to be extinct throughout former range.

G? = Not ranked to date.

Tn = Rarity of an infraspecific taxon. Numbers similar to those for Gn ranks above.

Q = Questionable.

State Rank (SRank)

State Rank characterizes the relative rarity or endangerment within the state of Washington. Two codes (e.g. S1S2) represents an intermediate rank.

S1 = Critically imperiled (5 or fewer occurrences).

S2 = Imperiled (6 to 20 occurrences), very vulnerable to extirpation.

S3 = Rare or uncommon (21 to 100 occurrences).

S4 = Apparently secure, with many occurrences.

S5 = Demonstrably secure in state.

SA = Accidental in state.

SE = An exotic established in state.

SH = Historical occurrences only but still expected to occur.

SN = Regularly occurring, usually migratory, nonbreeding animals.

SR = Reported, but without persuasive documentation.

SRF = Reported in error but this error persisted in the literature.

SU = Status uncertain; need more information.

SX = Apparently extirpated from the state.

SP = Likely to occur or to have occurred but without documentation.

SZ = Not of conservation concern (not SE or SA).

S? = Not yet ranked. "B" and "N" qualifiers are used to indicate breeding and nonbreeding status, respectively, of migrant species whose nonbreeding status (rank) may be quite different from their breeding status in the state (e.g. S1B,S4N for a very rare breeder that is a common winter resident).

State Status (StStat)

State Status of the species is determined by the Washington Department of Fish and Wildlife. Factors considered include abundance, occurrence patterns, vulnerability, threats, existing protection, and taxonomic distinctness.

Values include:

E = Endangered. In danger of becoming extinct or extirpated from Washington.

T = Threatened. Likely to become Endangered in Washington.

S = Sensitive. Vulnerable or declining and could become Endangered or Threatened in the state.

C = Candidate Animal. Under review for listing.

M = Monitor. Taxa of potential concern.

PT = Part. Used when two portions of a taxon have different state status.

Federal Status (USESAs)

Federal Status under the U.S. Endangered Species Act (**USESAs**) as published in the Federal Register:

LE = Listed Endangered. In danger of extinction.

LT = Listed Threatened. Likely to become endangered.

PE = Proposed Endangered.

PT = Proposed Threatened.

C = Candidate species. Sufficient information exists to support listing as Endangered or Threatened.

SC = Species of Concern. An unofficial status, the species appears to be in jeopardy, but insufficient information to support listing.

NL = Not Listed. Used when two portions of a taxon have different federal status.

Threatened and Endangered Fish Species

Threatened and Endangered Fish Species

Native salmonids in the Upper Columbia and Snake River basins have experienced significant population declines over the past 100 years. As a result, five anadromous fish species--Snake River sockeye salmon, Snake River spring/summer chinook salmon, Snake River fall chinook salmon, Snake River steelhead, and upper Columbia River steelhead-- as well as the bull trout, have been federally listed as threatened or endangered. The following fish species became federally listed as Threatened since the 1985 OGLP and EIS were written:

- Chinook Salmon (FT)
- Chum Salmon (FT)
- Sockeye Salmon (FT)
- Steelhead (FT)
- Bull Trout (FT)

Current environmental analysis of the affected environment for these fish species, has already been cited in Section I (Forest Land Threatened/Endangered/Sensitive Species (since 1985), for activities on all state forested lands. The protection measures now in place for forest lands (such as the DNR FRP, HCP, SHC and forest practices rules) meet the criteria of science-based best management practices approved by WDFW and the federal services for both state and private lands. Science-based adaptive management policies and regulations ensure that fish status and needed protection stay current for both DNR forest land management, and for statewide forest practice regulation under DNR's regulatory jurisdiction. Federal forest lands in the state of Washington must meet or exceed the same requirements for water quality and fish protection.

Riparian zone protection on federal lands, (both forested and non-forested) now often exceeds the state requirements due to the 1994 Northwest Forest Plan and Interior Columbia Basin Ecosystem Management Project interim management strategies which are in place until new forest and resource management plans can be written for federal lands. (See the 2005 Regulatory Framework for Affected Environment section on Non-Forested Federal Land Water Quality and ESA Regulation.)

Threatened and endangered fish species protection on non-forested DNR lands in the Columbia Basin is regulated in part by HB 1309 coordinated resource management plan requirements for grazing and agricultural leases. These joint DNR/WDFW plans are more fully discussed in the regulatory framework section, that follows this updated analysis of the affected environment elements. Both state and private lands, whether forested or non-forested, must also meet Shoreline Management Act and Growth Management Act provisions under Ecology and local government regulations and ordinances. Those waterbodies that Ecology has included on the Clean Water Act 303(d) list since 1985 for not meeting federal water quality standards may have total maximum daily load (TMDL) requirements related to fish protection. These requirements vary considerably among various local jurisdictions and water bodies, and with the nature of the particular water quality problem.

TMDL requirements such as riparian area buffer zones, or instream flow requirements may result from 303(d) listings for high water temperature, inadequate instream flow levels, or dissolved oxygen levels that impact fish. TMDLs are discussed in more detail under “Existing Water Conditions”, which notes specific water bodies and other water quality problems for the Columbia Plateau ecosystem area of gas exploration interest. The regulatory framework section, which follows this affected environment discussion, further describes the federal Clean Water Act water quality listing process and TMDL requirements.

Existing Earth Conditions (Natural Environment)

Since the 1985 Oil and Gas Leasing Program Final Environmental Impact Statement, technological and scientific advances have greatly increased our understanding of petroleum geology. The three basic geologic factors required for accumulation of commercial quantities of petroleum and gas are listed in the 1985 FEIS. In addition, scientific analyses are now utilized to identify thermal and geochemical signatures of petroleum source rocks to pinpoint exploration targets. Geochemistry is used to develop the thermal history of a basin, the type of organic materials in source rocks, the depth required for petroleum formation, and, if gas or oil will be generated in the basin.

The Oil and Gas Leasing Program also includes mineral rights that are leased for the development of underground gas storage facilities such as the Jackson Prairie Gas Storage Field at Mary’s Corner, southeast of Chehalis, Lewis County. Jackson Prairie is the world’s third largest natural gas storage field with a potential reservoir capacity of 50 Bcfg. Currently it stores 28 Bcfg with a daily delivery capacity of 850 MMcfg/day (Pinnotti, 2002).

The U.S. Geological Survey (Johnson et al, 1997) and DNR’s Geology and Earth Resources Division (Lingley, Jr., 1995) have identified prospective oil and gas areas of the state. Called “plays”, the USGS has enumerated eight conventional petroleum plays and five potential unconventional petroleum type accumulations in Washington State (see maps in back). The name of each play and national identifier number is given below:

Conventional Petroleum Plays

| | |
|--|------|
| Bellingham Basin | #401 |
| Southeastern Puget Lowland Gas | #402 |
| Puget Lowland Deep Gas | #403 |
| Tofino-Fuca Basin Gas | #404 |
| Western Washington Melange | #405 |
| Southwest Washington Miocene Sandstone | #406 |
| Cowlitz-Spencer Gas | #407 |
| Northwestern Columbia Plateau Gas | #501 |

Unconventional Accumulations – Coalbed Gas Plays

| | |
|--|------|
| Western Washington – Bellingham Basin | #450 |
| Western Washington – Western Cascade Mountains | #451 |
| Western Washington – Southern Puget Lowlands | #452 |

Unconventional Accumulations – Deep Basin-Centered Gas Plays

| | |
|---|------|
| Willamette-Puget Sound Basin-Centered Gas | #412 |
| Columbia Basin – Basin Centered Gas Play | #503 |

Conventional Exploration Results

To date, the Rattlesnake Hills Gas Field, Benton County, in the Columbia Plateau (Play #501) has been the only producer in Washington State. From 1929 to 1941 it produced 1.3 billion cubic feet of gas for local markets. A number of deep exploration wells have been drilled in the Northwestern Columbia Plateau and encountered natural gas with well BN 1-9 on Saddle Mountain being the most significant. Drill-stem tests of BN 1-9 had flows of 3.1 million cubic feet of gas per day and 6 barrels of condensate per day.

