

State of Washington
Joint Legislative Audit and Review Committee (JLARC)



DNR Grazing Lands Study

Report 05-13

September 14, 2005

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The Joint Legislative Audit and Review Committee (JLARC) carries out oversight, review, and evaluation of state-funded programs and activities on behalf of the Legislature and the citizens of Washington State. This joint, bipartisan committee consists of eight senators and eight representatives, equally divided between the two major political parties. Its statutory authority is established in RCW 44.28.

JLARC staff, under the direction of the Committee and the Legislative Auditor, conduct performance audits, program evaluations, sunset reviews, and other policy and fiscal studies. These studies assess the efficiency and effectiveness of agency operations, impacts and outcomes of state programs, and levels of compliance with legislative direction and intent. The Committee makes recommendations to improve state government performance and to correct problems it identifies. The Committee also follows up on these recommendations to determine how they have been implemented. JLARC has, in recent years, received national recognition for a number of its major studies.

DNR Grazing Lands Study

REPORT 05-13

REPORT DIGEST

SEPTEMBER 14, 2005



STATE OF WASHINGTON

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What Are State Trust Lands?

When Washington became a state, the federal government granted lands for the new state to manage in trust for the perpetual support of specified beneficiaries. State trust land beneficiaries include public schools, universities and the community and technical colleges, state Capitol buildings, prisons, and state institutions such as mental hospitals and rehabilitation centers for people with developmental disabilities.

State Trust Land Oversight and Management – A Unique Responsibility

With the oversight of the Legislature, the Department of Natural Resources (DNR) together with the Board of Natural Resources manages a portfolio of investments for the state trust land beneficiaries. These investments are intended to generate a return for the beneficiaries. The investments include expenditures to protect and enhance the lands, and expenditures to produce revenue from timber, agriculture and other leasing, and grazing. Over the past ten years, more than \$1 billion in beneficiary income has been generated from the state trust land assets. Beneficiary income is appropriated for school and institution construction projects through the state's Capital Budget.

Management of the state trust lands entails financial responsibilities that are not required of most other state lands. The Legislature is the **trustee** of these lands, and DNR is the **trust manager**. Management of these lands calls for consideration of current beneficiaries but also future generations of these beneficiaries. Competing demands to produce revenue **today**, while protecting and enhancing the lands so that they can produce revenue **forever**, create challenges to balance these interests.

While management decisions regarding these lands must be made with the interests of the beneficiaries as the primary consideration, other factors may be considered. DNR must comply with federal and state statutes, including federal environmental laws and the state's own policies regarding retention of state lands and multiple use of these lands.

JLARC's Assignment: State Trust Lands Used For Grazing

Some 850,000 acres of state trust lands are used for grazing. Of the \$1 billion in beneficiary income that has been generated in the last ten years, revenues from the grazing program on state trust lands contributed \$4.4 million.

The Legislature asked JLARC to look into the question, "**Does the grazing program make money for trust beneficiaries?**" We were asked to conduct a benefit cost assessment; to review grazing program revenues, beneficiary income, and program expenditures; and to provide an analysis of the program's legal and policy environment.

A key element of this study was determining *how to measure* whether the grazing program makes money. DNR does not have performance measures specifically for the grazing program. We've developed several ways of examining this question. We first look narrowly at revenues and expenditures, and then we look more broadly at an array of benefit and cost factors that provide a more comprehensive measure.

Looking Narrowly: Grazing Program Revenues, Beneficiary Income, and Expenditures

Comparisons of grazing program revenues, beneficiary income, and program expenditures found the following:

- The grazing program is generating an average of \$590,000 per year in total revenues from more than 1,200 grazing leases and permits. Of this total, an average \$440,000 per year is being distributed to the trust beneficiaries;
- Washington's grazing lease fees are the highest among the four states of Idaho, Oregon, Washington, and Wyoming, and Washington's permit fees are the second highest. All of the states' fees are higher than the fee charged for grazing on federal lands;
- Grazing program revenues (averaging \$590,000 per year) exceed program expenditures (averaging \$370,000 per year);
- Income distributed to beneficiaries exceeded grazing program expenditures in nine of the past ten years; and
- The grazing program deposits less into the Resource Management Cost Account than it withdraws to manage the program.

Looking More Broadly: A Benefit Cost Assessment

We developed a tool to look broadly at perceived benefits and costs of the grazing program using the comprehensive approach of benefit cost assessment. We modeled the net benefit of the status quo grazing program and three alternative scenarios to illustrate how this tool can support decision making for the grazing program. We found that:

- The status quo provides the greatest net benefit, and the second highest beneficiary income;
- Selling half of state trust lands used for grazing provides the least net benefit, and the most beneficiary income;
- Increasing fees by 50 percent provides the second highest net benefit, and reduces beneficiary income by 25 percent; and
- Eliminating all grazing on state trust lands provides the third highest net benefit, and eliminates beneficiary income.

Some costs and benefits, such as the effects of different grazing policies on the condition of the land, are not quantified in dollar terms in the benefit cost assessment. Instead, those topics are discussed qualitatively.

The benefit cost assessment model is flexible, allowing policymakers to choose which factors to consider in an assessment and which policy options to explore. The assumptions behind the estimates of net benefits yielded by the model as illustrated in this study are valid for approximately ten years.

Recommendation

DNR should own the benefit cost assessment model created as a result of this study in order to examine policy and management options as needed.

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CHAPTER ONE – INTRODUCTION

BACKGROUND OF THE DNR GRAZING LANDS STUDY

With the oversight of the Legislature, the Department of Natural Resources (DNR) and the Board of Natural Resources manage a portfolio of investments for state trust land beneficiaries. These investments include expenditures to produce income from timber, agriculture and other leasing, and grazing. The 2004 Supplemental Capital Budget instructed DNR to contract with the Joint Legislative Audit & Review Committee (JLARC) to conduct a study of the grazing program.

State trust land beneficiaries include public schools, universities and community and technical colleges, state Capitol buildings, prisons, and state institutions (mental hospitals, rehabilitation centers for people with developmental disabilities). Over the past ten years, more than \$1 billion in beneficiary income has been generated from the state trust land assets; grazing has contributed \$4.4 million toward this total. Beneficiary income is appropriated for school and institution construction projects through the Capital Budget.

The mandate for this study grew out of an ongoing public policy debate about the grazing program. Some parties have concerns about perceived program costs, such as inadequate grazing program fees subsidizing the ranching industry and long-term damage to the lands because of livestock. Others emphasize perceived program benefits such as controlling trash, crime and noxious weeds, and the creation of ranching and regional economy jobs. The Legislature asked JLARC to examine these perceived costs and benefits.

GOAL OF THE DNR GRAZING LANDS STUDY

The Legislature asked JLARC to look into the question “**Does the grazing program make money for trust beneficiaries?**” We were asked to conduct a benefit cost assessment; to review grazing program revenues, beneficiary income and program expenditures; and to provide an analysis of the program’s legal and policy environment.

A key element of this study was determining *how to measure* whether the program makes money. DNR does not have performance measures specifically for the grazing program. The overall measure for the larger leasing program is to increase revenues to the beneficiaries by 5 percent each year. We’ve developed several ways of looking at the question, and we provide our analysis in this report. We look narrowly at revenues and expenditures, then more broadly at an array of benefit and cost factors that provide a comprehensive measure.

READING THE REPORT

Chapter 2 provides background on state trust lands and a discussion of the roles and responsibilities of the Legislature and DNR in relation to these lands. Unlike other public lands, state trust lands carry a fiduciary responsibility to named beneficiaries. This responsibility creates a challenging environment for lands management – there’s a legal duty to provide both current *and* perpetual revenue for the beneficiaries. This primary duty must be executed while in compliance with general federal and state laws (such as the Endangered Species Act and

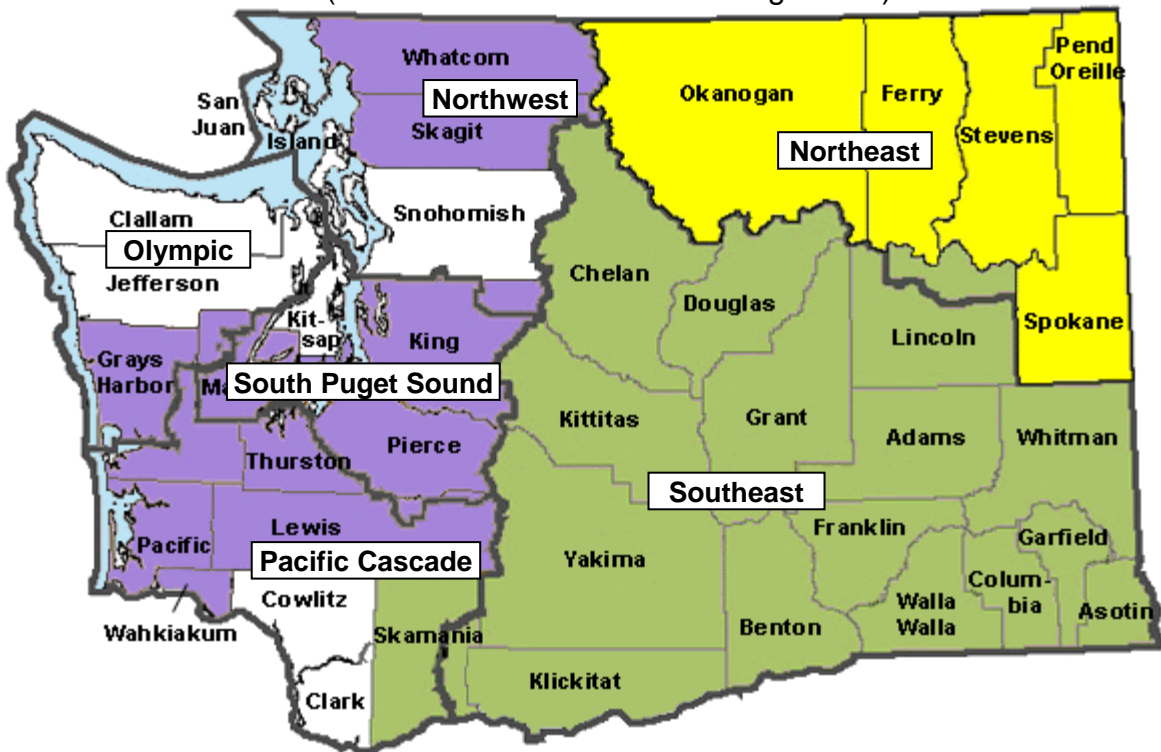
Multiple Use Act, respectively), and the Legislature’s articulated policy in favor of retaining state lands

In **Chapter 3**, we examine program revenues, beneficiary income, and program expenditures. We provide an overview of the grazing program, compare data about Washington’s program with those operated in Oregon, Idaho, and Wyoming, and provide an analysis of several ways of looking at the question of whether the program makes money. Examples include: Do program revenues exceed program expenditures? Does beneficiary income exceed program expenditures? Does the grazing program withdraw more from the Resource Management Cost Account (the agency-wide fund established by statute to manage all trust lands) than it deposits?

Chapter 4 takes a broader view of the question by presenting the results of the benefit cost assessment. JLARC worked with a consultant, Resource Dimensions, to develop a flexible model that allows decision makers to measure the effects of various public policy options related to the state trust lands used for grazing. For the purposes of this report, we’ve modeled the net benefit of the current grazing program (status quo) and three alternative scenarios. Many scenarios are possible, but to illustrate the model we focused on: 1) sell 50 percent of state trust grazing lands; 2) increase grazing fees by 50 percent; and, 3) eliminate grazing on state trust lands.

In **Chapter 5**, we summarize our conclusions and make a recommendation concerning the benefit cost assessment model created as a result of this study and DNR’s future use and ownership of the model to examine policy and management options as needed.

Figure 1 – DNR Regions and Counties With Grazing Trust Lands
(Shaded Counties Have Grazing Lands)



Source: JLARC analysis of DNR data.

Appendices provide useful supplementary information. Appendix 3 is a table of comparative information about grazing programs in Washington, Oregon, Idaho, and Wyoming. Appendix 4 is an abridged version of the consultant's report to JLARC. This shortened version features the discussion of the benefit cost assessment, including definitions and assumptions for the various factors used to develop the net benefit for the status quo and three alternative scenarios. The complete version of the consultant's report is available upon request from JLARC.

CHAPTER TWO – MANAGING STATE TRUST LANDS – AN INVESTMENT PORTFOLIO

CHAPTER OVERVIEW

When Washington became a state, the federal government granted lands to hold and manage in trust for the perpetual support of certain beneficiaries. Management of state trust lands entails financial responsibilities that are not required of other state lands. The Legislature is the trustee of these lands, and DNR is the trust manager. State trust lands represent about 60 percent of all DNR-managed public lands. The investment portfolio for these lands includes expenditures to protect and enhance the lands, and expenditures to produce revenue from timber, agriculture and other leasing, and grazing. These investments are intended to generate a return for the beneficiaries as the law requires. This chapter discusses the legal and policy framework for managing these lands.

LEGAL AND POLICY FRAMEWORK FOR OVERSEEING AND MANAGING FEDERALLY-GRANTED LANDS

At statehood in 1889, Washington was granted 3.2 million acres of land by the federal government to be managed in trust to provide revenue to public educational and institutional beneficiaries. Beneficiaries are the common schools, universities, state mental hospitals, rehabilitation centers for those with developmental disabilities, prisons, and the state Capitol.

These federally-granted lands included sections 16 and 36 of each township specifically for the support of the common schools, and specific grants for universities, institutions, and the state Capitol.¹ Where lands in these sections were already designated as part of the federal forest system or Indian reservations, the state was allowed to select other lands (lieu lands) in their place. The granted lands were, and are, widely dispersed and include a variety of land types, from high elevation forest to low elevation shrub-steppe lands.

The Legislature, according to the Enabling Act, the Washington State Constitution, and state law, is the **trustee** of 2.9 million acres of state trust lands held on behalf of trust beneficiaries.² In the role of trustee, the Legislature *oversees* an investment portfolio designed to generate both current and perpetual revenue for the beneficiaries.

DNR, as the **trust manager**, *manages* the portfolio of investments in timber, agricultural and other leases, and grazing.³ DNR's responsibilities include producing revenue **today**, which is distributed to the beneficiaries, and protecting and enhancing the assets (the land) to generate revenue **forever**.

¹ A "township" is a unit of land six miles square divided into 36 sections; each section is one square mile or 640 acres.

² Some state trust lands were sold in the early years of statehood. The state has since adopted a policy of retaining these public lands, and Washington retains a greater percentage of original federal grant lands than most of the other states.

³ DNR was formed in 1957. The agency is headed by the Commissioner of Public Lands, an elected official, who sits on the Board of Natural Resources. The Board is composed primarily of trust beneficiaries, and provides policy guidance for land management activities and makes decisions about sales of materials from the public lands.