In the Bellingham Basin (#401), natural gas has migrated up into glacial strata and has been produced from shallow wells in the Ferndale area. Also in the Bellingham Basin, an exploratory well has been venting 10,000 cubic feet of gas per day. In recent years the Bellingham Basin has been explored for underground gas storage potential.

The Southeastern Puget Lowland Gas Play (#402) has generated interest because of natural gas originating from underlying coal beds. A well drilled in 1911 in Flaming Geyser State Park is still venting traces of gas.

The Western Washington Melange Play #405 is a conventional oil play with petroleum generated in organic-rich marine mudstones. The broken up nature of the rocks has limited the size of reservoirs or traps. However, one well did produce 12,000 barrels of oil from the Sunshine Medina No. 1 well at Ocean City (1957-1962) and oil with gas was discovered at Oil City (north of the mouth of the Hoh River) during 1913 with additional drilling in the 1930's.

The Cowlitz-Spencer Gas Play (#407) is the geologic extension of the Mist Gas Field in Oregon and includes the Jackson Prairie underground gas storage facility. The Mist Gas field has produced 65 billion cubic feet of gas from 1979 through 2004 with a value of \$125 million and at this time is being used as an underground gas storage facility. At Jackson Prairie native gas, which had not been injected into the underground storage facility, was encountered in Storage Well 52 and tested a flow rate of 2.01 million cubic feet of 720 Btu gas per day (Pinotti, 2002).

Unconventional Prospects – Coal Bed Gas (methane)

Coal bed methane differs from conventional gas accumulations in that the coal beds are both the source rock and reservoir formation. Some coal bed methane is stored as free gas in natural fractures within the coal beds and as solution gas dissolved in water that occupies the fractures and pores. However, the majority of the coal bed methane is absorbed on the surfaces of organic matter that comprise the coal matrix. At the usual pressures encountered in producing coal bed methane reservoirs, coal can store more gas than a conventional sandstone trap.

Production of coal bed methane has become significant both in Canada and the US. Coal bed methane now accounts for 9 percent of all US gas production. During 2000, a total of 13,973 coal bed methane wells in 13 states produced 1.353 trillion cubic feet of gas (U.S. Environmental Protection Agency, 2004). The rate of coal bed methane production is expected to increase at least by 45 percent in the next 20 years.

To start gas desorption and production from coals, pressure in the coal must be lowered below the saturation point. When coal cleats (fractures) are saturated with water, it is necessary to dewater the coal bed to allow gas desorption and production. Depending on the water quality, disposal of production water can pose environmental challenges. As depressurization occurs, gas desorbs from the coal and moves to the well bore. Coal bed methane recovery typically requires four wells per section and sometimes upwards of eight.

In Washington State, as listed above, there are three coal bed methane areas with potential to produce gas. The Bellingham Basin (Play #450) contains natural gas that some believe has migrated up from coal beds but to date no wells have been drilled designed primarily as coal bed gas tests. The Western Cascade Mountains (Play #451) has seen coal bed methane exploration in King and Pierce counties from 1985 to 1993. Of the 19 coal bed methane wells, a few underwent extensive testing and had good shows of gas. However, there was no commercial production due to poor permeability and structural complexity of the coal formations. There has been no exploration in Play #452.

Unconventional Prospects – deep basin centered gas

There has been no exploration of deep basin gas in Washington State. In the US, unconventional drilling techniques, such as deep horizontal drilling through very tight formations have released natural gas from tight sands, limestones, and shales. The gas is typically 15,000 feet or deeper underground and is costly to extract. However, drilling in Wyoming has demonstrated that the technology can produce gas economically. During 1999, a 17,000-foot deep well with a 1,700-foot horizontal section produced 2.1 billion cubic feet of gas in the first six months of production (U.S. Department of Energy, 1999). It is estimated that tight gas represents over 21 percent of the total recoverable natural gas in the United States.

Oil & Gas Technological Advances Since 1985

Since 1985, and in particular during the last decade, basic geophysical and drilling methods described in the 1985 Oil and Gas Leasing Program Final Environmental Impact Statement have been supplemented by major upgrades in seismology and drilling technology. These developments have increased the success ratio for discovering hydrocarbons and increased the productive capacity of each well.

Seismic Exploration

Driven by faster computers and sophisticated mathematical equations to process data, 3-D seismic imaging has become the norm instead of the exception for outlining prospective oil and gas reservoirs. The application of 2-D seismology is mostly limited to reconnaissance surveys, or to where recording 3-D data is prohibitively expensive, such as rugged mountain terrain or heavy forest cover. A new application of 3-D seismic adds the dimension of time where changes in a reservoir during production can be illustrated and more accurate

predictions made for changes in the future. A host of other computer technologies, including better basin and reservoir modeling software, are improving the rate of success leading to fewer wells having to be drilled.

Drilling Technology – Horizontal Drilling

In the late 1970's engineers developed down-hole motors that could rotate the drill bit at the bottom of the well without having to twist the entire length of drill pipe. These motors allowed drillers to steer the bit, gradually guiding the hole off vertical to reach targets several miles or more from the drill rig. Recently, an even newer technology, called rotary steerable drilling, allows drillers to guide their well bores with greater precision than ever before including the deflection of a well to horizontal. Horizontal wells provide distinct advantages in developing reservoirs where oil or gas is present in a relatively flat lying formation. A formation 30 feet thick would only be accessed by a vertical hole for a 30 foot section whereas a horizontal hole through the same formation can extend for 8,000 feet or more. A single horizontal well can produce as much as several conventional wells and thus reduce surface impacts. Horizontal wells can also be used to avoid drilling from environmentally sensitive areas by placing the drilling location up to several miles from the underground target. The best example of this new technology is the \$12 billion development of the major Sakhalin Chayvo oil and gas field where some wells will extend 6.5 miles horizontally, ranking them among the longest in the world. In the North Slope of Alaska, now 90% of the wells drilled at Prudhoe Bay are completed horizontal. *However, the success of horizontal and directional drilling through basalt formations has not been demonstrated or proven. Particularly in exploration and wildcat plays, these methods may not be practicable.*

Drilling Technology – Designer Wells

Designer wells are drilled with a high degree of precision to reach small targets, several small oil pockets, or to drill through faults to encounter fault traps. This is made possible by 3-D seismic , which allows reservoir engineers to plot faults and small petroleum traps to within 100 feet of accuracy. It is also made possible by new drilling technology that allows for tight turns in drilling. Drillers can now turn wells 55 degrees in 100 feet or 100 degrees in 200 feet. One designer well drilled on the North Slope during 2004 was turned 180 degrees to tap four separate oil pockets, with a horizontal length of 5,800 feet.

Existing Water Conditions (Natural Environment)

National concern for the quality of our surface waters led to the enactment of the Federal Water Pollution Control Act Amendments of 1972. As amended in 1977, this law became commonly known as the national Clean Water Act (CWA). The Department of Ecology has been designated by the Environmental Protection Agency (EPA) as the state agency to enforce the provisions of the CWA. To document existing water conditions, EPA and Ecology, have identified 660 streams and rivers in Washington State that don't meet national standards and have tabulated them in section 303(d) of the CWA. To address the problems, clean up programs are being established by Ecology. For example, for the Yakima River Basin, sediment and DDT is a problem and in 1998 the EPA approved a cleanup plan for the Yakima River Basin that is to be completed by 2017.

The 1985 Oil and Gas Leasing Program Final Environmental Impact Statement address the regulatory framework for protecting the quality and quantity of our surface waters and aquifers. Responsible agencies are the Department of Ecology and the State Oil and Gas Supervisor (Oil and Gas Conservation Act, RCW 78.52) through a permitting process.