Balancing the competing short-term and long-term interests of the trust beneficiaries creates tension between actions to produce immediate income and the duty to future beneficiaries.

Further complicating DNR's operating environment, the agency also must comply with federal and state laws, such as the federal Endangered Species and Clean Water Acts, and the state Multiple Use and Growth Management Acts.

Courts have ruled that trust managers must exercise an "undivided loyalty" to trust beneficiaries. This principle prohibits trust assets from benefiting parties other than the trust beneficiaries without proper compensation. DNR must base all trust land decisions on the beneficiaries' best financial interests. However, trust managers may provide public benefit to other parties as a by-product of these decisions.⁴ Indeed, the state Constitution states that these lands "are held in trust for all the people."⁵

The Legislature has been clear that other considerations, such as using state trust lands for recreation, are valid when in the best interests of the state and its citizens, and when "consistent with the applicable trust provisions of the various lands involved." The Legislature has also articulated a policy for maintaining the current state lands base by requiring the replacement of any state lands that are sold "so that the publicly-owned land base will not be depleted."⁶

The Washington Office of the Attorney General has issued an opinion stating that DNR may consider other factors in land management decisions: "Though providing economic support to the beneficiaries remains the *primary purpose* of the Department's responsibilities with regard to the federal grant lands, *this purpose does not exclude all other considerations* so long as such considerations are consistent with protecting the economic value and productivity of the federal grant land trusts."⁷

DNR regulations clearly state that the main object of the management of state-owned range lands used for grazing is providing for the maximum use of the resources through four strategies of equal priority:⁸

- 1) Secure the highest return to the state under good management practices;
- 2) Perpetuate the natural resources on both state and related lands through wise use, protection, and development;
- 3) Provide the best practical, social, and economic correlation of the use of state lands with adjacent lands; and
- 4) Stabilize that part of the livestock industry which makes use of state land through administrative policy and management practices which conform to the requirements of practical operation.

⁴ See "The Federally Granted Trusts: What Makes Them Unique" (DNR, 1999) for a thorough discussion of these issues.

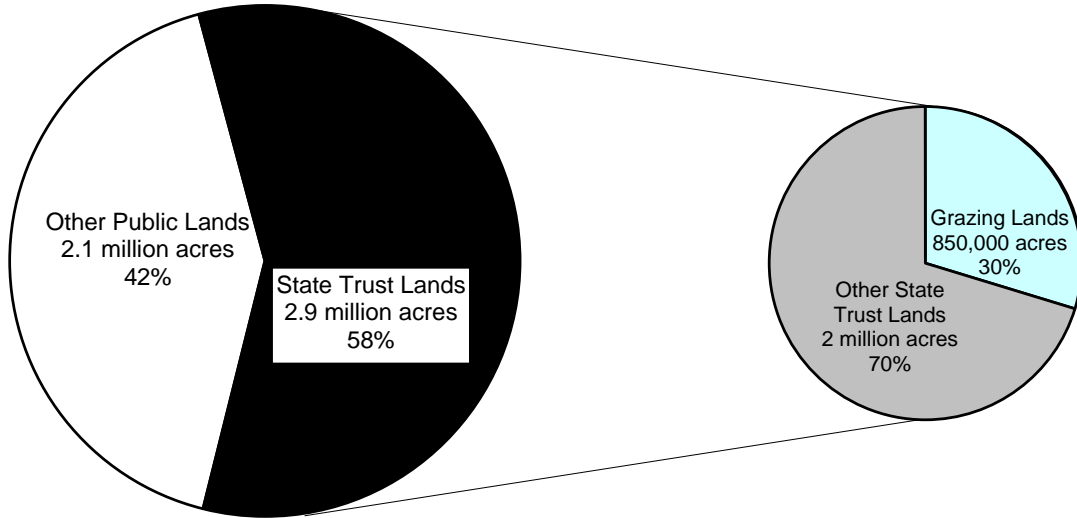
⁵ Constitution of the State of Washington, Article XVI.

⁶ See RCW 79.10.100 (formerly RCW 79.68.010) and RCW 79.19.010 (formerly RCW 79.66.010).

⁷ Emphasis added to AGO96-11.

⁸ WAC 332-20-010.

Figure 2 – State Trust Lands Make Up the Majority of DNR-Managed Public Lands

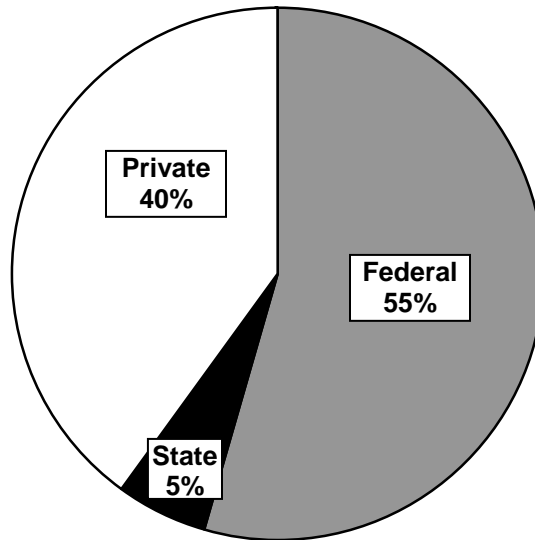


Source: JLARC analysis of DNR data.

THE GRAZING PROGRAM – ONE OF THE INVESTMENTS IN THE TRUST PORTFOLIO

The DNR grazing program is one of the investments made on behalf of trust beneficiaries. Grazing occurs on approximately 30 percent, or 850,000 acres, of all state trust lands; about one-half of these lands are shrub-steppe lands used principally for grazing, and the other half are forested lands that have grazing as a secondary use. The vast majority of state grazing lands are located in Eastern Washington, though most counties have some trust lands used for grazing. While the amount of state grazing lands acreage may sound large, state grazing lands provide only about 5 percent of the total grazing lands available in Washington. In Chapter 3, we discuss features of the grazing program in detail.

Figure 3 – State Grazing Lands 5% of Total Washington Grazing Lands



Source: JLARC consultant.

CHAPTER CONCLUSIONS

The Legislature and DNR's land managers have a unique responsibility in overseeing and managing state trust lands and the investment portfolio these lands provide in the form of timber, agriculture and other leasing, and grazing. The competing demands to produce revenue today, while protecting and enhancing the lands so that they can produce revenue forever, create challenges to balance these interests. While management decisions regarding these lands must be made with the interests of the beneficiaries as the primary consideration, other factors may be considered. DNR's operating environment requires compliance with federal and state statutes, including federal environmental laws and the state's own policies regarding retention of state lands and multiple use of these lands. In the next chapter, we will look in depth at the grazing program investment.

CHAPTER THREE – DNR’S GRAZING PROGRAM: AN INVESTMENT FOR TRUST BENEFICIARIES

CHAPTER OVERVIEW

DNR manages a portfolio of investments for the trust beneficiaries. One of the investments in the portfolio is the grazing program. The Legislature asked JLARC to conduct a benefit cost assessment of the program to examine the question “Does the grazing program make money for trust beneficiaries?” In this chapter, we provide an overview of the grazing program and discuss revenues, beneficiary income, and expenditures.

OVERVIEW OF THE GRAZING PROGRAM

DNR manages grazing on approximately 30 percent, or 850,000 acres, of all state trust lands; about one-half of these lands are shrub-steppe lands used principally for grazing, and the other half are forested lands that have grazing as a secondary use. Six DNR FTEs manage over 1,200 grazing leases and permits to generate an average of about \$440,000 in beneficiary income each year from fees.⁹ Over the past ten years, the grazing program has generated \$4.4 million, or less than 1 percent, of total beneficiary income from all sources in the investment portfolio.

Nearly all state grazing lands are on the east side of the state where 95 percent of the state’s livestock industry is located. An estimated 25,000 head of livestock run on state trust lands at some point in the grazing season.¹⁰ Lands are used primarily for cattle, but some ranchers graze sheep. Herd size varies from 100 to 2,000 with the larger herds running on higher elevation lands. Each cow and calf pair requires on average 8-10 acres.

Ranchers lease land to add forage acres to their property. Many ranchers hold multiple leases or permits. State grazing lands provide from 6 to 60 percent of an individual ranch’s land base. The average lease is 491 acres; the average permit is 7,167 acres. On average, ranchers spend \$2,850 per year on grazing fees. Eighty percent of ranchers have held the same leases and permits for over ten years. Interviews suggest that the majority have held these leases and permits for several generations. Ranchers we interviewed estimated that about 25 percent of the ranching operations are marginal, with about 5 percent that would be out of business without state grazing lands.

The state trust lands are scattered and often landlocked by private land. Under Washington’s Multiple Use statute, the lands are available to the state’s citizens for recreation where there is public access.¹¹ Leaseholders may not prevent access to the state lands unless DNR has previously agreed to such limitations. Some ranchers we interviewed expressed frustration with citizens’ misuse of land on or near parcels ranchers had leased. They said that to get to public land, some people drive over private land without permission, even cutting fences to do so.

⁹ Differences between leases and permits are discussed later in this chapter.

¹⁰ The grazing season is generally the summer. However, variability in the lands and weather conditions means that some lands may be grazed for only six weeks, while others may be grazed for six months.

¹¹ Chapter 79.10 RCW, Part 2 (formerly Chapter 79.68 RCW).

Can State Grazing Lands Be Leased, But Not Grazed?

DNR requires that an individual wishing to lease these lands have a base ranch (a place to have cattle before and after the state grazing lands are available for the season).¹² Leaseholders must graze the land at some point during the lease; portions of the land can be ungrazed to protect habitat or to improve the condition of the land. Permit holders must graze, unless they have prior written approval of DNR to not do so. Upon the written request of the Washington Department of Fish and Wildlife (WDFW), DNR may withdraw lands from leasing for the purposes of the state outdoor recreation plan, but trust beneficiaries must be compensated for the use of the lands.¹³ WDFW historically has held special use leases for such lands, contributing as much as \$170,000 in annual revenues to the grazing program. Recent budget reductions have led WDFW to relinquish 85 percent of these leases.

FEES DRIVE REVENUES

DNR's grazing program generates revenues for the state trust land beneficiaries through the fees charged to ranchers.

Two-Tier Fee Structure Is Unique

JLARC compared Washington's grazing fees, management structures, and management policies to those of Oregon, Idaho, and Wyoming. Among these four states, Washington is unique in setting two separate fees for grazing lands: one fee is charged for grazing *leases*, while another fee is set for grazing *permits*. Table 1 on the following page compares some of the key aspects of leases and permits for fiscal year 2003.

Grazing leases (1,200) represent the majority of the acreage used in the DNR grazing program and generate the majority of the revenues and expenditures. The first grazing lease was issued in 1893. Leases typically are located on lowlands and have grazing as a primary purpose, and leases are subject to public bid at expiration.

Grazing permits (48) are more likely to exist on lands at higher elevations, and the lands are used primarily for timber with grazing as a second use. These lands often abut federal grazing lands. Permit ranges were established in 1959, shortly after DNR was created. These permits are not subject to public bid at expiration; the permit holder has a "preference" to retain the permit unless DNR concludes that the permit holder has not met program requirements.

¹² WACs 332-20-050 and 332-20-180.

¹³ RCW 77.12.360.

DNR Grazing Lands Study

Table 1 – Washington State Grazing Program Lease & Permit Comparison (2003)

	Lease	Permit
Fee Amount per AUM	\$7.52	\$5.25
Total acreage (<i>est.</i>)	542,417	330,527
Total AUMs (<i>est.</i>)	58,971	35,556
DNR Revenues	\$446,976	\$154,607
DNR Expenditures	\$232,490	\$95,290
Unleased acreage (<i>est.</i>)	< 5%	< 5%
Length of contract	10 years	10 years
Publicly bid at termination	Yes. When a lease is about to expire, its availability is published. Anyone meeting the qualifications may challenge the existing leaseholder's renewal by bidding. The existing leaseholder has the opportunity to match the winning bid.	No. Can be acquired by successfully holding a temporary grazing permit for at least 5 years, by authorized prior use, gift, or by transfer through purchase or inheritance as long as the base ranch property is maintained and the new permit holder receives written consent from the department.
Transferable	Yes. Must be approved by the department.	Yes.
Allowed to lease and not graze livestock?	No. Limited nonuse allowed for portions of land over a limited period of the lease, and only with prior DNR approval.	No.

How Does DNR Calculate and Apply Fees?

Fees are charged based on the number of animal unit months (AUMs) that a rancher purchases. An AUM is a measure of the amount of forage one 1,000-pound cow and calf will consume during one month of the grazing season. DNR calculates the fees annually.

Lease fees are based on a five-year rolling average of private grazing lease rates. This “per AUM” figure is then adjusted downwards by \$2 to reflect the land management and improvement responsibilities assumed by the leaseholder, rather than by DNR. On private grazing leases, the landowner frequently provides services that are included in the fee, such as containment (fencing) and care of the livestock, maintenance of the water supply, and noxious weed control. DNR does not provide such services to leaseholders. Indeed, leaseholders are required to assume certain land management responsibilities, such as weed control, in addition to the fees they pay as a condition of the lease. The 2005 fee is \$7.92 per AUM.

Permit fees are calculated using a formula similar to that used by the federal grazing land managers, the Bureau of Land Management, and the United States Forest Service. Washington statute requires similar permit terms to that of the federal lessor. This approach recognizes that the state and federal lands often adjoin at higher elevations, and that a rancher is likely to lease

lands from both the state and the federal government. The fee is not based on the private range fee; rather, it is built on a complex formula that includes last year's per pound livestock selling price. The 2005 fee is \$6.31 per AUM.

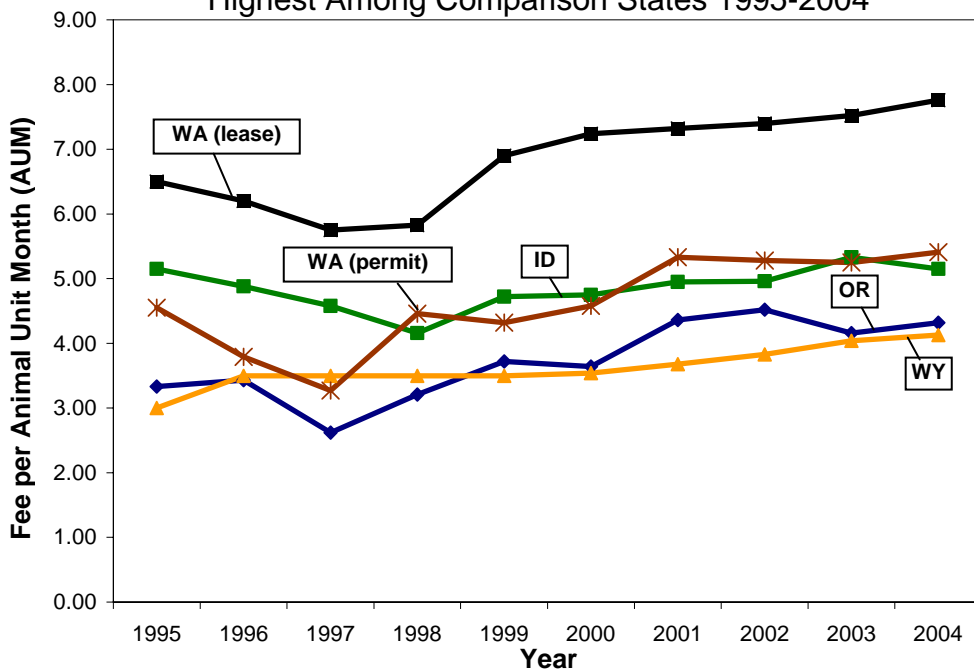
Are the DNR Fees Low Compared to Other Public Lands?

One criticism of grazing on public lands is that the fees charged are too low and are thus a subsidy to livestock interests. We compared Washington's fees to other states' public lands grazing fees and to private grazing fees.¹⁴ We found that:

- Washington is unique among the four states (Idaho, Oregon, Washington, and Wyoming) in having a two-tier fee structure.
- DNR's grazing *lease* fees are the highest among the four states, representing about 70 percent of Washington's average private lease rate.
- DNR's grazing *permit* fees are the second highest among the four states, equaling about 40 percent of Washington's private lease rate.

Our comparison of grazing fees charged for state trust lands in Oregon, Idaho, and Wyoming revealed that **Washington's public fees are the highest** for any of these states. Interestingly, **Washington's private lease fees are the lowest** among the comparison states. Expressed as a percentage of the private fee charged, again, Washington's fees are the highest. Figures 4, 5, and 6 display these comparisons.

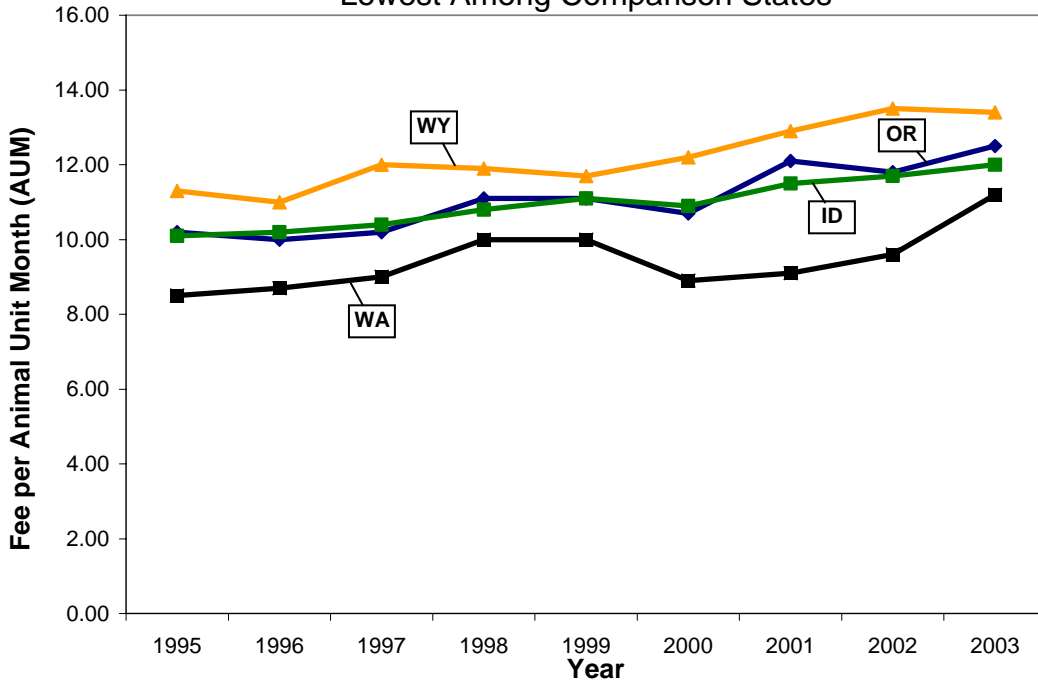
Figure 4 – Washington State Grazing Lands Fees Highest Among Comparison States 1995-2004



Source: JLARC consultant analysis.

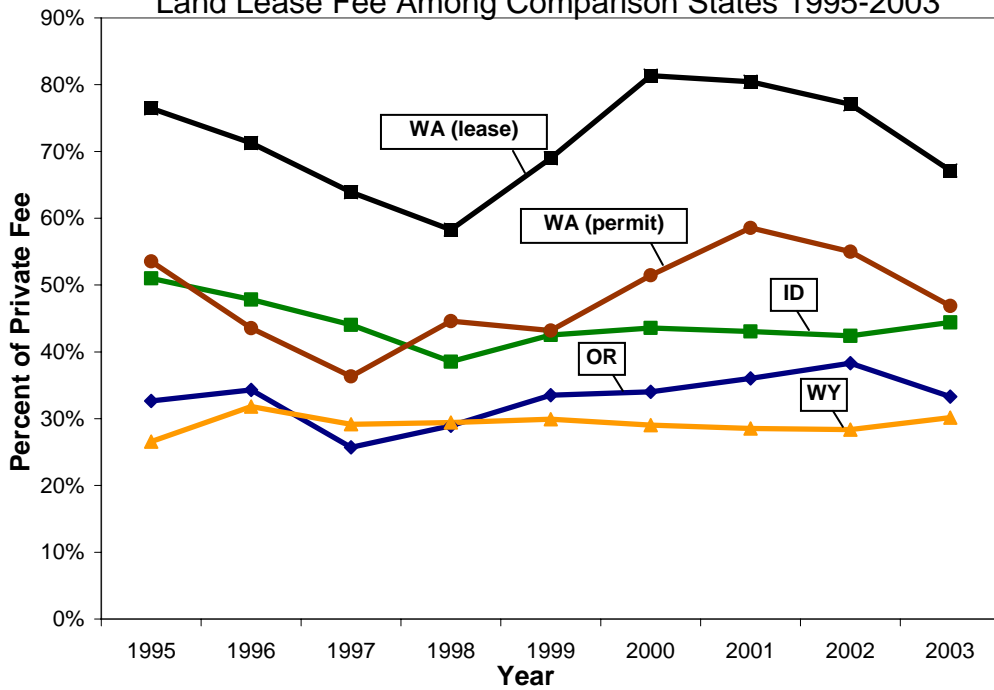
¹⁴ Appendix 3 displays extensive comparative information about selected state grazing programs.

Figure 5 – Washington Private Lands Grazing Fees Lowest Among Comparison States



Source: JLARC consultant analysis.

Figure 6 – Washington's State Grazing Fees Closest to Private Land Lease Fee Among Comparison States 1995-2003



Source: JLARC consultant analysis.

We also compared private and state grazing fees to federal fees. Federal grazing fees are uniform across the nation and are by far the lowest fees we examined. Over the past ten years, federal grazing fees have remained well below \$2 per AUM. In 2005, the fee is \$1.79 per AUM.

Comparisons of Grazing Revenues, Distributions, and Expenditures

The Legislature asked JLARC to examine grazing program revenues, beneficiary income (distributions), and expenditures as part of the cost benefit assessment. The preceding fee discussion explains how revenues are generated.

In this section, we discuss three ways to measure whether the grazing program makes money for trust beneficiaries:

- 1) A comparison of total revenues and program expenditures,
- 2) A comparison of program expenditures and beneficiary income, and
- 3) A comparison of deposits into and withdrawals from the agency-wide cost pool established by statute to fund management expenditures for all state trust lands.

Total Revenues Exceed Program Expenditures

While grazing fees drive revenues and beneficiary income, FTE expense is the investment DNR makes to produce that income. **Approximately 85 percent of grazing land expenditures are FTE related.** Over the past ten years, on average, six FTE have managed the grazing lands as part of their duties. FTE levels in 2004 (5.75) are the lowest in the past ten years; the highest level, 8.5 FTE, was reached in 2001, and coincided with the implementation of ecosystem standards.¹⁵

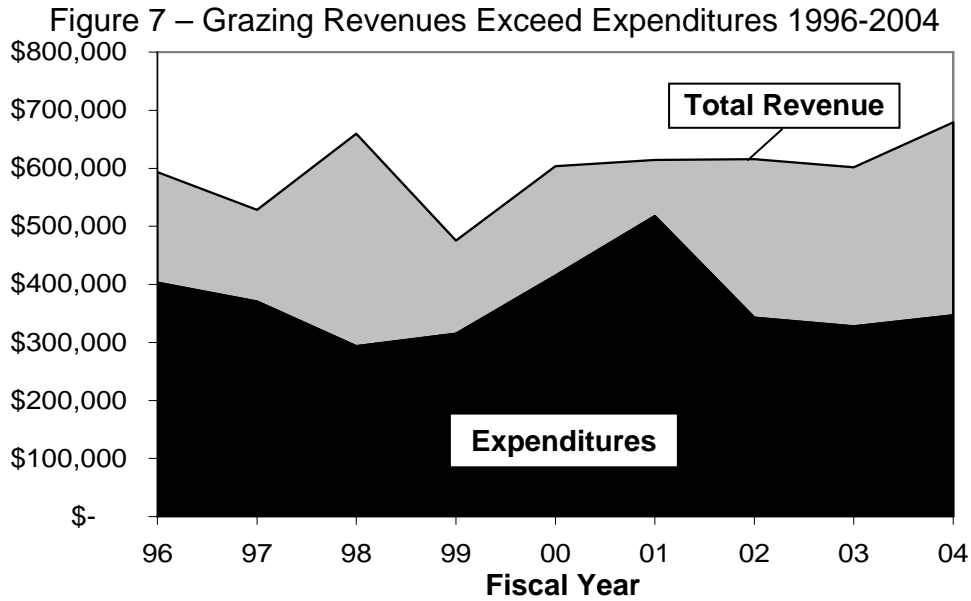
No employees are dedicated 100 percent to the grazing program. Land management field staff in DNR's Northeast Region (Colville) and the Southeast Region (Ellensburg) cover the entire eastern part of the state. The employees have multiple responsibilities related to the various investments in the trust lands portfolio. For instance, a land manager is likely to have responsibility for agriculture, mineral, and communication site leases as well as grazing.

Figure 7 compares program expenditures to total program revenues. Revenues have outpaced expenditures in each year. Expenditures have averaged about \$370,000 annually, compared with revenues averaging \$590,000.

We compared the revenue and expenditures of two states—Oregon and Idaho—with those of Washington.¹⁶ With seven years of comparable data (1998-2004), we found that **Washington's grazing program produces the highest return on investment** of these states at \$1.66 in revenue for every \$1 spent to produce the return. Oregon and Idaho returned \$1.51 and \$1.35, respectively.

¹⁵ HB 1309 (1993) directed the Conservation Commission to create a technical advisory committee to develop standards for state-owned agricultural and grazing lands to maintain and restore fish and wildlife habitat. DNR is directed to implement practices to meet the standards "consistent with the trust mandate of the Washington State Constitution and Title 79 RCW (Public Lands)." The standards are voluntary for private landowners.

¹⁶ Comparable data not available for Wyoming.



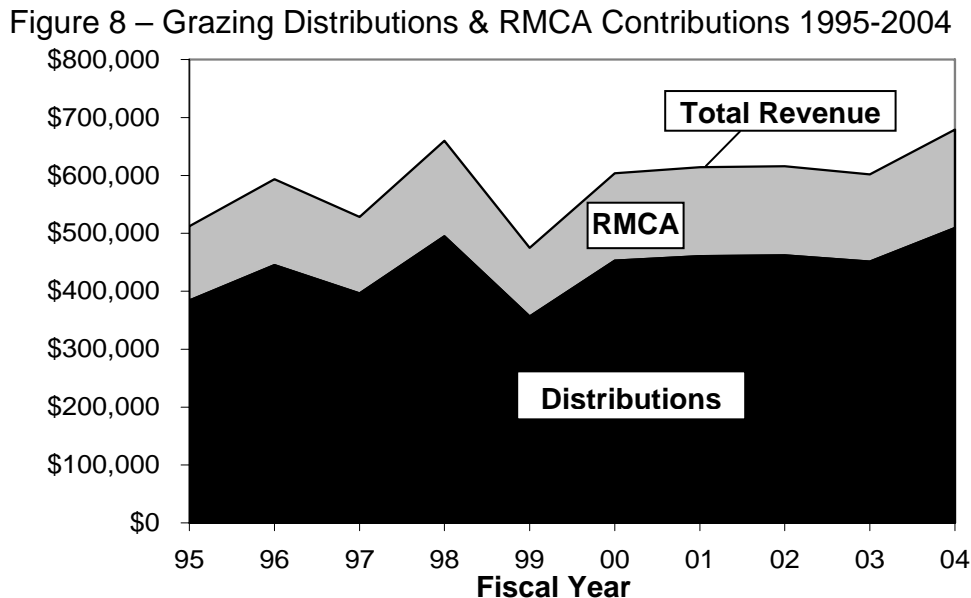
Source: JLARC analysis of DNR data.

Beneficiary Income Exceeds Program Expenditures—Usually

Another way to look at expenditures is to compare them to beneficiary income, or distributions.

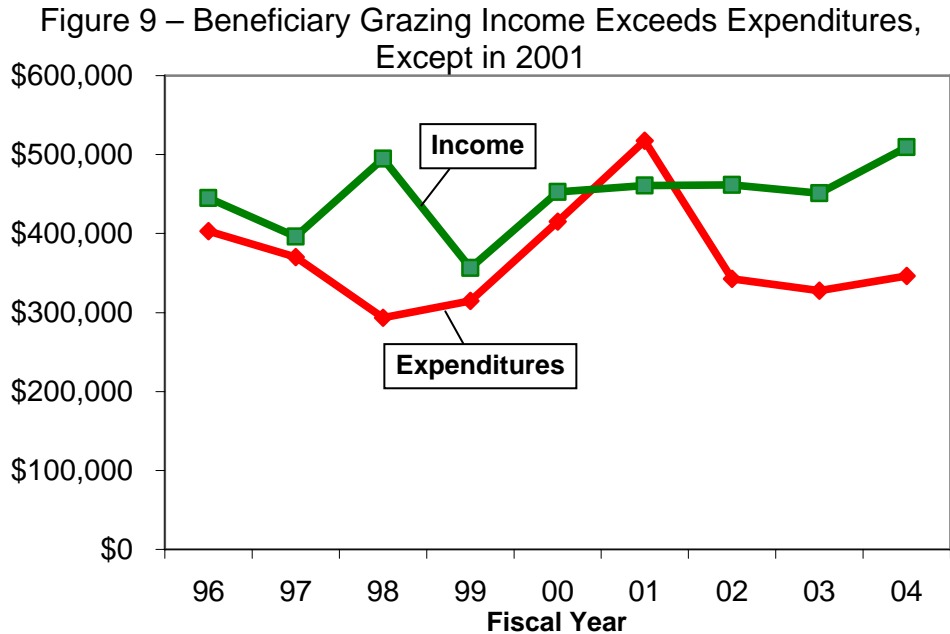
What is the difference between revenues and distributions? Statute grants DNR the authority to retain up to 25 percent of revenues generated from **all** the investments in the trust land beneficiaries’ portfolio, including grazing. These retained revenues are deposited into the Resource Management Cost Account (RMCA), which is an agency-wide funding pool dedicated to supporting **all** of the trust land management activities. The remaining 75 percent of revenues are distributed to the beneficiaries as income.