Existing Historic and Cultural Preservation Conditions

New state laws since 1985 include the 1989 Indian Graves and Records law (RCW 27-44), many changes to the 1975 Archaeological Sites and Resources law (RCW 27-53) and to the 1990 Abandoned and Historic Cemeteries and Graves law (RCW 68.60). See the 2005 Regulatory Framework for Affected Environment section that follows for more details.

The 1989 Centennial Accord (Appendix K), and the 2000 Millennium Agreement (Appendix L) helped to initiate a new era of communication between state agencies and Washington tribes. The Governor and tribes made commitments in 1989 to a framework for better government-to-government relationships and implementation procedures for all state agencies and tribes to better achieve mutual goals. The 1999 Tribal and State Leader's Summit was another meeting between the Governor and tribes. It resulted in the 2000 Millennium Agreement that further strengthened government-to-government relationships and cooperation towards mutual goals such as preservation and protection of natural resources, economic vitality, education social services and law enforcement.

DNR has adopted new policies since 1985 (1992 PO14-024, 1996 PO06-001, and 2003 PO08-034) on identifying historic and archaeological sites, on protecting archaeological and cultural resources on agricultural and grazing lands, and on identifying and protecting potential sites/resources on all department lands in the course of normal duties in coordination with OAHP and or the appropriate Tribes.

In 2004 Commissioner Doug Southerland signed a new 2004 Commissioner's Order on Tribal Relations. The 2004 DNR Commissioner's Order is the DNR's commitment to establish collaborative working relationships and cooperative problem solving with tribes. It is a commitment to periodic meetings and informational briefings with all Washington tribes and an enhanced regional tribal consultation process. There is a process for issue resolution with delegated authority that designates DNR technical experts or policy makers depending on the nature of the issue.

In July 3, 2003 the TFW Cultural Resources Committee issued a Forests and Fish Report addendum, the "Cultural Resource Protection and Management Plan"(CRPMP). The TFW Cultural Resources Committee participating caucuses included tribes, Washington Forest Protection Association (WFPA), Washington Farm Forestry Association (WFFA), DNR Forest Practices and State Lands, and Office of Archeology and Historic Preservation (OAHP). This new plan provides cultural resource guidance including new definitions for cultural resources components such as "historic sites, traditional places, traditional materials, and archaeological resources." It also provides watershed analysis module and other rule suggestions. See the 2005 Regulatory Framework section, which follows, for more details on the resulting regulatory changes. This whole process has greatly improved tribal/agency communications and agency understanding of cultural resource issues.

The CRPMP establishes tribal, forest landowner, and state agency roles for cultural resource planning, protection and management commitments identified in both the 1987 Washington State TFW Agreement, and the 1999 Forests & Fish Report (Appendices K, L, and N). For the complete CRPMP see Appendix M. Some of its new definitions are noted here as follows:

HISTORIC SITES are locations where Native or non-Native events and activities have taken place since contact with Euro-Americans. Historic sites often, but not always, have written records that document the events and activities that occurred at a particular location. Examples of historic sites include homesteads, forts, lumber mills and cabins.

TRADITIONAL PLACES are landscapes, sacred sites, legendary areas, indigenous uses and objects which are identified (often with traditional names) by affected Indian tribes in the state of Washington as being important for the maintenance and perpetuation of their traditional values and practices. These landscapes, places and objects provide subsistence and spiritual relationships, as well as stability and meaning to community ceremonies, customs and beliefs. Examples of traditional places include sacred ceremonial sites, groves used for gathering edible/medicinal plants and sources of materials used for traditional tools and arts.

TRADITIONAL MATERIALS are the resources used by Native peoples to sustain their culture. Traditional materials come from the broad variety of plants, animals and minerals that are indigenous to this region's native landscapes. The individual species recognized as a cultural resource are specific for each tribe. Traditional and current cultural values for plants include their use as medicines, foods, tools, textiles, building materials, carvings, and sacred objects. Examples of traditional materials (such as some of the plants utilized by tribes) include bear grass, tule, and cedar and birch trees.

ARCHAEOLOGICAL RESOURCES are only one kind of cultural resource. Archaeological resources provide evidence of the cultural continuum of people occurring across time and space throughout the diverse landscapes of Washington. Archaeological resources demonstrate the variety of activities engaged in by ancient peoples (such as fishing, hunting, gathering and spiritual practices) that still continue today. Examples of archaeological resources include shell middens, lithic scatters, rock paintings, talus slope gravesites, and culturally modified tree locations.

2005 Regulatory Framework for Affected Environment

Since the 1985 Oil and Gas Leasing Program Final Environmental Impact Statement, a greater understanding and concern for the health of our ecosystems has led to strengthened and new regulatory programs. These cover endangered/threatened/sensitive species and their habitat; surface waters; and, the quality and quantity of our ground water resources. In order to fully evaluate the impact of the oil and gas leasing program on the affected environment, with emphasis on the Columbia Basin, a review of pertinent new federal, state, and local government laws, rules, and ordinances is in order.

Post-1985 environmental protection measures include the Federal Clean Water Act Section 303(d) listings; an additional number of both federal and state listings the Endangered Species

Act, since 1985; the 1994 federal Northwest Forest Resource Plan and the Interior Columbia Basin Ecosystem Management Project; the 1990 Growth Management Act; the 1988, 1992, and 2002 updates to the Washington Forest Practices rules; the 1992 DNR Forest Resource Plan; and the 1994 Ecosystem Standards for State-Owned Agricultural/Grazing Lands. For additional details, see Appendix R.

Washington State's anti-degradation policy by the Department of Ecology promotes the protection of the state's ground waters and the natural environment. The policy is based on the Water Pollution Control Act (Chapter 90.48 RCW) and the Water Resources Act (Chapter 90.54 RCW). They are implemented on the ground through water quality standards (Chapter 173-200 WAC) that prevent ground water quality from being degraded past certain levels. The State Oil and Gas Supervisor, in conjunction with the Department of Ecology, assure that exploration wells are engineered to prevent degradation of ground water. The Department of Ecology specifically regulates EPA designated Class II wells which inject fluids brought to the surface as part of oil or natural gas exploration, recovery, or production. As part of the 1990 Growth Management Act and in conjunction with Article 11 of the Washington State Constitution, local jurisdictions are mandated to adopt ordinances that protect Critical Aquifer Recharge Areas. In 1992, Washington State established the Interagency Ground Water Committee in order to advance ground water protection priorities and to facilitate coordination among federal, state, local government, tribal and public groups.

Starting in 1993, Department of Ecology began a program to manage surface water quality on a watershed basis. The watershed approach to water quality management divides the state into 23 water quality management areas (WQMAs). Ground water is part of the WQMA process. The program schedule calls for each WQMA to be evaluated in a five-year/step process to prioritize and establish Total Maximum Daily Loads (TMDLs) for state's waters: 1) identify water quality problems; 2) water quality monitoring and studies; 3) analyze water quality results and pollution effects; 4) reports summarizing solutions and strategies for areas of concern; 5) implement pollution prevention and control actions. The Mid-Columbia WQMA is of special significance as it covers Frenchman Hills, Saddle Mountains, and adjacent lands that are of prime interest for natural gas exploration in Grant, Adams, and Douglas counties. In conjunction with surface water management, the Columbia Basin Ground Water Management area was designated by Department of Ecology in 1998 and budgeted during 2004 to address nitrate contamination. Horseheaven/Klickitat, Upper Yakima, and Upper Columbia WQMAs all underwent a watershed-scoping period during 2003 to identify water bodies needing TMDLs and Water Cleanup Plans. The permitting of any operating plans to explore for petroleum will be evaluated in the broader context of WQMAs, see Appendix T for additional regulatory framework information.

Chapter 4. Supplement to Environmental Impacts and Mitigation

This section discusses only the possible impacts of this proposal that might be significant in spite of the existing regulatory framework, and with the stipulated mitigation in place that is required for each of the proposed OGLP alternatives. It also considers additional or optional mitigation measures that might further reduce impacts to elements of the potentially affected environment.