Figure 8 illustrates the relationship between total revenues, retained revenues, and distributions for fiscal years 1995-2004. The upper line in the graph shows total revenues; the black shaded area displays the distributions. The retained revenues deposited into the RMCA are represented by the lighter shaded area between the total revenue and distributions.



Source: JLARC analysis of DNR data.

In Figure 9, we compare beneficiary income to program expenditures for fiscal years 1996-2004. Over the period, beneficiary income usually exceeded program expenditures, with the exception of 2001. In that year, DNR was implementing legislation related to ecosystems standards on the public lands. Workload (and FTEs) were higher, reflecting the need to meet with leaseholders, to offer training in the standards, and to negotiate land management plans with the lessees.

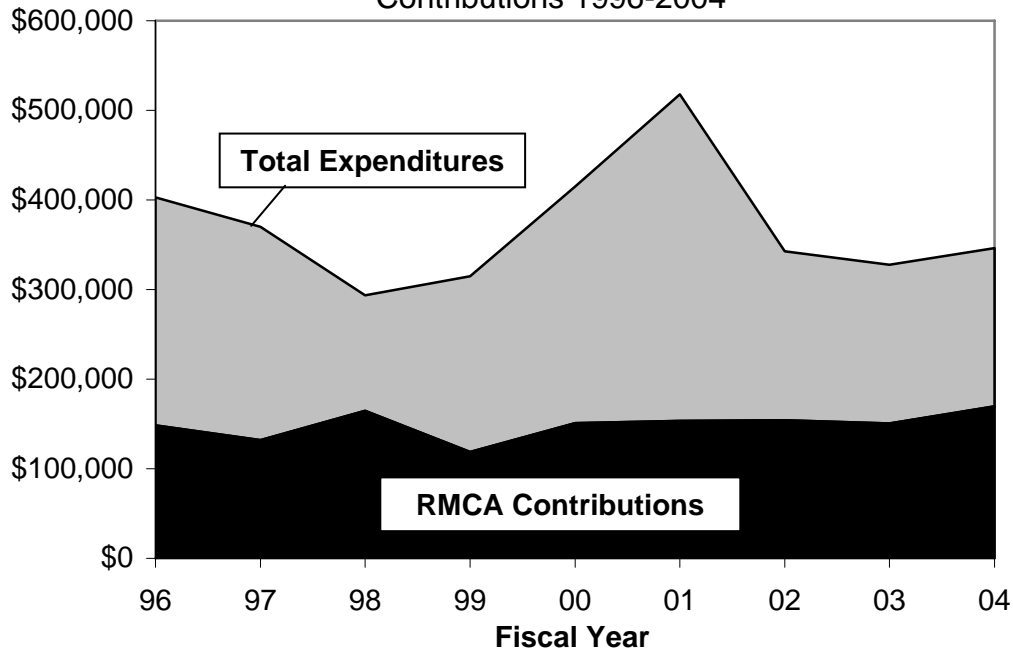


Source: JLARC analysis of DNR data.

Withdrawals From RMCA Exceed Deposits

A final discussion of expenditures compares withdrawals from the RMCA (program expenditures) to deposits into the RMCA (retained revenues). Figure 10 on the following page displays this comparison. The graph shows that the grazing program takes more money out of the RMCA than it puts in; grazing contributes about 40 percent of the funding used to support program expenditures. This outcome does not conflict with statute – there is no statutory requirement that grazing program expenditures must be self-supporting from retained grazing revenues.

Figure 10 – Grazing Program Expenditures Exceed RMCA Contributions 1996-2004



Source: JLARC analysis of DNR data.

CHAPTER CONCLUSIONS

The grazing program is one of the investments made on behalf of state trust land beneficiaries. Over 1,200 leases and permits generate an average of \$440,000 in annual beneficiary income from fees. Currently, eligibility for leasing state trust lands for grazing requires ownership of a base ranch and requires livestock grazing. Leaseholders assume certain land management responsibilities as a condition of holding the lease.

JLARC was asked to look into the question of “Does the grazing program make money for trust beneficiaries?” In this chapter, we’ve focused on ways to answer the policy question through an examination of revenues, beneficiary income, and expenditures:

- Does the program generate revenues? *Yes.*
- How do the grazing fees charged by DNR compare to fees charged by other states? *The fees in Washington are higher; all the states’ fees are higher than the fees charged for grazing on federal lands.*
- Do program revenues exceed program expenditures? *Yes.*
- Does beneficiary income exceed program expenditures? *Yes, in nine out of the past ten years.*
- Does the grazing program deposit more into the Resource Management Cost Account than it withdraws? *No, but this does not conflict with statutory authority.*

In the next chapter, we examine other ways, using the tool of benefit cost assessment, to measure from a more comprehensive perspective the benefits and costs of the grazing program.

CHAPTER FOUR – GRAZING PROGRAM BENEFIT COST ASSESSMENT

CHAPTER OVERVIEW

In Chapter 3, we examined revenues and expenditures for the grazing program at some length. We demonstrated that, using this information alone, one can answer the question of whether the grazing program makes money in a variety of ways. In this chapter, we look more broadly at the question by employing a benefit cost assessment. JLARC worked with a consultant to develop a model that allows decision makers to measure the effects of various public policy options related to the state trust lands used for grazing. The model is flexible; the various factors that are included as benefits and costs can be modified.

Many public policy options can be modeled. **For the purpose of illustrating how the benefit cost model works**, we've modeled the net benefit of the current grazing program (status quo) and three alternative scenarios. We are not proposing implementation of any of these options, and each would have implementation issues that we have not attempted to address in this report. This chapter describes benefit cost assessment, the model we've developed, and the results of applying the model to the current program and the three scenarios.

WHAT IS BENEFIT COST ASSESSMENT (BCA)?

Recognizing the complexity of managing state trust land investments for both today *and* forever, the Legislature asked JLARC to conduct a benefit cost assessment (BCA) to provide insight into the question “Does the grazing program make money for trust beneficiaries?” This approach acknowledges that today's expenditures are investments *not only* in generating today's revenue, *but also* in protecting and enhancing the assets so that they may continue to generate revenue forever.

Simply comparing annual revenues to annual expenditures does not give a comprehensive answer to the question. To illustrate this limitation, when a DNR land manager negotiates a lease agreement and works through the development of the management plan for the lease, that lease will produce revenue this year. But that lease also demands that the leaseholder control noxious weeds and may require the leaseholder to fence a portion of a stream to keep cattle out during a critical bull trout spawning period. These negotiations and adherence to the management plan affect the value of the land for years to come. However, the expenditure for that land manager's time is booked completely to the current year.

Benefit cost assessments are a way to look more broadly, over a longer period of time, at factors that contribute to an understanding of the value of various public policy options. Such an assessment includes revenues and expenditures, but can include other benefits and costs, such as:

- Land stewardship: market value; lease hold taxes; controlling litter, crime, and noxious weeds; protection and enhancement of the land asset;
- Ranching jobs: direct jobs created in this industry;
- Regional jobs: related or “spin-off” jobs created by the industry (feed stores, veterinarians); and,
- Recreation: the value of the lands for their availability for wider use by the state's citizens.

Individual factors can appear as both benefits and costs. For example, a benefit of the grazing program is that it creates jobs for DNR staff, as well as within the ranching community and in the region as “spin-off” jobs. However, there is a direct cost to the grazing program in connection with this benefit, in the form of the DNR FTE expenditures. Benefits can also appear as negative numbers where there is a perceived underinvestment in the activity, such as shown for noxious weed control in this analysis.

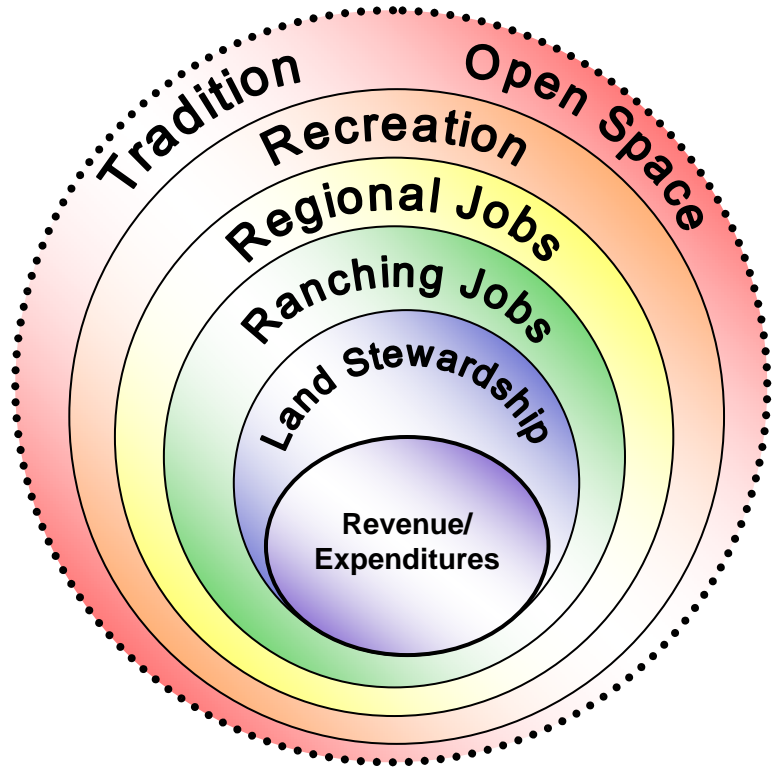
In addition to these factors, which can be more readily *quantified* into dollars, benefit cost analysis can also identify factors to be considered *qualitatively*. These are factors that aren’t quantified in dollar terms in this analysis, such as:

- The effects of revenue-generating activities such as grazing on public lands, water and ecosystems,
- The value of public ownership of open space to a society, and
- The preservation of a traditional way of life, such as ranching.

Figure 11 depicts examples of various factors that can be included in a benefit cost assessment, starting from the most concrete (revenues and expenditures), and moving toward the least concrete (tradition and open space).

Policymakers can choose which factors to include or exclude in the decision-making process, and which options to consider. The model is built on assumptions that are dynamic; as such, the longer the period of time considered by the model, the more uncertainty is introduced into the outcomes. The model as illustrated in this report reflects assumptions that are expected to hold for approximately ten years. BCA does not produce the definitive choice for public policymakers to make, but it can be a useful tool in weighing the complexities of policy options.¹⁷

Figure 11 – Benefit Cost Assessment is Comprehensive, Yet Flexible



¹⁷ The BCA model created as a result of this study is an accounting of benefits and costs directly or indirectly affecting the welfare of trust beneficiaries of DNR’s grazing program. The model does not take into account the impact of changes to the grazing program that produce changes in other economic sectors – for instance, if changes in the grazing program result in ranchers choosing to not produce livestock, and changing to wine grape production instead, the decreased income attributable to the rancher leaving ranching is shown, but the increase to the wine industry is not reflected.

Can the Legislature and DNR consider a range of factors in making decisions about the state trust lands? The best interest of the beneficiaries is required to be the primary goal of trust management activities. However, state policy has historically promoted continued ownership of the trust lands by the public. Policy has also promoted the concept of “multiple use” of the land in the best interests of the citizens of the state, where these interests do not impair the interests of the trust beneficiaries. As noted in an earlier chapter, the Washington Office of Attorney General has concluded that the primary duty to the beneficiaries does not exclude all other considerations, so long as such considerations are consistent with protecting the economic value and productivity of the federally granted trust lands.

Scenarios Modeled in the BCA

For the purpose of this report, we have modeled the **status quo** and three alternative scenarios:

- Alternative Scenario 1: Sell 50 percent of the grazing lands,
- Alternative Scenario 2: Increase grazing fees by 50 percent, and
- Alternative Scenario 3: Stop all grazing on state trust lands.

We are not proposing implementation of any of these scenarios; the options are presented to illustrate the BCA model. All of these scenarios would have implementation issues that we have not addressed in this report.

The *quantitative* results for each scenario are presented in a graph and a table. Figure 12 graphically depicts the outcome for each scenario when **all** factors are considered. Table 2 summarizes and compares the same information numerically.¹⁸ Recall that the BCA model allows its users to decide whether to include **all** or some subset of the factors.

In the sections that follow, we briefly discuss some of the quantitative information, but pay particular attention to selected *qualitative* factors, which are not easily summarized in a graph or table.

Status Quo Scenario – No Change in the Grazing Program

Under the status quo, no changes would be made in the DNR-managed grazing program. This scenario presents the **greatest net benefit** of the options we examined, when all factors are considered.

Key Drivers of Total Benefits

The total market value of the land is estimated to be \$287 million.¹⁹ Ranching income totals \$31 million (\$30,000 per lease), while \$3.9 million is generated from 130 regional jobs. Recreation value adds another \$17.8 million.

¹⁸Appendix 4 provides an abridged version of the final report on the benefit cost assessment prepared by JLARC’s consultant, including the definitions and assumptions related to the various factors. Complete versions of the detailed report may be obtained from JLARC. In Figure 12, DNR Jobs are included as part of the Stewardship category.

¹⁹ In 1995, Deloitte and Touche prepared an economic analysis of all state trust lands. Estimated market value of the grazing lands was \$187/acre, for a total value of \$154 million. JLARC’s 2005 estimate is an average market value of \$295/acre. Values ranged between \$90 and \$1,000+ per acre.

Key Drivers of Total Costs

Total program costs are \$937,000, representing DNR staff costs and costs of land stewardship such as noxious weed control and litter removal. As indicated earlier, indirect costs, such as wildfire impacts and suppression costs, and effects on the ecosystem are not quantified.²⁰

Implications

Under this scenario, annual beneficiary income remains at the 2004 level of \$580,000. The state policy of public ownership and stewardship continues, spaces remain open, and lands remain available for multiple use by citizens.²¹ The tradition of the ranching lifestyle is maintained, along with red meat production.

Wildfire danger and suppression costs are minimal on rangeland acres; on forested acreage, costs are borne by DNR through its suppression budget and are not “charged out” to other DNR programs. Negative ecosystem effects (livestock trampling vegetation, damaging stream banks, and competing with wildlife for forage) are the baseline level for comparison with other alternatives. DNR, as landlord, continues to work with leaseholders on implementation of ecosystem standards designed to protect habitat for fish and wildlife.

Figure 12 – Grazing Program Policy Options – Summary of Quantified Benefits



Source: JLARC consultant analysis.

²⁰ This quantification cannot be made without a systematic evaluation of the actual condition of the lands. Such a “condition assessment” was beyond the scope and funding for this project. We did not identify any state with state trust land grazing programs that had undertaken an assessment of this nature in recent history, primarily because of the cost involved and the generally low amount of revenues generated by grazing programs.

²¹ These factors are expected to increase the market value of the lands over time, as less undeveloped land is available.

Alternative Scenario 1 – Sell 50 Percent of Grazing Lands

A land survey to determine the actual market value and sales potential of the individual state trust holdings is beyond the scope and funding for this study. Conversations with ranchers, appraisers, and tax assessors yielded agreement on a range of values, from \$90 - \$1,000 an acre. This scenario assumes that half of the lands, reflecting a representative mix of high and low value lands, is sold at \$295 an acre. This scenario presents the **least net benefit** of the options we examined, but it produces the **highest income for the trust beneficiaries**.

Key Drivers of Total Benefits

Compared to the status quo, the total market value of the land remaining in public ownership is halved. The value of direct ranching income and regional jobs is also halved, as is the recreation value. The scenario assumes that proceeds from the sale are placed in a permanent fund, which generates interest. Each 1 percent in interest earnings yields \$1.4 million, annually. This scenario assumes a 9 percent return.

Key Drivers of Total Costs

Total direct costs rise to \$6.6 million. This increase over the direct costs attributable to the status quo is driven almost exclusively by the need to fence about 25 percent of unsold state land.

Table 2 - Grazing Program Policy Options - Summary of Quantified Benefits and Costs

	Status Quo	Sell 50% of Lands	Increase Fees 50% (50% Ranchers Stop Leasing)	Eliminate Grazing on Public Lands
BENEFITS				
Beneficiary Income	580,500	12,900,000	435,000	0
Land Stewardship				
Market value of land	287,765,424	143,882,712	282,565,424	282,500,000
Control of weeds, crime and trash	(531,636)	(265,818)	(231,636)	(1,500,000)
Jobs				
DNR Jobs	232,970	194,142	194,142	194,142
Ranching Jobs	31,000,000	15,500,000	15,500,000	0
Regional Jobs	3,900,000	1,950,000	1,950,000	0
Recreation	17,800,000	8,900,000	17,800,000	19,600,000
TOTAL BENEFITS	\$340,747,258	\$183,061,036	\$318,212,930	\$300,794,142
COSTS				
Beneficiary income foregone	0	290,250	0	580,550
Land Stewardship				
DNR FTE Expenditures	232,970	187,727	187,727	0
Foregone management fees (\$2/AUM)	189,056	94,528	94,528	0
Additional Fencing	0	5,050,000	5,050,000	10,100,000
Control of weeds, crime and trash	515,771	1,027,099	503,271	3,318,346
TOTAL COSTS	\$937,797	\$6,649,604	\$5,835,526	\$13,998,896
TOTAL NET BENEFITS	\$339,809,461	\$176,411,432	\$312,377,404	\$286,795,246

Implications

Under this scenario, annual beneficiary income rises dramatically. The state policy of public ownership and stewardship is discontinued on approximately 425,000 acres, fewer open spaces will remain since some of these sold lands are likely to be developed, and less land is available for multiple use by citizens.

The ranching lifestyle and red meat production would be affected. Ranchers we interviewed indicated that they'd like to buy the lands that they lease, but they were unsure as to their ability to obtain financing and to make payments on that financing. Some ranchers indicated that their operations were so marginal or dependent on public grazing lands that they'd be out of business if they lost their leased land to sales. Others thought that their businesses were diversified enough to stay in business but perhaps not in livestock.

Wildfire effects would remain similar to the status quo, if the sold lands remained undeveloped. However, if the lands are developed, DNR's fire suppression costs would be expected to increase, since DNR's tactics change on land with structures. Ecosystem effects are estimated to be the same as the status quo for retained lands. However, since ecosystem standards are voluntary for private landowners, there's some expectation that ecological conditions could worsen. Ecological conditions would also change if the lands are developed.

The Cost of Noxious Weeds

An Oregon Department of Agriculture study estimated that noxious weeds reduce total personal income of state citizens by about \$83 million and 3,329 jobs lost. In Washington, DNR estimates that weeds cause the loss of 24 percent of gross annual agricultural production. Seeds are spread by wind, motor vehicles, humans and wild animals, and wildfire can create seedbeds for such weeds. There is ongoing debate about livestock and noxious weeds; some argue that livestock spread noxious weeds; others argue that livestock help control weeds.

Regardless of source, DNR is responsible for managing and controlling these weeds on the properties it manages. Department-wide, DNR estimates that it currently spends around \$500,000 annually in this effort, down from a peak of \$1 million in 1999. Leaseholders pay about \$25,000 in weed assessments to the counties, in addition to grazing fees paid to DNR, and the leaseholders are responsible for controlling the weeds on the leased lands.

Alternative Scenario 2 – Increase Fees 50 Percent

This scenario assumes that fees increase by 50 percent, and that half of the ranchers stop leasing as a result. This scenario presents the **second highest net benefit** of the options we examined, but it reduces grazing income for the trust beneficiaries by 25 percent.

Key Drivers of Total Benefits

Compared to the status quo, the total market value of the land is roughly the same. The value of direct ranching income and regional jobs is halved. Recreation value remains the same as the status quo.

Key Drivers of Total Costs

Total direct costs are \$5.8 million. This increase over the direct costs attributable to the status quo is driven almost exclusively by the need to fence unleased state land.

Implications

Under this scenario, annual beneficiary income declines to \$435,000. The state policy of public ownership and stewardship continues, spaces remain open, and lands remain available for multiple uses by citizens. The ranching lifestyle and red meat production on state trust lands would be halved.

Wildfire effects would remain similar to the status quo. Ecosystem effects are estimated to be reduced.

A Word About Fencing

About 500,000 acres of Washington's public grazing lands are "open range," meaning that if the state, as landowner, wants to prevent livestock from gaining access to the land (and the forage it provides), the landowner must "fence out." A large proportion of these lands are landlocked by private land or interspersed with other state or federal lands, so a combination of building new fences and purchasing existing fences from leaseholders is required to prevent trespass cattle if state trust lands are pulled out of the grazing lands mix. New fencing costs about \$6,500 per mile, and it is estimated that a total of nearly 800 miles would need to be fenced, for a total of \$5 million. Purchasing all existing fences would cost about \$5 million.

Alternative Scenario 3 – Eliminate Grazing on State Lands

This scenario assumes that all grazing on state trust lands ends. This scenario presents the **third highest net benefit** of the options we examined; however, this scenario eliminates beneficiary income from grazing.

Key Drivers of Total Benefits

Compared to the status quo, the total market value of the land is roughly the same. The value of direct ranching income and regional jobs is eliminated. Recreation value increases over the status quo.

Key Drivers of Total Costs

Total direct costs are nearly \$14 million. This increase over the direct costs attributable to the status quo is driven largely by the need to fence *all* state trust land used for grazing. Costs for noxious weed control, litter removal, and illegal activities also increase dramatically because DNR must assume all responsibility for addressing these problems; these responsibilities are now shared with the leaseholders.

Implications

Under this scenario, annual beneficiary income declines to \$0. The state policy of public ownership and stewardship continues, spaces remain open, and lands remain available for multiple use by citizens. The ranching lifestyle and red meat production would be eliminated on state trust lands.

In terms of wildfire effects, the cessation of grazing would increase the surface fuel load for potential fires. Any negative ecosystem effects from grazing are expected to be reduced further.

What Is The Condition Of Grazing Lands in Washington?

The last thorough assessment of the condition of Washington's grazing lands was published in 1984. The Conservation Commission sponsored study found that about 30 percent of grazing lands (private and public) were in good or excellent conditions.²² Similarly, the U.S. Department of Agriculture's 1982 National Resource Inventory found 32 percent of lands ranked as good to excellent. By 1992, that number had risen to 42 percent. The state's Ecosystems Standards (HB 1309, 1993), designed to promote good land management practices for fish and wildlife habitat on state agricultural and grazing lands, have been implemented since that time. DNR reports that nearly all leases have resource management plans developed using these standards. The Washington State Rangeland Committee is working to assemble the resources to update the 1984 assessment.²³

CHAPTER CONCLUSIONS

Benefit cost assessment is a tool that can help public policymakers weigh the complexities of policy options by looking broadly at the factors that contribute to the value of each option. The BCA model we've created allows flexibility in asking questions and modeling policy options. Many options can be examined; we've illustrated how the model works by looking at the grazing program status quo and three alternatives for this report. Among these public policy options, the status quo provides the greatest net benefit. Selling half of state lands provides the most beneficiary income.

All scenarios, including the status quo, have implications for beneficiaries, ranchers, communities that depend on ranching, and the state's citizens who use the lands for recreation. These effects have been quantified. Other effects are not readily quantified but have been discussed qualitatively. These effects include wildfire and ecological effects on the lands.

Balancing the short term and long term interests of trust beneficiaries is the primary challenge faced by the Legislature, in its role as trustee, and DNR, in its role as trust manager. Because of the need to provide for today and forever, a comprehensive view of the benefits and costs of each of the investments in the trust portfolio is needed.

²² RCW 89.08.030.

²³ The Committee is a consortium of representatives of federal and state agencies, universities, and interest groups that works to coordinate efforts to support responsible use of rangelands.

Increasing Revenues on State Grazing Lands?

A thorough examination of all methods to increase revenues on grazing lands was beyond the scope of this study. However, in our consideration of policy options for the program, four strategies arose. **Fee increases** and **selling lands** are addressed at length in the report. Two methods that could be considered further are:

- **Open market bidding for grazing leases.** Currently, the AUM fee is set at a flat rate annually for all lands. The leases are bid at expiration, but the current leaseholder can retain the lease by matching a “bonus bid” tendered by another bidder. Open market bidding would allow for bidding on the amount to be paid per AUM on each lease that is expiring. More revenue than the current flat fee could accrue for high-value lands as a result. However, this system would likely require more management expenditures, since fees would no longer be standard across all state trust lands used for grazing.
- **Open market bidding for variable use leases.** Current statute and regulations restrict leaseholders/permit holders to livestock grazing. Elimination of this requirement would allow bidding for leasing the lands for recreation, wildlife viewing, habitat, or other purposes. Again, lands that are perceived to have a higher alternative value could generate more revenue than the current flat fee generated from grazing, but this change could drive higher management costs.

CHAPTER FIVE – CONCLUSIONS AND RECOMMENDATION

CONCLUSIONS

We've examined the question "Does the grazing program make money for the trust beneficiaries?" from a number of perspectives.

Revenues, Beneficiary Income, and Expenditures

We looked narrowly at comparisons of program revenues, beneficiary income, and program expenditures, and we found:

- The grazing program generates total revenues averaging \$590,000 per year, of which an average of \$440,000 per year is distributed to trust land beneficiaries;
- Washington's grazing fees are higher than those charged by three other states, and all the states' fees are higher than the fee charged for grazing on federal lands;
- Program revenues exceed program expenditures (which average \$370,000 per year);
- Beneficiary income exceeded program expenditures in nine of the past ten years; and
- The grazing program deposits less into the Resource Management Cost Account than it withdraws to manage the program.

Benefit Cost Assessment

We've illustrated the usefulness of benefit cost assessment to look comprehensively at perceived benefits and costs of the grazing program by modeling the net benefit of the status quo and three alternative scenarios. When all factors are considered:

- The status quo provides the greatest net benefit, and the second highest beneficiary income;
- Selling half of state trust lands used for grazing provides the least net benefit, and the most beneficiary income;
- Increasing fees by 50 percent provides the second highest net benefit, and reduces beneficiary income by 25 percent; and
- Eliminating all grazing on state trust lands provides the third highest net benefit and eliminates beneficiary income.

It is important to recognize that the benefit cost assessment model is flexible and based on assumptions. Because assumptions are dynamic, the longer the time frame covered in the assessment, the less certain its results. The net benefits yielded by the model as illustrated through the policy options we selected is valid for approximately ten years.

Policymakers can choose which factors to consider in the calculation of benefits and costs and which policy options to explore to support decision making.

Recommendation

DNR should own the benefit cost assessment model created as a result of this study in order to examine policy and management options as needed.

Legislation required:	No
Fiscal impact:	Minimal
Completion Date:	Ongoing

Agency Responses

We have shared the report with the Department of Natural Resources (DNR) and the Office of Financial Management (OFM) and provided them an opportunity to submit written comments. Their written responses are included as Appendix 2.

Acknowledgements

We appreciate the assistance provided by DNR staff in conducting this study.

Ruta Fanning
Legislative Auditor

On September 14, 2005, this report was approved for distribution by the Joint Legislative Audit and Review Committee.

Representative Ross Hunter
Chair

APPENDIX 1 – SCOPE AND OBJECTIVES

DNR Grazing Lands Study

SCOPE AND OBJECTIVES

SEPTEMBER 2004



STATE OF WASHINGTON
JOINT LEGISLATIVE AUDIT
AND REVIEW COMMITTEE

STUDY TEAM

Deborah Frazier

LEGISLATIVE AUDITOR

CINDI YATES

Joint Legislative Audit & Review
Committee
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BACKGROUND

The Department of Natural Resources (DNR) generates, on average, over \$120 million in revenues annually through management of nearly 3 million acres of state trust lands. Trust lands are lands granted by the federal government to Washington at statehood, plus lands that have been purchased from private owners or transferred from counties.

The DNR has a legal responsibility to manage these lands to produce revenue in perpetuity for the trusts, whose beneficiaries include: K-12 school construction, universities and community and technical colleges, state Capitol buildings, prisons, state institutions, and many counties.

Revenues are generated through timber and land sales, and through leases, including commercial real estate, communications sites, agricultural production, minerals and grazing. Approximately 870,000 acres of state trust lands are used for grazing; over 1,100 permits and leases produce \$600,000 in revenues annually.

The DNR has statutory authority to retain 25 percent of revenues generated by state trust lands to support management activities. DNR spends over \$300,000 annually to manage the grazing program.

The agency cites other benefits to the grazing program, such as crime, litter and weed control. Critics of the grazing program cite other costs, such as degradation of riparian areas, soil compaction and damage to forest regeneration areas.

MANDATE

The 2004 Supplemental Capital Budget (2573) instructs the Department of Natural Resources to contract with JLARC to conduct a study of the grazing program. The study, which is due in June 2005, includes two major components: a cost/benefit assessment, and, a policy analysis.

The cost/benefit assessment must consider the total revenue generated by grazing permits and leases and the total dollars distributed to trust beneficiaries. The assessment also must examine other benefits of the grazing program identified by DNR. Finally, the assessment must provide an estimate of the costs associated with the grazing program.