“All wildlife and habitat conditions and information discussed in this Chapter are based on information and data currently available to WDFW and other government agencies. This information may be supplemented or changed as scientific and biological information and knowledge are developed and evolve over time, and as site-specific information is developed.”

Alternative 1 (No Action Alternative)

Wildlife

Under the No Action Alternative, oil and gas exploration and development would occur in the Columbia Basin. As discussed under Oil and Gas Phased SEPA Process, the phased SEPA approach for oil and gas exploration and development activities described in 1985 would remain the same under this alternative. Forest Plan policies 22 and 23 would only apply to forested lands in the areas of potential oil and gas exploration and development, as would mitigation measures specified under the current Forest Practices Rules and Forest Practices Board Manual best management practices. Consequently, under the No Action alternative activities such as road building would not be conducted under the same standards that apply to other state owned lands.

The 1985 OGLP requires the identification of sensitive areas, including habitats used by threatened and endangered species and significant wildlife wintering areas. If oil and gas exploration and development were to occur in the vicinity of habitats used by listed species, permits and leases for these activities would contain conditions and recommendations by the Natural Heritage Program to protect these areas. However, no additional conservation measures, such as habitat restoration or collaboration with adjacent landowners, would be required of the DNR. The following subsections discuss potential impacts of oil and gas exploration and development in the Columbia Basin on selected Columbia Basin species. The past and recent listing of these species under the ESA will continue to provide protection from oil and gas leasing impacts, as stated in the 1985 OGLP. Additionally, new information on the status of Washington populations, habitat requirements, and the various recovery plans developed since 1985 would be incorporated into oil and gas leasing site selection to avoid degradation and removal of suitable habitats in currently used areas and areas of potential recovery. Identification and avoidance of these sites would be accomplished during the first site-specific phase of additional SEPA review, as required under the 1985 OGLP.

Sandhill Crane

Impacts

Sandhill cranes rely on agricultural areas for food and wetland habitats and marshes for nesting and protection. Oil and gas development in the Columbia Basin may result in the impacts to wetland habitats, marshes, and agricultural areas used by migrating and nesting sandhill cranes. Loss of these habitats would offset recovery efforts for this species in eastern Washington and could potentially contribute to further population decline in the region. Oil and gas exploration and development in the Columbia Basin would also result in increased human activity and construction noise at drill sites and along roads. Human presence, vehicle traffic, and construction can potentially disturb breeding and roosting cranes (Kramer et al. 1983, Norling et al. 1992). Sandhill cranes are extremely wary and require large tracts of undisturbed, isolated marshes or meadows for feeding and nesting. Additionally, during migration, sandhill cranes often select night roost sites located away from roads and other areas with human activity (Norling et al. 1992). If exploration and development activities occur in the vicinity of breeding or staging areas, the disturbance could displace sandhill cranes from these critical areas, potentially resulting in habitat loss, reduced nesting success, and increased likelihood of predation on unattended nests (Safina 1993). Additionally, loss of staging and stopover areas could potentially result in reduced fitness of migrating birds. Overtime, these factors can lead to population decline (Stevens 1991).

Structures associated with oil development could also pose hazards to migrating cranes that may collide with them. Cranes have been shown to collide with powerlines and other structures (U.S. Fish and Wildlife Service 1978, Kramer et al. 1983, Walkinshaw 1989, Morkill and Anderson 1991, Brown and Drewien 1995).

Mitigation

In order for sandhill cranes to survive in Washington, their breeding, migration, and wintering habitats need to be protected and enhanced. It is crucial that further losses of Washington's remaining wetlands are prevented. In some instances, the creation of additional habitat should be considered (Safina 1993, Tacha et al. 1994). Disturbing cranes during the breeding season (March to September) should be avoided. Road and foot travel should be avoided within 400 m (1,312 ft) of nests, and logging operations within 800 m (2,625 ft) of crane nests should be curtailed during the breeding season (Schlorff et al. 1983). Aircraft activity should be avoided or kept to high altitudes over areas used by cranes (Kramer et al. 1983). In addition, construction and development within 1.2 km (0.75 mi) of nest sites should be avoided (Joe Engler, U.S. Fish and Wildlife, personal communication).

Pygmy Rabbit

Impacts

Pygmy rabbits require sagebrush-dominated habitats, which they depend on exclusively for food during winter months, and deep, loose soils for excavating burrows (WDFW 1995). Consequently, soil structure and the availability of suitable sagebrush habitat are key elements of pygmy rabbit recovery. Exploratory activities that involve driving over sites may compact deep soils, reducing their suitability for burrowing habitat. Similarly, well pad, access road, and pipeline construction and well excavation are all earth-moving activities that have the potential to alter soil characteristics and increase soil erosion, thereby degrading prospective recovery areas. Further, in areas where recovery efforts are successful, active burrows could be destroyed by these activities. Oil and gas related activities also have the potential to

destroy protective cover, deplete native grasses, and encourage weed invasions, contributing to further habitat loss and degradation.

Mitigation

Recovery of the Washington pygmy rabbit population is dependent on preventing additional habitat losses due to the conversion of shrub-steppe habitat to cropland, removal of sagebrush for cattle grazing and other land clearing activities, and wildfire. Development on sensitive soils and steep slopes should be avoided to reduce erosion and soil compaction. Impacts to potential pygmy rabbit recovery areas due to oil and gas development would be avoided and ongoing recovery efforts including the captive breeding program initiated by the Washington Department of Fish and Wildlife and the U.S. Fish and Wildlife Service in 2001, would continue. Recommendations provided in the 1995 Washington State Recovery Plan for the Pygmy Rabbit (WDFW 1995) and subsequent addenda for habitat protection would also be applied to minimize impacts of oil and gas development.

Ferruginous Hawk

Impacts

Ferruginous hawks breed in several counties in eastern Washington and could be impacted by oil and gas leasing activities through the direct removal of shrub-steppe habitat. Loss of shrub-steppe habitat would reduce opportunities for nesting and indirectly, could potentially decrease the abundance and diversity of small mammals and bird, which important prey species for Ferruginous hawks.

In addition to habitat removal, construction of oil and gas facilities and associated access roads would lead to increased human presence near these sites. Because Ferruginous hawks show strong breeding site fidelity and are sensitive to human activity, an increase in human presence may preclude nesting in traditionally used territories or may lower breeding success.

Mitigation

To recover and maintain Washington's population of Ferruginous hawks, sufficient shrub-steppe and native grassland must be preserved, and disturbance to nesting areas must be reduced or eliminated through limited operating periods. Protecting potential nesting sites also protects habitat for other raptors or birds of prey, songbirds, and small mammal species also associated with shrub-steppe habitat.

Greater Sage-Grouse

Impacts

Removal of shrub-steppe habitat due to oil and gas development would reduce the amount of potentially suitable foraging, nesting, and cover habitats available to sage grouse. Predation intensity is also dependent on the quality of these habitats (Schroeder and Baydack 2001). Habitats characterized by good shrub and grass cover, provide opportunities for sage-grouse populations to increase despite predation, whereas populations in fragmented habitats may experience greater predation related losses (VanderHagen et al. 2002). There is also potential for habitat loss due to behavioral avoidance of well structures. This has been shown to be an important issue in relation to the impacts of wind farms on wildlife (WDFW 2003). Sage grouse avoidance of areas with tall structures is thought to be an instinctive response to reduce their vulnerability to avian predators that might use these structures as hunting perches. Sage-

grouse in California have been shown to abandon leks located a mile and half from new powerlines, and reduce lek attendance up to three miles away (Rodgers 2003).