The policy analysis must include a review of DNR's legal requirements, plus the agency's management policies and practices.

PROPOSED SCOPE AND OBJECTIVES

The JLARC Grazing Study seeks to answer the question: Does the grazing program make money for the trust beneficiaries?

Some of the questions JLARC will examine include:

- Does the grazing program provide benefits beyond the revenues generated?
- Does the grazing program incur costs beyond the DNR management costs?
- Are the trust beneficiaries realizing both short-term income and long-term management of the grazing lands to permit revenue generation in perpetuity?
- Do DNR’s statutory authority and management practices adequately provide for management of the grazing program?

OVERVIEW OF STUDY APPROACH

JLARC staff will conduct the study through research, data analysis, and field work. Consultants will be engaged to provide specialized expertise in producing the cost/benefit assessment.

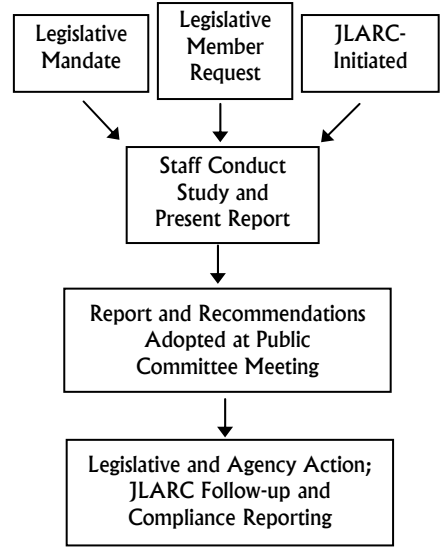
TIMEFRAME FOR THE STUDY

Staff will present the preliminary and final reports at the JLARC meetings in May and June 2005.

JLARC STAFF TO CONTACT FOR THE STUDY

Deborah Frazier (360) 786-5186 frazier.deborah@leg.wa.gov

JLARC Study Process



Criteria for Establishing JLARC Work Program Priorities

- Is study consistent with JLARC mission? Is it mandated?
- Is this an area of significant fiscal or program impact, a major policy issue facing the state, or otherwise of compelling public interest?
- Will there likely be substantive findings and recommendations?
- Is this the best use of JLARC resources: For example:
 - Is the JLARC the most appropriate agency to perform the work?
 - Would the study be nonduplicating?
 - Would this study be cost-effective compared to other projects (e.g., larger, more substantive studies take longer and cost more, but might also yield more useful results)?
- Is funding available to carry out the project?

APPENDIX 2 – AGENCY RESPONSES

- Department of Natural Resources (DNR)
- Office of Financial Management (OFM)



July 15, 2005

Ann Daley, Interim Legislative Auditor
Joint Legislative Audit and Review Committee
506 -16th Avenue SE
Olympia, WA 98501-2323

Subject: Formal Response to JLARC's Preliminary Report: DNR Grazing Lands Study

Dear Ms. Daley:

Thank you for the opportunity to provide the Department of Natural Resources' formal response to the State of Washington, Joint Legislative Audit and Review Committee (JLARC), DNR Grazing Lands Study, Preliminary Report, June 22, 2005. We found the report to be of high quality; it reflected the complexities of grazing and grazing land management.

The report made only one recommendation: DNR should own the benefit cost assessment model created as a result of this study in order to examine policy and management options as needed. We concur with that recommendation.

While we understand the point being made in the report, we consider the Federal Granted Trust Lands as land assets and not an investment portfolio where one has the opportunity to select desired investment instruments. We do manage subsequently-acquired properties in a manner that meets return on investment goals. We typically state that grazing is one of the management activities occurring on Federally Granted Trust Lands managed on behalf of the trust beneficiaries.

In the discussion of selling 50% of the Federally Granted Trust Lands, we understand that the report was attempting to propose a simple scenario, for purposes of comparison, only. We would, nevertheless, like to note that the Enabling Act and the Washington State Constitution limit the sale of these lands to not more than 160 acres in a parcel and at a value not less than market. As most of these lands are larger in size, this would require the division of almost all of these lands by survey and boundary line adjustments. This would require either a large contractual obligation or a significant increase in staffing; it appears that these costs were not included in the analysis. Further, these sales must be at public auction, with no guarantee of sale.

Again, thank you for the opportunity to comment.

Sincerely,

Doug Sutherland
Commissioner of Public Lands

cc: Bruce Mackey, Lands Steward





STATE OF WASHINGTON
OFFICE OF FINANCIAL MANAGEMENT

Insurance Building, PO Box 43113 • Olympia, Washington 98504-3113 • (360) 902-0555

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JUL 22 2005

JLARC

July 20, 2005

TO: Ann Daley, Interim Legislative Auditor
Joint Legislative Audit and Review Committee

FROM: Victor A. Moore, Director *V.A.M.*

SUBJECT: DEPARTMENT OF NATURAL RESOURCES (DNR) GRAZING LANDS STUDY

Thank you for seeking input from the Office of Financial Management (OFM) on the Joint Legislative Audit and Review Committee's preliminary report on the DNR Grazing Lands Study.

Overall, the benefit-cost assessment model recommended in the study provides a useful policy tool, and DNR should include it among the analytic tools used to inform grazing land management decisions. If DNR establishes a review group for future applications of the model, OFM would be pleased to participate.

Recommendation	Agency Position	Comments
Recommendation 1	Concur (with comments)	<p>No benefit-cost model is completely general. This model was constructed to examine specific scenarios (e.g., the sale of half the trust lands); it will take effort to tailor the model to examine other policy options (e.g., open market bidding for variable-use leases).</p> <p>Given data constraints and limited resources available for studies, models rely on key assumptions (e.g., values for key parameters and responsiveness of economic agents to changes in prices). DNR should consider establishing a professional peer review group to review assumptions when using the model to make major policy decisions.</p> <p>The model incorporates many factors that determine costs and benefits to trust beneficiaries and to society. When applying the model to evaluate a policy option, which of these factors to include depends upon whether the objective is to maximize beneficiary income or social welfare. DNR should consider making these distinctions explicit whenever recommendations based on the model are reported.</p>

We commend your staff for their hard work on this report. If you have any questions, please contact John Bauer of my staff at 902-9812.

cc: John Bauer, OFM
Linda Steinmann, OFM



APPENDIX 3 – TABLES FROM GRAZING PROGRAM AUDIT & ECONOMIC ANALYSIS

Table 17 – State Grazing Program Fees & General Statistics (2004)

State	Acres (millions)	Number of Leases & Permits	\$/AUM (2004)	Fee Structure
Idaho	1.9	1,200	\$5.15	A formula based on livestock (cattle and sheep) market factors. Open bid for lease preference. The 2004 fee was \$5.15 for cattle.
Oregon	.64	1751	\$4.32	Since 1995, Oregon has utilized a crop share approach in determining the rent due for grazing rangeland.
Washington	.91	1,278	\$5.41 and \$7.76	The 1995-1998 formula includes a 12.84% lease-hold tax, which was passed-through to counties in lieu of receiving property tax on state-owned lands. In 1999, the formula was revised, and the lease-hold tax is no longer included. The formula is based on livestock market factors and other factors such as landlord's share of land income, permit holder share of land assessment, and leaseholder improvements. Washington State has two different fees, one for grazing leases and one for permits. The grazing lease fees are set below private lease rates to account for higher operating costs on state lands (i.e., the state does not pay for fences and provision of water that might be provided by private landowners). Since 1998, this has resulted in a fee reduction of \$2.00 for leaseholder's contribution.
Wyoming	3.6	3,990	\$4.42	Formula based on a 5-year average of the private land lease rate in Wyoming, times the 5-year weighted average "parity ratio" for beef cattle per hundredweight, less 20% to reflect leaseholder contributions. The "parity ratio" is determined by the National Agricultural Statistical Service and adjusts the fee to current industry viability.

Source: Compiled by Resource Dimensions from miscellaneous data resources obtained from respective states.

DNR Grazing Lands Study

Table 18 – State Grazing Program Features

State	Permit holder/Leaseholder Requirements	Nonuse	Range Improvements	AUM Limits, Reductions, Monitoring	Subleasing
Idaho	To be eligible for a grazing lease, an applicant must certify they will use the lease for domestic livestock grazing. This is a change over prior qualifications, which did not require land to be used for grazing.	Allowed, at reduced fees if not more than two consecutive years nor more than three years of 10-year term. Allowed indefinitely if full fee is paid.	State does larger improvements and has title; leaseholder may do smaller ones, owns them, and is reimbursed upon transfer.	Range managers set AUMs based on "ocular inventory;" no formal study or monitoring requirements. Reductions in active use are mutually agreed upon between the leaseholder and Land Board.	Allowed with approval; State gets 50% of money above the state lease fee.
Oregon	Competitive bidding was discontinued for awarding leases for current leaseholders and will not be reinstated as the terms and conditions of the current lease contract control how lease renewals are handled.	May allow nonuse established in a Range Management Plan, otherwise not. May allow "conservation use" on a particular parcel.	Under old rules, leaseholder owned to the extent paid for; under new rules, state will own.	Carrying capacity determined by professional judgment; AUMs reevaluated annually by range management in consultation with leaseholder and approved by supervisor. Photos to indicate condition and trend.	Allowed with approval; state keeps all of subleasing compensation.
Washington	Two systems: 1) permits similar to federal; 2) leases with greater rights. By law, applicant must be 18 years of age and have two years' experience in range management or animal husbandry and financial resources to carry out the proposed grazing operation.	Allowed for grazing leases. Temporarily allowed for grazing permits, depending upon certain conditions and with state approval.	Agreements must be made with DNR in connection with the construction of range improvements on state rangelands. Leases: If approved, leaseholder pays for and owns, and is reimbursed current value upon transfer, etc. Permit: some cost-sharing; state owns all. Agreements must address ownership of the improvements and its disposition at the end of the permit term. Grazing permit fees may be adjusted to compensate permit holders for the construction of range improvements or performance of range conservation practices where prior written approval has been given by DNR.	Carrying capacity determined through professional judgment of range managers. <u>Reductions</u> : if lease, reductions are determined by leaseholder; if permit, state may adjust AUMs based on professional judgment of range managers. Permits are monitored annually. Leases are monitored at least every five years, up to monthly if resource issues/concerns are present.	If lease, allowed with approval and state does not share in revenues because state charges fair market value. If permit, subleasing is not allowed.
Wyoming	Must be authorized to transact business in Wyoming. Do not have to be in the livestock business or run livestock on the lease.	Allowed because state does not check number of stock or level of use, unless condition deteriorates.	Approval required for costs more than \$2,000 per section. Leaseholder pays and owns, and is reimbursed by the new leaseholder or purchaser on transfer	Carrying capacity determined in 1970s by managers' visual inspections. Not reevaluated unless change or leaseholder requests; # of stock up to leaseholder; no monitoring.	Allowed if approved. Also pasturing agreements. State gets 50% of money above the state lease fee.

Source: Compiled by Resource Dimensions from miscellaneous data resources obtained from respective states.

DNR Grazing Lands Study

Table 19 – Other Characteristics of State Grazing Programs

State	Water rights	Wildlife	Riparian	Other Uses/Access	Advisory Boards
Idaho	State holds title.	No formal allowance.	Riparian concerns are addressed on a case-by-case basis through grazing management.	Allowed without restriction.	None.
Oregon	State holds title.	No express allowance. Wildlife is considered in Range Management Plans and determining range condition.	Increasing attention to riparian issues, with protection by setting AUMs and seasonal restrictions.	No restrictions on other uses, except no commercial uses allowed. Permission of leaseholder not required.	Grazing Fee Advisory Committee was appointed in September 2004.
Washington	State holds title.	Taken into account when determining carrying capacity, but no specific amount or percentage. State has 110,000 additional acres, which are leased to the State Dept. of Fish and Wildlife for habitat.	Yes, 1993 law for salmon protection resulted in standards for grazing lands. Riparian provisions may be included in Resource Management Plans for each lease or permit. Not regulatory at present, emphasizing partnerships. Also participates in the federal CREP. Land enrolled in CREP is removed from production and grazing, under 10-15 year contracts. Landowners receive annual rental, incentive, maintenance and cost share payments.	Multiple use access for low-impact activities, as long as it does not interfere with the state's fiduciary responsibilities to produce income from state lands. Lands can be posted only with written permission from the state and only for protection of high value crops or improvements.	Advisory boards are authorized. First use began in late 1990s. DNR includes participation and cooperation with various groups of permit holders including livestock associations (i.e., the Cattlemen's Association) and advisory boards without associations (i.e., WA State Rangeland Committee) representing range users of state land.
Wyoming	Usually leaseholder and State hold rights jointly.	Allowance of 2% left for wildlife consumption. May be set higher to reflect actual use levels.	No specific program. Most lands are mixed with BLM lands and private lands, and are treated the same.	Other uses allowed through special use leases if compatible with grazing. More uses allowed in more recent times. Public access exists for approximately 70% of lands.	None. Some special purpose committees have been used.

Source: Compiled by Resource Dimensions from miscellaneous data resources obtained from respective states.

APPENDIX 4 – WASHINGTON STATE DEPARTMENT OF NATURAL RESOURCES GRAZING PROGRAM ASSESSMENT AND ECONOMIC IMPACT ANALYSIS



Washington State Department of Natural Resources Grazing Program Assessment and Economic Impact Analysis

Prepared for:
Washington State
Joint Legislative Audit and Review Committee
Olympia, Washington 98501

March 2005
Minor Edits August 2005
Final Report

Prepared by:

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Gig Harbor, WA 98335
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Grazing Program Assessment and Economic Impact Analysis

This investigation, analysis, and report are subject to important conditions and assumptions that affect the findings and conclusions. Data gaps, in particular, those related to potential management issues, are identified throughout the report. The reader should review all limiting conditions and assumptions in this report before utilizing or relying upon the conclusions and findings.

Resource Dimensions team (*in alphabetical order*):

Julie Ann Gustanski, Ph.D.*

Charles C. Harris, Ph.D.

Larry Van Tassell, Ph.D.

Acknowledgements to The Research Group's Shannon W. Davis and Hans D. Radtke, Ph.D. for contributions to Section 6 of the report.

* Corresponding author.

Grazing Program Assessment and Economic Impact Analysis

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Grazing Program Assessment and Economic Impact Analysis

Executive Summary

This analysis of the Washington State Department of Natural Resources (DNR) Grazing Program has been prepared for the Washington State Joint Legislative and Audit Review Committee (JLARC). The analysis evaluates DNR's current grazing program operations using comparative, statistical, and economic analyses to estimate the range of economic impacts of the current program compared to several alternative policy or program actions.

Resource Dimensions was commissioned in November 2004 to answer the question: "Does the grazing program make money for trust beneficiaries?" The complexity of the social and institutional setting of the program required an approach that could address both this question of fiduciary responsibility and those embedded in related issues such as:

- DNR management practices related to administration of the grazing program
- Assessment of benefits generated beyond direct revenues
- Assessment of costs accrued beyond direct management costs
- Potential to realize both present income and enhance the resource base for perpetual revenue generation.