The construction of new roads could also increase habitat fragmentation, potentially limiting access to breeding sites or destroying protective travel corridors between nesting and foraging areas. Additionally, new roads would potentially facilitate public access to development sites and increase human use of these areas. Road-based activities including off-road vehicles, farming activity, recreation (e.g., birding, hunting), and other uses are all potential disturbances that may displace sage grouse temporarily or permanently from a site. Adverse impacts of displacement include increased energy expenditure by birds and disruption of breeding populations at leks. During the breeding season, regular disturbance at a lek can reduce mating opportunities and cause decreased production (*Stinson, et.al. 2004*). *The creation of ponds from coal bed methane wells in Wyoming has increased West Nile virus carrying mosquitoes deadly to sage-grouse.*

Mitigation

Habitat acquisition is critical for sage-grouse recovery in Washington. During the last decade, resource agencies or conservation organizations have acquired >120,000 ac in the sage-grouse recovery area. Some acquisitions were primarily focused on other species or were for multiple management objectives. The Bureau of Land Management (BLM) and WDFW, as well as the Nature Conservancy (TNC) have been acquiring shrub-steppe lands in Washington. The following priorities for acquisition lands for sage-grouse are: areas of high-quality shrub-steppe currently occupied by sage-grouse; overlapping leks and winter-use areas on remaining shrub-steppe; key wintering areas; shrub-steppe 8 km (5 mi) from active leks; areas supporting many shrub-steppe obligates including sage-grouse, and historic use areas and travel corridors (*Stinson et al. 2004*).

Sites recently acquired primarily for the conservation of pygmy rabbits (*Brachylagus idahoensis*) have provided habitat for sage-grouse in the Moses Coulee Sage-grouse Management Unit, including 4,000 ac on the Sagebrush Flat Wildlife Area and 2,000 ac at Chester Butte Wildlife Area. Lands acquired primarily for the conservation of sharp-tailed grouse that may provide sage-grouse habitat in the Crab Creek sage-grouse unit include 20,000 ac at the Swanson Lakes Wildlife Area. The Nature Conservancy (TNC) has acquired 25,000 ac in the Moses Coulee sage-grouse unit, including >4,500 ac in the Beezeley Hills and 3,500 ac in Moses Coulee, where management will probably be compatible with sage-grouse recovery. They also secured conservation easements on 2,800 ac and hoped to purchase an additional 9,000 ac in 2003. Lands acquired by WDFW and BLM, and the TNC reserves in southern Douglas and southwest Grant County should help facilitate sage-grouse conservation in the area. New programs in the 2002 Farm Bill may also benefit sage-grouse by providing funding for habitat improvements, protection, and the acquisition of perpetual conservation easements.

A Conservation Assessment for the Greater Sage-grouse was completed in 2004 (Connelly et al. 2004), and provides extensive background on the current knowledge of sage-grouse. This report assessed over 770,000 square miles and involved 14 states, 13 federal agencies, and 2 nations. The assessment will assist land managers in current and future conservation efforts.

The success of sage-grouse recovery, however, may depend on cooperative efforts by private landowners, tribes, and agencies that manage public lands in recovery areas or influence agricultural practices on private lands. These agencies include the U.S. Army Corp of Engineers, WDFW, BLM, USFWS, U.S. Department of Energy, WDNR, Washington State Parks, and US Department of Agriculture Natural Resources Conservation Service. A multi-party 5-year action plan for sage-grouse that will outline more specific actions and responsibilities is currently underway and will focus on the goals and objectives in the recovery plan for Washington State (Stinson et al. 2004), as well as current and future research efforts. Current guidelines outlined in the above recovery plan include the following recommendations:

- Avoid activities that interfere with sage-grouse at or near leks;
- restrict off-road vehicles, snowmobiles, camping, site visits, etc, and close roads or limit area access as necessary to protect lek areas from disturbance;
- avoid potentially disturbing activities such as farming, mining, and recreation within 2 km (1.2 miles) of leks between the hours of 1800 and 0900 during February-April. Disturbing activities are those, which cause the birds to flush or alter their behavior for a substantial length of time. Persistent disturbing activities are a more serious problem; farming activities on a single day of the breeding season is not likely to be a significant problem;
- minimize disturbance from construction and development activities, particularly within 1 km of breeding habitat during February – June; and
- wherever possible, prevent disturbance in sage-grouse nesting and brood rearing habitat between 1 March and 15 June, including development, blasting, military training, livestock trail use, falconry, off-road vehicle use, recreation, and training of hunting dogs.
- *reduce the collision and predation hazards posed by poles, wires, fences;*
- *minimize or eliminate exposure of sage grouse to organophosphate insecticides.*

In addition to land acquisition, providing protection to existing suitable habitat as well as restoration of degraded land due to grazing and fire are critical. Reintroductions and augmentations will likely also play a large role in recovery, particularly at the Yakima Training Center (YTC). Maintaining sage-grouse in Washington will depend on protecting remaining habitat, restoring degraded habitat, and re-establishing populations outside their current range. Sage-grouse recovery in Washington will take a sustained cooperative effort by many agencies and individuals for a long period of time. Successful recovery of sage-grouse will result in benefits to many other shrub-steppe species that have also declined dramatically in the state.

Sharp-Tailed Grouse

Impacts

Impacts to sharp-tailed grouse from oil and gas development in the Columbia Basin are similar to those described above for sage grouse. Population isolation is a major factor influencing sharp-tailed grouse survival in Washington, which could be furthered by habitat loss and degradation due to oil and gas development or the construction of new roads, all of which contribute to landscape fragmentation. Isolated populations are more susceptible to environmental changes, including habitat degradation and weather extremes, than larger, contiguous populations (WDFW 1998). Predation is also a greater concern for small populations. Collectively, these impacts to isolated populations increase the risk of extirpation.

Winter survival of sharp-tailed grouse is dependent on the quality and quantity of winter habitats. High winter mortality is thought to be the primary factor causing the decline in the Washington sharp-tailed grouse population (Schroeder 1996). Removal of shrubs for the development of oil wells and roads would potentially reduce the quality and quantity of available habitat.

Physical disturbances to individuals or groups of birds during biologically critical periods can cause nest abandonment, displacement from essential habitat, additional stress, or increased vulnerability to predation. Potential sources of disturbance associated with oil and gas leasing, as noted above, include human activity associated with exploratory and development efforts, and the potential increase in human use of areas along new roads.

Mitigation

Conservation of sharp-tailed grouse in Washington is dependent upon protecting high quality habitat where birds concentrate, and restoring key low-elevation winter sites (WDFW 1998). This can be accomplished by avoiding oil and gas development near known leks and winter use areas associated with the eight remaining subpopulations located in the Okanogan Valley and along the northern edge of the Columbia Basin.

The area within 2.5 km (1.6 mi) of a lek is believed to be critical to the management of Columbian sharp-tailed grouse and this area should contain, or provide access to, suitable wintering habitats (Saab and Marks 1992; Giesen and Connelly 1993). Because of their importance, leks (including their surrounding area) may be viewed as the principal units affecting the demographics of this species. Consequently, activities that physically disturb breeding activity (March-June), including loud noise and other disturbances, should be avoided in the vicinity of an active lek. Lek sites isolated by more than 40 km (25 miles) from other lek sites should be considered isolated and priority should be given to establishing habitat to link the population to larger populations (Ulliman 1995).

Because most of the existing sharp-tailed grouse range in Washington exists on private lands, collaborative efforts directed toward the protection of suitable sharp-tailed grouse habitats and the identification of leks and wintering areas should be made with landowners adjacent to potential oil and gas development sites and other agencies.

Fish

Impacts

Clearing and earth-moving activities associated with the construction of well pads, access roads, pipelines, and support facilities may result in the removal of riparian vegetation. Riparian habitats provide a number of important functions for aquatic species including the stabilization of stream banks, steep slopes, and saturated soils, flood plain development, nutrient inputs for aquatic insects, and stream shade. Riparian vegetation also serves as a primary source of large woody debris (LWD) within streams, which is a primary mechanism for maintaining channel structure by storing sediment and encouraging pool scour. Sustainable levels of LWD are an important function of riparian ecosystems in that they also provide critical fish habitat structure and complexity including spawning gravel for reproduction and refuge for rearing. Additionally, the contribution of leaves, twigs, and insects to streams provides basic food and nutrients that support fish and aquatic wildlife. These functions are essential to fish survival and productivity, and riparian habitat is critical in supporting suitable in-stream conditions necessary for the recovery of imperiled native salmon stocks. Removal of vegetation can increase stream temperatures to levels that do not support fish populations, reduce stream bank stability, increase sediment input, and reduce woody debris inputs. Additionally, oil and gas exploration and development, including stream crossings from roads above unique habitats, have the potential to increase sedimentation and erosion. Adverse impacts to fish associated with the loss of riparian vegetation and development may be substantial if water quality or the availability of suitable in-stream habitat is reduced over the long-term.