Given the breadth of monetary and non-monetary effects to be evaluated, the study takes a multi-methods costs-benefits approach to its investigation and analysis. In that not all costs and benefits can be quantified in dollar values given the limitations of the study, the BCA approach used seeks to incorporate more than monetary measures of benefits and costs into the process.

The Big Picture

The DNR is responsible for the management of about 5 million acres of public lands in the state, 2 million acres of forest lands, and about 1 million acres of agricultural and grazing lands and other properties. The majority of state grazing lands are within counties in the Department's northeast and southeast regions. These lands generate income to support school construction, colleges, counties, state institutions and other beneficiaries. State trust lands are managed for multiple uses including timber, agriculture, grazing, commercial real estate, recreation, and for potential conservation value.

Washington's program is unique among the four states evaluated in that it has a two-tiered system: one for grazing land leases, and one for permit rangelands. Some basic differences exist between management of permit and lease lands and are addressed in Sections 2 and 3.

Section 2 provides a general overview of the state's grazing program. Information on administration, revenues and expenditures, beneficiary distributions, and other aspects of the program are presented. In spite of cost control and productivity gains between 1995 and 2004 and given reduced revenue and increased costs, the 25% deduction may be insufficient to fund necessary investments to realize trust lands full potential.

In Section 3, we compare Washington's program to similar programs in Idaho, Oregon, and Wyoming. Details on grazing formulas, fees, management, revenues, expenditures and program structures are reviewed.

Grazing Program Assessment and Economic Impact Analysis

Section 4 presents policy and program alternatives used in Sections 5 through 7 analyses. These include: 1) selling state grazing lands, 2) 50% increase in grazing fees, and 3) reducing the number of Animal Unit Months (AUMs) provided on grazing lands by 100%. AUMs are a measurement for the amount of forage a 1,000 pound cow/calf unit consumes per month.

The Analysis

Sections 5 and 6 detail the fiscal and economic impacts at the ranch and state level to evaluate the importance of state grazing lands and understand the effects of policy alternatives versus the status quo.

Finally, Section 7 presents the findings of the cost-benefit analysis. Benefits and costs go well beyond changes in individual incomes. The BCA promotes decision-making based on more than monetary measures of benefits and costs. Not all costs and benefits can be quantified, much less assigned a dollar value within the scope of this study. The analysis presents data on particular aspects of the state’s current program and operations (status quo) against policy alternatives.

The cost-benefit calculator model for this study measures costs of the status quo and policy alternatives in different ways and generates the following: 1) total benefit/profit, 2) total cost, 3) net benefit, 4) net present value (NPV) indicator, and 5) benefit-cost ratio. Highlights of the BCA are presented below.

TOTAL BENEFITS AND COSTS BY ALTERNATIVE					
	Alternative 1		Alternative 2		Alternative 3
	Status Quo (No Action)	Sell Lands	Increase Fees (No ranchers stop leasing)	Increase Fees (50% ranchers stop leasing)	100% AUM Reduction
Total Benefit	\$340,747,258	\$183,061,036	\$341,336,758	\$318,212,930	\$300,794,142
Total Cost	\$937,797	\$6,649,604	\$937,797	\$5,835,526	\$13,998,896
Net Benefit	\$339,809,461	\$176,411,432	\$340,398,961	\$312,377,404	\$286,795,246
NPV @ 9%	\$30,582,851	\$15,877,029	\$30,635,906	\$28,113,966	\$25,811,572
Benefit/Cost Ratio	363.35	27.53	363.98	54.53	21.49

Balancing the varied interests involved is key to evaluating the question of maximizing beneficiary distributions while simultaneously seeking fair and effective resolution of concerns over the management of the DNR’s grazing program and improving the health of grazing land resources.

Grazing Program Assessment and Economic Impact Analysis

List of Acronyms

ASP	Asset Performance System
AUM	Animal Unit Month. A measurement for the amount of forage a 1,000 pound cow/calf unit consumes per month.
BCA	benefit-cost analysis
BLM	U.S. Bureau of Land Management
CBA	cost-benefit analysis
CMF	Common School Fund
CRMP	coordinated resource management plan
DNR	Washington State Department of Natural Resources
DSL	Division of State Lands. State of Oregon agency
DOF	Department of Forestry. State of Oregon agency
FTE	Full-time equivalent
FY	Fiscal year
IMPLAN	IMpact analysis for PLANning. Computerized database and modeling system that is used for constructing regional economic accounts and input/output tables.
I/O	input/output. Type of economic modeling
JLARC	Joint Legislative and Audit Review Committee
PLLR	private land lease rate. A standard to measure the equity of federal and state grazing fee rates
USFS	U.S. Forest Service
WDFW	Washington State Department of Fish and Wildlife

This report has been abridged. For a complete copy, please contact JLARC at 360-786-5171 or request a copy from:

Joint Legislative Audit and Review Committee

PO Box 40910

Olympia, WA 98501-2323

Section 7: **Cost-Benefit Analysis and Policy Alternatives Assessment**

Section 7 presents the analysis of the benefits and costs of various policy alternatives for the DNR grazing program. Included in those alternatives is a status quo option. In this section, we begin by explaining benefit-cost analysis and its use in decision-making.

7.1 Introduction

Benefit-Cost analysis (BCA), also known as Cost-Benefit Analysis (CBA), is one of the most important tools available to economists assisting public policymakers. It is also one of the more controversial. That said, the method is widely used because it provides conclusions that can help policymakers.

Whenever people decide whether the advantages of a particular action are likely to outweigh its drawbacks, they use some form of BCA. In the public sector, BCA can be a controversial technique for thoroughly and consistently evaluating the pros and cons of policy change. Specifically, BCA is an attempt to identify and express in dollars all of the effects of proposed policies or projects. While never intended to be the **only** basis for decision-making, BCA can be a valuable aid.

A particular project or change in policy can result in positive impacts, or benefits, for some people, and at the same time negative impacts, or costs, for others. Assessing who are the gainers and losers from a project or changed policy—that is, who bears the costs and who reaps the benefits, and to what extent—is the crux of BCA.

7.1.1 How Does BCA Work?

To determine the net effect of a proposed policy change on social well-being, we must first have a way of measuring the gains to the gainers and the losses to the losers. Implicit in this statement is a central tenet of BCA: the effects of a policy change on society are no more or no less than the sum of the effects on the individuals who comprise society. If no individual would be made better off by a policy change, no benefits are associated with it and no one is made worse off. BCA counts no values other than those held by the individual members of society.

Benefits and costs go well beyond changes in individuals' incomes. If someone's well-being is improved because of cleaner air—through improved visibility—they experience a benefit even though their income may not change. Likewise, an increase in pollution that puts people at higher risk of disease imposes a cost on them even though their incomes may not fall. In fact, a person would bear a cost (be made worse off) if the pollution posed a threat to an exotic and little-known species of animal that she or he cared about.

Some criticize BCA on the grounds that it allegedly enshrines the free market and discourages government intervention. However, BCA exists precisely because economists recognize that free markets sometimes allocate resources inefficiently, causing problems such as dirty air and water.

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BCA also recognizes that to assess the sum-total of net welfare changes to a group of individuals (for this study citizens of Washington state) some common measure of benefits and costs is needed and BCA uses dollar values.

7.1.2 Boundaries for the Analysis

To keep it achievable and accurate, we need to clarify the boundaries around the analysis. These boundaries are in practice both social and spatial.

The primary social boundary is traditionally, between financial and economic analysis. Financial analysis is the perspective of a social unit such as a family, firm, ranch, county or region. *Externalities* (non-market costs and benefits that impact others) are excluded from financial analyses. Taxes and subsidies are included (Tisdell 1970). The discount rate in a financial analysis reflects the opportunity cost of investment to the social unit. On the other hand, economic analysis reflects the opportunity cost of investment to society. Because economic cost-benefit analyses aims to reveal the collective perspective of society, it includes externalities.

For this BCA, which is an accounting of benefits and costs directly or indirectly affecting the welfare of trust beneficiaries of the DNR's grazing program, we take into account the multiplier effects of investment in the regional economy attributable to the grazing program. See Section 5 of this report for a discussion of the regional economic impacts of implementing certain policy alternatives on the grazing program. In a larger sense, social welfare extends beyond these beneficiaries. Redistributions of income, say, from one group directly affected by grazing to other groups directly affected by other economic sectors are not addressed here.

7.2 General Limitations, Caveats and Approaches to Addressing BCA

Within the analysis, we have conducted a general assessment of risks to be incorporated. Further, we have made an effort to identify "winners" and "losers." The following statements provide some guidance as to the breadth of approach, limitations, and important caveats of the BCA.

Identification of a clear and consistent baseline. For social acceptance of a decision based on BCA, there must be general consensus that the baseline created for the analysis is accurate. As discussed earlier in this report, efforts to ensure the accuracy of baseline information have been conducted on several levels to avoid accusations of bias or "strawman" analyses.

Appropriately broad range of policy alternatives. The analysis conducted has identified a range of policy alternatives and estimates opportunity costs for each under various scenarios.

Non-monetized or quantifiable aspects identified (what is not in the equation). The process of abstracting to build a model for estimating costs and benefits means that some aspects are left out of the equation. We have identified and qualitatively assessed possible impacts that have

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not been monetized. To conduct the research, primary data collection, and analysis necessary to do so would require extensive time and falls outside the scope of the current project.

Benefit transfers issues. Given the schedule and other limitations of this audit and related economic analyses, we have relied on information from existing studies. Some of these may not be exactly related to the analysis geographically or in terms of issue. While this enables calculation of a rough estimate, there are limits to this analysis.

The BCA approach identifies consumptive and non-consumptive uses as beneficial, which requires consideration of those uses in the analysis. BCA explicitly incorporates opportunity cost as a consideration. Finally, it allows for constraint uses that may not be well captured in the calculation, e.g. policy or program constraints.

The limitations we have identified surround issues dealing with benefits measurements and social importance. BCA is not the only way to justify decisions. Equity issues, intergenerational issues, and how one identifies standing are but a few examples. We agree with many decision-makers and economists who argue that decision rules should not be based solely on BCA. Measuring benefits and costs is not precise enough to rely solely on BCA as the primary tool. However, it is appropriate to use BCA to add information to the decision-making process.

7.3 Methodology

Information used in the cost-benefit analysis has been obtained from the following sources:

- DNR memos, reports, and studies
- Existing scientific literature (particularly, economics and ecological studies)
- Extensive interviews with:
 - Statewide, regional, and district DNR employees directly involved in the grazing lands program
 - Other state and federal agency employees working cooperatively with the DNR on grazing lands and their management
 - Ranchers
 - Others able to provide information related to specific costs of particular activities relative to grazing lands and operations.

The analysis was intended to use secondary data. However, given staffing and other limitations the DNR does not track activities or hold detailed records that could be transformed directly and without substantial difficulty for cost-benefit analysis.²⁵ Therefore, many of the data

²⁵ An issue for the program is that DNR staff responsible for the grazing program are few yet the territory they manage is vast. One related recommendation is that the DNR evaluate its reporting requirements to better understand the kind of records it needs to keep and report, and at what level of detail. Through our investigations, the paper trail would indicate that this level of detail has not been expected or required in the past.

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resources that Resource Dimensions believed would be available do not exist in a format that could be used or converted for use in the BCA.

7.3.1 Estimating Costs and Benefits

Benefits and costs are flip sides of the same coin. Benefits are measured by the willingness of individuals to pay for the outputs of the policy or project in question. The proper calculation of costs is the amount of compensation required to offset negative consequences. Willingness to pay or compensation required should be the dollar amount that would leave every individual just as well off after policy implementation as before it.

In this study, we evaluate the benefits and costs of alternative policy or program options that may generate greater revenues in the long-term for trust land beneficiaries against a status quo. On the positive side, selling grazing lands to ranchers may mean that the burden of management and its associated costs would be removed from DNR's ledger, proceeds from the sale would be entered as revenues, and those revenues invested into funds that could generate greater annual revenues for beneficiaries. On the negative side, DNR would be moving away from its long-established policy of retaining the land in trust ownership, increases in operating costs at the individual ranch level due to land acquisitions would likely raise the price of products, smaller and marginal ranching operations would likely close, and over the long-term communities may experience the loss of jobs, and ultimately ranching and agriculture.

7.3.2 Estimating Indirect Economic Contributions

When the benefits or costs aligned with a given policy involve marketed outputs and inputs, valuing them is not terribly difficult. However, when talking about the range of benefits generated by state grazing lands, it is much less clear how to estimate the willingness to pay (the value of the benefits). Some of the benefits of the grazing program are not things that people directly buy and sell. The type of analysis needed to conduct that valuation (e.g., contingent valuation) is beyond the scope of this study.

Cost estimation is more complicated than totaling up expenditures that affected parties must make. Some parties not directly affected by a policy or program change may ultimately incur higher costs—for example, those purchasing ranch products such as beef. These “ripple” effects must be taken into account. In the case of forced AUM reduction, while some ranches may accept voluntary AUM reductions, others may potentially close down altogether. In that case, while the individual operations expenditures will be zero, the social costs are still positive. The costs then are borne by employees, related businesses, communities, partners/shareholders, and purchasers of its output. The techniques for making these sophisticated cost estimates require more time and funding. Instead, we used direct expenditures within the BCA as rough measures of true social costs.

Three additional BCA issues in the discussion of benefit-cost analysis bear mention.

1. Government policies (and projects) typically produce streams of benefits and costs over time rather than in one-shot increments.

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2. Willingness to pay for the favorable effects of a policy, program or project depends on the distribution of wealth. (e.g., A millionaire would be able, and thus more willing, to pay more than an average wage earner for the same improvement in environmental quality, even though both cared about it with equal intensity.)
3. If the above were not true, and benefits and costs could be easily expressed in dollar terms and converted to present values, according to BCA principles, a policy would be attractive if the benefits produced exceeded the costs. In theory, those gaining from the project could compensate those made worse off and still be better off themselves. In practice, however, implementation is difficult.

7.3.3 Social and Economic Impacts

The following is a discussion and enumeration of direct and indirect social and economic impacts associated with the DNR grazing program. These impacts include:

- Positive outcomes of land management for active recreation and their values
- Reduced illegal activities and trespassing
- Reduced litter
- Land stewardship activities that include the control of invasive species
- Restoration of land from past damage and in enhancements of the land's productivity
- Decreased negative impacts of wildfire
- General increases in water and ecosystem quality.

Other related positive social impacts include social stability and maintenance of traditional land uses: in particular, the heritage values of maintaining traditional ranching lifestyles. The tables at end of section 7.4 present a complete listing of benefits and costs, a summary of net benefits, and notes on the issues associated with them.