Mitigation

To minimize impacts to fish from oil and gas exploration and development, riparian and wetland habitats should be avoided. The 1985 OGLP requires that seismic surveying, drilling, development, and production activities are prohibited within 200 feet of any Type 1, 2, 3, or 4 water and wetlands of the state (WAC 222-16-020; WAC 344-12-040). Reclamation of disturbed sites should also be conducted following the establishment of oil and gas facilities to reduce the potential for erosion into adjacent streams and wetlands. Additionally, dams and siltation fences should be constructed and maintained to reduce these inputs to streams.

Plants

Impacts

All phases of oil and gas activities would likely have the direct effects of physical disturbance and individual plants may be killed. Indirect effects may include loss of habitat from increased competition with noxious weeds and fire. Noxious, invasive plant species can impact plant communities and ecosystem functions. In the worst case, uncontrolled invasive weeds may replace native plants that eventually lead to altered plant communities, habitat functions and overall biodiversity. Ecosystem functions that can change with exotics species invasions are hydrology, soil chemistry, fire behavior and the overall value of natural resources. The Columbia Basin ecoregion has one of the largest concentrations of noxious weeds and is addressed here because of its potential impacts to native plant species.

There are currently no state laws protecting rare plant species in Washington, and the Natural Heritage Program does not have regulatory authority. However, many Federal and state land-managing agencies have policies that provide protection for rare species or high-quality

ecosystems. In addition, local jurisdictions may provide protection for rare species and high-quality ecosystems through ordinances, regulations, and permitting requirements (Washington National Heritage Program, 1997). Some of the rare plant species on the statewide list are also federally listed species under the Federal Endangered Species Act (ESA). The Federal ESA does include provisions for the listing and protection of plant species.

For sensitive and rare plant species associated with unique habitats such as riparian areas, cliffs, talus slope, and wetlands would be protected under Alternative 1 under current policies and regulations. Sensitive and rare plants associated with eastern Washington riparian areas include shrubs, forbs, sedges and annual species. Riparian areas in eastern Washington are more strongly differentiated from surrounding uplands than riparian areas in Western Washington, and therefore provide a more specialized habitat for rare plant species.

Mitigation

DNR management activities on all forested trust lands follow Forest Resource Plan Policy No. 23, Endangered, Threatened, and Sensitive Species. The Natural Heritage Database is generally reviewed for known occurrences of TES plant species during the planning and review stage for management activities, however, there are no DNR procedures requiring review or avoidance of TES plants during operations. The 1985 OGLP requires that seismic surveying, drilling, development, and production activities are prohibited within 200 feet of any Type 1, 2, 3, or 4 water and wetlands of the state (WAC 222-16-020; WAC 344-12-040). Reclamation of disturbed sites should also be conducted following the establishment of oil and gas facilities to restore native vegetation and reduce the potential establishment and spread of noxious weeds.

Earth

Impacts

As discussed in the Affected Environment section, recent advances in geophysical and drilling technology since 1985 have increased the success of identifying prospective oil and gas reservoirs and the productivity of wells. These advances have made the process of determining sites on which to proceed with oil and gas development more efficient. Under the No Action alternative, there are no changes from the 1985 OGLP in relation to lands available for lease or in policies pertaining to exploratory or development activities on these lands. Consequently, no significant impacts to earth conditions are anticipated under the No Action alternative. Exploratory activities on leased lands, including seismic surveys and other actions where ground disturbance is anticipated, require a notification by the operator to proceed. All other activities (e.g., oil and gas development, well production product storage, and site reclamation/abandonment) require SEPA review.

Mitigation

No further mitigation is needed because no significant earth impacts are anticipated under the no-action alternative OGLP proposal.

Water Quality

Impacts

No significant water quality impacts are anticipated from the no-action alternative. The water quality element of the affected environment was well protected by the 1985 OGLP. New ESA listings, the new 303(d) listings, and new forest practice rules have not resulted in wider

riparian buffers than required by the 1985 OGLP requirements for activities associated with the initial exploration for oil and gas. This is true in spite of a considerable growth in water quality and quantity information. There are some counties (see Shoreline Management Act (SMA), under 2005 Regulatory Framework) that may have jurisdiction over more than 200 feet landward along shorelines of large water bodies with wide 100-year flood zones. In these cases the oil and gas exploration activities are still required to meet local government SMA requirements beyond the 200 feet required by the 1985 OGLP. The 1985 OGLP requirements combined with other federal, state, and local government regulations (see 2005 Regulatory Framework section) help ensure no significant water quality impacts will occur. The extremely rare historic frequency of exploration proposals, the additional SEPA reviews required (should any site-specific proposals be presented for review) lend further water quality protection assurance.

The lack of a specific Type 5 Water protection policy in the 1985 OGLP is not anticipated to result in any significant water quality impacts related to oil and gas exploration activities. Exploration activities can easily avoid any Type-5 water without sacrificing any necessary survey information, should that be required at the time of site-specific exploration proposals. Such avoidance can be required with the Plan of Operation at the first site-specific phase of additional SEPA review if there are any water quality concerns.

Mitigation

No further mitigation is needed since no significant water quality impacts are anticipated under the no-action alternative OGLP proposal, and within the 2005 regulatory framework of water quality protection.

Historic and Cultural Preservation

Impacts

Seismic exploration and oil and gas exploratory well drilling, well development, well production, and storage have the potential to affect cultural resources in a variety of ways. Seismic exploration may temporarily damage stands of traditional materials and cause direct, permanent injury to traditional places, historic sites, or archaeological sites. It may also create temporary auditory and visual intrusions that could impact Native practitioners' ability to utilize traditional places. Similar effects may be expected from oil and gas well exploration, development, production, and storage and from construction of any access roads or any pipelines that might be required for transportation of oil or gas from producing wells. The effects on traditional materials would in these cases be permanent, however, and the disruption of Native people's ability to utilize traditional places could be longer term. Site reclamation and abandonment should not introduce any new effects and would eliminate or minimize visual and/or auditory effects on the use of traditional places.

Mitigation

Implementation of Policies PO06-001 and PO08-034 under this alternative require application of Forest Resource Plan Policy 24 to all state managed land, including agricultural and grazing lands. Titled “Identifying Historic Sites,” Policy 24 declares that the DNR will establish a program to identify and inventory historic and archaeological sites and protect them at a level that, at a minimum, meets regulatory requirements. The DNR will follow procedures equivalent to those required under Section 106 of the National Historic Preservation Act, which requires a consideration of the effects of a federal undertaking on properties eligible for or listed on the National Register of Historic Places. In addition, implementation of Commissioner’s Order No. 200407 requires communication and collaboration between the DNR and tribes on issues of mutual concern. Implementation of this policy involves tribes in the identification and protection of cultural resources. Should SEPA review during any of the four phases subsequent to this SEIS identify significant impacts to cultural resources, an EIS or Supplemental EIS would be required at Lessee expense to assess these impacts and develop mitigation measures for them. Seismic exploration activities would not be subject to SEPA review during SEPA Phase 3 under this alternative, leaving open the possibility that some impacts to cultural resources, particularly the impacts to traditional materials and traditional places, would not be ascertained prior to initiation of seismic activities. Undetected, such impacts might not be subject to mitigations afforded at other stages of the process. Impacts to cultural resources pursuant to oil and gas leasing, and development are likely to be minimized, however.

Alternative 2 (Preferred Alternative)

The Preferred Alternative updates the 1985 OGLP and incorporates four new policies. The first policy requires an operating plan subject to SEPA review when seismic surveys and other exploratory activities requiring ground disturbance are anticipated. Currently, only notification by the operator is required and these surveys are not subject to SEPA review. The second policy relates to the protection of animal and plant resources. Under this policy, the DNR would apply Forest Practices policies 22 and 23 of the 1992 Forest Plan to non-forested lands (i.e., agricultural and grazing) leased for gas and oil in eastern Washington. The third and fourth policies relate to the protection of surface waters, wetlands, and aquatic species. These policies require the application of 2002 Forest Practices Rules and Best Management Practices described in the Forest Practices Board Manual to oil and gas activities on all state lands, including agricultural and grazing lands. *The third policy, if adopted, would apply WAC 222-16-035 and Best Management Practices in Forest Practices Board Manual Sections 8 and 9 to non-forested lands for oil and gas activities. The fourth policy, if adopted, would apply WAC 222-24 (excluding WAC 222-24-050 and WAC 222-24-051) and Forest Practices Board Manual Section 3, Parts 1, 2, and 5 to non-forested lands for oil and gas activities.* Appendix S provides additional discussion of each policy.

Wildlife

Impacts associated with oil and gas exploration and development in the Columbia Basin would be similar to those discussed under the No Action alternative. Each of the additional policies applied to the OGLP under the Preferred Alternative would increase protection of sensitive habitats and species in areas of potential oil and gas development and promote the

Department to take a more proactive approach to mitigating impacts of oil and gas leasing on these resources. The added requirement of a SEPA review for seismic surveys and other ground disturbing exploratory activities would enable the DNR to identify and avoid critical habitats well in advance of exploratory activities associated with oil and gas leasing. Previously this was only required during the development phase. This would make the selection of suitable locations for oil and gas development more efficient by identifying and eliminating critical areas that must be avoided early in the exploratory phase.

The application of Forest Resource Plan policies 22 and 23 require the DNR to take a more proactive approach in their protection of endangered, threatened, and sensitive species and their associated habitats on non-forested lands used for oil and gas leasing. Policy 22 directs the department to "develop habitat objectives based on habitat availability and function, species status and species vulnerability, and trust obligations." Similarly, Policy 23 directs the department to "meet the requirements that protect endangered, threatened, and sensitive species and their habitats as well as voluntarily participate in efforts to recover and restore endangered and threatened species." These policies are currently under review in the DNR Forest Plan Revision EIS. Under the Preferred Alternative, protection of listed species would continue with the added requirement of the DNR's participation in voluntary efforts geared toward recovery and restoration of populations and habitats. When applied to non-forested lands leased for oil and gas, policies 22 and 23 achieve statewide consistency and mitigation from oil and gas exploration and development impacts.

Current Washington Forest Practices Rules (FPRs) provide a variety of protective measures to wildlife and plant species, particularly for species that are State or Federal listed as threatened or endangered, on all state and private forestlands in Washington. These rules provide minimum standards for activities on forested lands and define critical wildlife habitats that may be affected, along with measures to protect these habitats (e.g., riparian management zones, leave tree requirements, etc.). Currently, there are no similar rules that apply to non-forested lands leased for oil and gas development in eastern Washington. Application of the 2002 Forest practices rules and the Forest Practices Board manual to oil and gas activities on all DNR lands will increase protection of surface water habitats. It will achieve statewide consistency in protection of these resources. More stringent guidelines would apply to the placement of roads, drill pads, and surface disturbances in relation to streams and wetlands. Specifically, these features would not be located within 200 feet of Type A or B wetland or any stream, as defined by the Forest Practices rules and the Board manual.

Sandhill Crane

Impacts

The types of impacts to sandhill cranes from oil and gas exploration and development in the Columbia Basin would be similar to those described under the No Action alternative. However, under the Preferred Alternative, additional protection would be given to wetlands and marshes that may serve as important staging and wintering areas for this species. By identifying and avoiding areas of concentrated sandhill crane use during oil and gas exploration, following standardized practices for construction in the vicinity of suitable surface waters and wetlands, and participating in voluntary efforts to protect the species, impacts to sandhill cranes from oil and gas development in the Columbia Basin would be less under the Preferred Alternative than the No Action alternative.

Mitigation

Mitigation measures discussed under the No Action alternative would apply under the Preferred Alternative.

Pygmy Rabbit

Impacts

Impacts to pygmy rabbits and potential recovery areas associated with oil and gas development would be the similar to those discussed under the No Action alternative. Under the Preferred Alternative, required participation of the DNR in voluntary recovery efforts with owners of public and private lands adjacent to oil and gas leases would increase protection and restoration of potential recovery areas that currently do not support pygmy rabbit populations. Additionally, cooperation with these landowners would potentially increase access to private lands for monitoring existing pygmy rabbit populations in the vicinity of oil and gas leases to better mitigate potential impacts of exploration and development activities.

Mitigation

Mitigation measures discussed under the No Action alternative would apply under the Preferred Alternative.

Ferruginous Hawk

Impacts

Impacts to the Ferruginous hawk from oil and gas leasing in the Columbia Basin would be similar to those discussed under the No Action alternative. The additional requirement of collaborative efforts between the DNR and other public and private organizations, required under Forest Resource Plan policies 22 and 23, will facilitate the identification of breeding sites on lands that should be avoided by oil and gas exploration and development.

Mitigation

Mitigation measures discussed under the No Action alternative would apply under the Preferred Alternative.

Greater Sage-Grouse

Impacts

Impacts to the sage grouse from oil and gas leasing in the Columbia Basin would be similar to those discussed under the No Action alternative. Added protection to this species under the Preferred Alternative would result from collaborative efforts between the DNR and adjacent landowners on recovery activities, which could include more extensive surveys for active leks and wintering areas. These areas could then be avoided during oil and gas exploration.

Mitigation

Mitigation measures discussed under the No Action alternative would apply under the Preferred Alternative.

Sharp-Tailed Grouse

Impacts

Impacts to the sharp-tailed grouse from oil and gas leasing in the Columbia Basin would be similar to those discussed under the No Action alternative. Additional protection under the Preferred Alternative would be the same as that described above for sage grouse.

Mitigation

Mitigation measures discussed under the No Action alternative would apply under the Preferred Alternative.

Fish

Impacts

Impacts to fish and aquatic habitats due to oil and gas exploration and development under the Preferred Alternative would be similar to those described under the No Action Alternative. However, the Preferred Alternative would increase the protection of fish and aquatic habitats in the vicinity of potential oil and gas exploration and development. The added requirement of a SEPA review for seismic surveys and other ground disturbing exploratory activities would aid in the identification of sensitive habitats such as wetlands, streams, and associated riparian areas that could then be avoided. Additionally, by extending Forest Practices rules and Board manual Best Management Practices pertaining to surface waters and wetlands to non-forested lands, protection of fish and other aquatic species and habitats on these lands from oil and gas activities would be consistent with those on DNR managed lands throughout the rest of the state.

Mitigation

Mitigation measures discussed under the No Action alternative would apply under the Preferred Alternative.

Plants

Impacts

Impacts to sensitive and rare plants from oil and gas leasing in the Columbia Basin would be similar to those discussed under the No Action alternative.

Mitigation

Mitigation measures discussed under the No Action alternative would apply under the Preferred Alternative. The added requirement of a SEPA review for seismic surveys and other ground disturbing exploratory activities would aid in the identification of sensitive habitats such as wetlands, streams, and associated riparian areas that could then be avoided, and would likely require review of the Natural Heritage database for known occurrences.

Earth

Impacts

Under the Preferred Alternative, no significant impacts are anticipated to the availability of lands leased for oil and gas exploration and development. Under both the No Action and the Preferred Alternative, the initial SEPA review required prior to the leasing phase would eliminate some lands from leasing based on anticipated environmental impacts. However, the policy change requiring the completion of a SEPA checklist for seismic surveys and other exploratory activities where ground disturbance is anticipated under the Preferred Alternative would add an additional review step in the process. Leased lands containing critical wildlife habitats, cultural resources, or other sensitive features would be identified and subsequently avoided prior to conducting exploratory activities.

Mitigation

No further mitigation is needed because no significant earth impacts are anticipated under the preferred OGLP proposal.

Water Quality

Impacts

Greater protection of water quality would occur under the Preferred Alternative by complying with all the stipulations of the 1985 OGLP in addition to the new laws and regulations adopted since 1985. The policy requiring the completion of a SEPA check list prior to ground disturbing seismic exploration activities and the policies applying the 2002 Forest Practices rules and Best Management Practices with respect to new roads (constructed for oil and gas exploration and development) in all parts of the state, provide mitigation for enhanced protection of surface water resources.

Mitigation

Under the Preferred Alternative, mitigation measures would be the same as those discussed under the No Action alternative and those resulting from implementing policies in Appendix S.

Historic and Cultural Preservation

Impacts

Seismic exploration and oil and gas exploratory well drilling, well development, well production, and storage have the potential to affect cultural resources in a variety of ways. Seismic exploration may temporarily damage stands of traditional materials and effect direct, permanent injury to traditional places, historic sites, or archaeological sites. It may also create temporary auditory and visual intrusions that could impact Native practitioners' ability to utilize traditional places. Similar effects may be expected from oil and gas well exploration, development, production, and storage and from construction of any access roads or any pipelines that might be required for transportation of oil or gas from producing wells. The effects on traditional materials would in these cases be permanent, however, and the disruption of Native people's ability to utilize traditional places could be longer term. Site reclamation and abandonment should not introduce any new effects and would eliminate or minimize visual and/or auditory effects on the use of traditional places.

Mitigation

Implementation of Policies PO06-001 and PO08-034 under this alternative requires application of Forest Resource Plan Policy 24 to all state managed land, including agricultural and grazing lands. Titled "Identifying Historic Sites," Policy 24 declares that the DNR will establish a program to identify and inventory historic and archaeological sites and protect them at a level that, at a minimum, meets regulatory requirements. The DNR will follow procedures equivalent to those required under Section 106 of the National Historic Preservation Act, which requires a consideration of the effects of a federal undertaking on properties eligible for or listed on the National Register of Historic Places. In addition, implementation of Commissioner's Order No. 200407 requires communication and collaboration between the DNR and tribes on issues of mutual concern. Implementation of this policy involves tribes in the identification and protection of cultural resources. Should SEPA review during any of the four phases subsequent to this SEIS identify significant impacts to cultural resources, an EIS or Supplemental EIS would be required at Lessee

expense to assess these impacts and develop mitigation measures for them. Impacts to cultural resources pursuant to oil and gas exploration, leasing, and development are likely to be minimized under this alternative.

Alternative 3 (Delayed Implementation of Alternative 2)

Impacts and Mitigation

Alternative 3 would implement No Action Alternative initially. Therefore, the effects associated with Alternative 1 would apply over the short term. At some point in the future, however, the effects would change to those of the Preferred Alternative. Therefore, impacts and mitigation associated with oil and gas development in the Columbia Basin would be the same as those described under the No Action alternative until the Preferred Alternative is implemented, at which time the additional protective measures described above would apply.

Cumulative Effects

The following discussion analyzes the potential cumulative impacts of the alternatives within the larger context of past, present and reasonably foreseeable actions on the principle features of the affected environment discussed in this SEIS, with a focus on the Columbia Basin.

The DNR recognizes that cumulative impacts are occurring and have the potential to occur in the future with relation to a potential increase in oil and gas activities on DNR-managed oil and gas lands. The loss of shrub-steppe due to farming, grazing, and fire within the Columbia Basin has resulted in cumulative adverse impacts of loss and endangerment of various species. The listing of the pygmy rabbit, the state listing and the petition to federally list greater sage-grouse are examples of these cumulative effects.

All alternatives have the potential to impact fish, wildlife and plant species found within shrub-steppe habitat. The greatest potential cumulative impacts would be expected in areas where the DNR's trust ownership is greatest, and where oil and gas leasing is concentrated. In areas where state trust land is small, impacts to the above resources will be dependent on other landowners (e.g., federal lands, private lands under CRP agreements, or private forestlands subject to state Forest Practices Rules.

Because of the Oil and Gas Program Phased SEPA process, cumulative effects will be reviewed at multiple steps during different phases of oil and gas development. Therefore, the potential for significant cumulative effects as a result of oil and gas exploration and development is expected to be minimal.

The expectation is that the overall level of cumulative effects from potential oil and gas activities will be reduced in the future under all three alternatives due to Board of Natural Resources policy; SEPA review; operational procedures; state Forest Practices Rules; and combined with other regional programs, such as salmon recovery efforts (Salmon Recovery Funding Board), CRP enrollment lands, and other habitat conservation and recovery plans. These combined efforts will reduce the potential for future cumulative impacts, by requiring that all landowners do their share of mitigation and avoidance. See Appendix T for a summary of the regulatory framework for further context for cumulative effects.

Any cumulative adverse impacts that could result from increased exploratory, development and production of oil and gas will be mitigated through four proposed policy changes under the Preferred Alternative (see Appendix S) which would increase environmental review, application of the current Wildlife Policies 22 and 23, and apply the current Forest Practices Rules for oil and gas activities on all WDNR-owned lands where oil and gas leasing is permitted. These policy changes and other mitigation measures would be applied to each oil and gas phase (exploratory, development and production, and reclamation) through the phased SEPA approach. All oil and gas activities would require a plan of operations, which include management strategies and mitigation measures described in this document. Protection measures are directed toward minimizing cumulative impacts on terrestrial and aquatic wildlife and their habitats, and would maintain the same level of protection under all alternatives.

Appendices

(Attached on CD)

- A Distribution List
- B Department of Natural Resources Organization Chart
- C 1985 Oil and Gas Leasing Program
- D 1985 Oil and Gas Leasing Program Final Environmental Impact Statement
- E Oil and Gas Exploration Process Flow Chart
- F DNR/WDFW Oil and Gas Leasing Memorandum of Agreement (2003)
- G Status of Washington's Shrub-Steppe Ecosystem August 1996 found in Appendix G or online @ <http://wdfw.wa.gov/wlm/research/songbird/shrub.pdf>
- H Further Ranking and Status of SS Species (by ELCode)
- I 2004 OGLP Determination of Significance (DS) and Request for Comments on Scope of SEIS
- J Enabling Act
- K 1989 Centennial Accord
- L 1999 Millennium Agreement
- M Cultural Resource Protection and Management Plan, July 3, 2003
- N 2004 Commissioner's Order on Tribal Relations
- O 2004 OGLP Tribal Letter, Tribal Meetings Documentation
- P References Supplemental to the 1985 Final EIS
- Q DNR Board of Natural Resources Resolution # 1141
- R HB-1309 Ecosystem Standards for State Owned Agricultural and Grazing Land
- S Policy Changes to 1985 Document
 - S-1 Oil and Gas Lease Operating Plans-Resource Protection, Plants and Animals
 - S-2 Oil and Gas Lease Operating Plans-Protection of Surface Waters
 - S-3 Oil and Gas Lease or Land Use License-Seismic Surveys
 - S-4 Oil and Gas Leasing Plans-Roads

T 2005 Regulatory Framework for Affected Environment

U Comments and Responses

Maps

(Attached on CD)

- 1 Columbia Basin Agricultural, CRP Land Cover in Shrub-Steppe Habitat
- 2 Major Public Lands of Washington, NAPS/NRCAs Washington State/Federal/Tribal Lands, Counties, Columbia Basin, Showing Hanford, Yakima Nation, Yakima Training Center
- 3 Columbia Basin Enlargement
- 4 Washington State Petroleum Plays, Counties