7.3.4 Cost-Benefit Model Framework

The BCA model uses an Excel formatted database that allows the flexibility to examine various grazing policy scenarios. Through interactive worksheets, the BCA model assists in the estimation of various costs associated with incremental changes in policy. The purpose of this tool is to provide a system that can be readily used to quantify various dimensions (e.g. social, environmental, community, etc.) as they relate to grazing lands policy alternatives. This is a general tool that uses a constant weighting scheme, and allows the user to modify the option inputs based on assumptions being made.

The model derives a single number for each variable by calculating the elements using coefficients and outputs generated from the impact model, and data from the representative ranch

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model. In addition, we use data that is drawn from other studies that measure the effects of policy choices at the local and regional levels. The model measures costs in different ways and generates the following: 1) net benefit/profit, 2) net present value (NPV) indicator, and 3) benefit-cost ratio relative to the status quo and alternative policy options.

7.4 Alternatives Assessed in the BCA

In the following analysis, BCA is used to evaluate potential impacts of the most viable policy alternatives discussed in Section 3 of this report. The status quo, or no action alternative, is compared to three primary policy options:

- **Alternative 1:** Selling 50% of state grazing lands
- **Alternative 2:** Increasing grazing fees charged for use of grazing lands by 50%
- **Alternative 3:** 100% AUM reduction on state grazing lands (elimination of **all** grazing and removal of all livestock from state lands).

Each of these alternatives is discussed in general terms of their impacts on the grazing program and associated parties. Table 42 presents a summary of the total benefits, costs and net benefits derived for the alternatives examined.

Table 42. Summary of Total Benefits, Costs and Net Benefits, Associated with Alternatives Summary Analysis

TOTAL BENEFITS AND COSTS OF ALTERNATIVES					
	Status Quo / No Action	Sell Lands	Increase Fees (No ranchers stop leasing)	Increase Fees (50% of ranchers stop leasing)	100% AUM Reduction
Total Benefit	\$340,747,258	\$183,061,036	\$341,336,758	\$318,212,930	\$300,794,142
Total Cost	\$937,797	\$6,649,604	\$937,797	\$5,835,526	\$13,998,896
Net Benefit	\$339,809,461	\$176,411,432	\$340,398,962	\$312,377,404	\$286,795,246

Differences in net benefits of the alternatives indicate that the most-preferred scenario from a monetary measure of social welfare²⁶ is the status quo, or no action alternative. The status quo is roughly equal in net benefits (\$339.8 million) to the alternative 2 of raising grazing fees (\$340.1 million), with the stipulation that no ranchers would stop ranching. If half of the ranchers stopped leasing, the net benefit drops to \$312.4 million, or about 8% less than the status quo, with the stipulation that 50% of the ranchers would stop ranching. Realistically, the outcome of a fee increase would fall somewhere between these bounds of no ranchers being negatively affected by it and half being sufficiently affected that they would stop leasing state rangelands.

Net benefits for the status quo are nearly two-times greater than alternative 1 (selling DNR grazing lands). That alternative was found to have a net benefit of \$176.4 million dollars, the

²⁶ The social welfare function is a mapping from allocations of goods or rights among people to the real numbers. Such a social welfare function might describe the preferences of an individual over social states, or might describe outcomes of a process, as in the distribution of proceeds to beneficiaries from the state's grazing program, that made allocations, whether or not individuals had preferences over those outcomes.

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lowest amount for any alternative under consideration. Alternative 3 is the next lowest valued alternative and includes eliminating all AUMs from state lands and, therefore DNR's grazing program. Under alternative 3, we found a net benefit score of \$286.8 million, compared to the status quo, which is approximately 20% higher than this amount.

Another indicator of net benefits is the Benefit-Cost Ratio (BCR). BCR indicates the order of magnitude by which benefits exceed (or don't) the costs of an alternative. The highest BCR of 363.98 was found for the fee increase alternative. That alternative assumes no ranchers respond to a fee increase by discontinuing leasing of state lands, which is likely an invalid assumption. The status quo realized a similar amount with a BCR of 363.35. In contrast, BCRs for all other alternatives were in the 20 to 55 range, from the lowest for eliminating AUMs (21.5 for alternative 3) to alternative 2, with the stipulation that 50% of the ranchers would stop ranching (54.65). These indicators suggest that in measuring differences in benefits received to costs incurred, the status quo is the most beneficial policy.

Table 43 sets forth an itemized schedule of benefits and costs. It shows the net benefits for the status quo and the primary policy alternatives presented in Section 4 of this report.

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Table 43.
Detailed Summary of Benefit-Cost-Net Benefits for Alternative Policy Actions

BENEFITS (annualized)	STATUS QUO	SELL LANDS	INCREASE FEES 50% (No Ranchers Stop Leasing)	INCREASE FEES 50% (50% Ranchers Stop Leasing)	100% AUM REDUCTION
COMMODITY/MARKET					
Income to beneficiaries	\$580,500	\$12,900,000	\$870,000	\$435,000	minimal
Market value of land	\$287,600,000	\$143,800,000	\$287,600,000	\$282,400,000	\$282,500,000
Resource stewardship activities					
Invasive species control	(\$1,500,000)	(\$750,000)	(\$1,200,000)	(\$1,200,000)	(\$1,500,000)
Reduced illegal activities, theft & trespassing	\$68,364	\$34,182	\$68,364	\$68,364	\$0
Reduced litter & trash	\$900,000	\$450,000	\$900,000	\$900,000	\$0
Job Creation					
Program management	\$232,970	\$194,142	\$232,970	\$194,142	\$194,142
Lessees/permittees	\$31,000,000	\$15,500,000	\$31,000,000	\$15,500,000	\$0
Regional economic impacts	\$3,900,000	\$1,950,000	\$3,900,000	\$1,950,000	\$0
Property taxes (fiscal impacts)	\$165,424	\$82,712	\$165,424	\$165,424	\$0
Active recreation-related non-market	\$17,800,000	\$8,900,000	\$17,800,000	\$17,800,000	\$19,600,000
Red meat production	94,528 AUM	47,264 AUMs	94,528 AUM	47,264 AUMs	0 AUMs
INDIRECT BENEFITS (impacts addressed qualitatively)					
Decreased wildfire impacts					
Passive use					
Resource stewardship (improvements, restoration, protection, etc.)					
Administrative services (collection and payments)					
TOTAL BENEFITS	\$340,747,258	\$183,061,036	\$341,336,758	\$318,212,930	\$300,794,142
COSTS	STATUS QUO	SELL LANDS	INCREASE FEES 50% (No Ranchers Stop Leasing)	INCREASE FEES 50% (50% Ranchers Stop Leasing)	100% AUM REDUCTION
COMMODITY/MARKET					
Foregone revenues (grazing and AUMs)	\$0	\$290,250	\$0	\$0	\$580,550
Program expenditures (management)	\$232,970	\$187,727	\$232,970	\$187,727	\$0
Fencing	\$0	\$5,050,000	\$0	\$5,050,000	\$10,100,000
Invasive species control	\$325,000	\$900,000	\$325,000	\$312,500	\$2,250,000
Resource stewardship activities					
Resource improvements	\$63,426	\$63,426	\$63,426	\$63,426	\$0
Reduced illegal activities, theft & trespassing	\$27,345	\$13,673	\$27,345	\$27,345	\$68,346
Reduced litter & trash	\$100,000	\$50,000	\$100,000	\$100,000	\$1,000,000
Management costs forgone - \$2/AUM	\$189,056	\$94,528	\$189,056	\$94,528	\$0
TOTAL COSTS	\$937,797	\$6,649,604	\$937,797	\$5,835,526	\$13,998,896
INDIRECT COSTS (impacts addressed qualitatively)					
Costs of wildfire (impacts and suppression)					
Opportunity costs: use of capital and other, more productive or worthy uses					
Subsidies					
Damages to land, water, ecosystems, etc.					
Costs of water sources, fencing, and other livestock improvements					
TOTAL NET BENEFITS	\$339,809,461	\$176,411,432	\$340,398,961	\$312,377,404	\$286,795,246
BCR	363.35	27.53	363.98	54.53	21.49

Notes: Full determination of indirect benefits and costs would require a separate study and significant time to estimate values in monetary terms. For the purposes of this study, these costs and benefits are qualitatively assessed as appropriate within the text and in Appendix B.

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The positive economic impacts of the status quo total \$340.7 million. These costs are attributable to the direct impacts of the present leasing and grazing program, the value held in the state's public lands, and the indirect impacts of the active-recreation values associated with those lands of \$17.8 million. The costs of this program are relatively low (\$.93 million), for net benefit of \$339.8 million.

Tradition is a major force behind maintaining the status quo, which can be viewed negatively as inertia, or positively as incremental "muddling through" to an optimum situation ecosystem managers call "adaptive management." With a small staff, the grazing program is making the effort not simply to retain the state's lands, resources, and their traditional uses, but also to encourage use of state lands in a way that promotes their stewardship. At the same time, income is being generated and actions taken to promote the sustainability of these resources for generations to come.

The tables presented at the end of this section (Tables 47 through 50) list the benefits and costs, annotate the financial costs, and qualitatively discuss issues for the alternatives analysis. Appendix B provides additional discussion and supporting literature on the impacts of the alternatives.

7.4.1 Selling Lands

Alternative 1 includes the sale of state grazing lands to ranchers or other buyers. Divestiture of state grazing lands has several implications and irreversible impacts. While it is inconceivable that the state could simultaneously release all grazing lands into the market, we have not considered a phased approach or schedule to implement such a plan. That level of forecasting and planning is beyond the scope of this project.

Economic activity related to sales is viewed as a one-time occurrence, with a direct economic impact of \$143.8 million generated through land sales and revenue investment of \$12.9 million, as well as the income of lease holders (\$15.5 million), economic impacts of grazing activities (\$1.95 million), and the land and resource values held in trust (\$143.8 million). The indirect economic impact attributable to recreation values totals \$8.9 million. The net positive economic impact is \$183.0 million.

Major sources of financial benefits and costs for this alternative include a decrease in lease holders and their contribution to local economies, less land base for the state's land trust, reduced quality of the trust grazing lands base as higher-value lands are likely to sell first, less recreation-generated activities, and more conversion of rural landscapes to built environments. Additional fencing and foregone lease revenues would also be major costs, contributing to the second highest range of total costs (\$6.6 million). The net benefits are \$176.4 million.

Table 44 summarizes the net benefit or profit received under this alternative, net present value, and the BCR.

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Table 44.
Alternative 1 – Sell Lands

Cost-Benefit Analysis Performance Assessment Sell Lands to Ranchers	
Net Benefit/Profit	\$176.4 million
NPV @ 9%	\$15.87 million
Benefit/Cost Ratio	27.53

Dollar measures suggest only part of the ramifications of policy choices. Selling state grazing lands would likely contribute to the continued loss of open lands to residential, recreational, and commercial development. Where undeveloped lands remain, many of the problems sought to be resolved would be faced by private landowners, without public oversight.

There is the possibility of selling off state grazing lands and realizing their market value at that point, placing the sale revenues in a trust fund, and receiving the returns to the beneficiaries in interest. However, certain difficulties are presented. For example, there are lands that are isolated or otherwise undesirable, as well as lands that are politically problematic (e.g. unique or critical habitat value). Presumably, first preference would be given to ranchers to purchase lands that may be land-locked either by their own lands or other federal or state lands currently leased for their ranching operation. An exception might be cases of environmentally unique lands, if an appropriate agency, organization (e.g., The Nature Conservancy), or individual buyer could be found.

Would the ranchers even buy these lands? Our assumption for this analysis is that approximately 50% of the lands would have a willing and able buyer should they be put up for sale. This estimate is approximate and was derived from discussions and interviews with ranchers from north central and southeast Washington. Ranchers responded that while most would like to purchase these lands, only a percentage could do so. In the case of the other lands, once they are sold in an open market, presumably there would be no limits on their use or development. In areas close to growing population centers, sales for residential development might occur, and in areas rich in natural amenities, resort development might occur. However, such a forecast is beyond the scope of this analysis. These are suggested only as examples of the types of development that could occur.

Substantial investigation through field interviews was conducted with ranchers, DNR land managers, appraisers, and real estate agents specializing in ranch and agricultural properties to determine a range of fair market values for similar lands within the public and private market with production rates similar to those of state grazing lands (Study Informants 2005). In addition, county assessors and/or appraisers in all counties with state grazing lands were interviewed to assist in the development and validation of an estimated average fair market value of \$295/acre for these lands.²⁷ This value, while approximate, represents a conservative indicator of property worth across all lands within those counties that have the majority share of all state grazing/pasture lands. The value represents a mid-range of those values most frequently found

²⁷ Fair market value, here and generally, refers to the highest price that a buyer, willing, but not compelled to buy, would pay, and the lowest a seller, willing, but not compelled to sell would accept.

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across the broad spectrum of values between \$90 and \$1,000+ per acre. For the purposes of this cost-benefit analysis, we believe this is a fair general estimate. Some lands may actually have a much higher fair market value. Others such as those that may be land-locked (up to 50-60%), in poor condition, or otherwise undesirable for purchase, or otherwise without a willing buyer would have a much lower fair market value. Any sale of trust land requires that the fair market value be determined through an independent appraisal process. The DNR may not sell the land at less than the fair market value determined through the appraisal process. Therefore, for the purposes of estimating the present value of DNR grazing lands the fair market value is the appropriate measure.²⁸

Alternative 1 removes both the responsibility for and costs associated with DNR's management. When land continues within the same operation with grazing as part of the cycle, there would likely be little change in the short-term as to the management and use of the land base, and little likelihood of change in the overall condition of the land.

Where ecological costs are not considered, this option would save taxpayers money by reducing DNR's costs, while at the same time providing short-term income from sales and longer returns from interest on the principal invested. For this analysis, we are assuming the rate of return used by Deloitte & Touche of 9% (Deloitte & Touche 1996).²⁹

This alternative may also represent a potential boon to some communities, with increased property taxes due to the sale and development of these lands for commercial or residential uses. Given the change in use, these lands would no longer be valued at their agricultural value and property taxes would likely increase, depending on category of use. However, it is not possible to estimate those revenues.

We assume that, currently, rangeland productivity averages 7 acres per AUM and the tax rate per acre is \$0.25, with each AUM is taxed at approximately \$1.75. Therefore, if 450 AUMs per ranch were removed, about \$787.50 of taxes would be lost, or would have to be replaced. For all 94,528 AUMs, the total potential tax value foregone is \$165,424. Our assumption for this alternative is that 50% of the lands are sold, producing revenues of \$82,712. However, at least this amount would likely continue to be generated in property taxes. Lands sold for residential development, for example, would generate property taxes likely to be substantially higher than those currently received. Estimating the nature of all lands and their potential for development, however, is beyond the scope of this project and its analysis; accordingly, we are conservative and use the lesser amount.

The foundation of the argument supporting the strategic sales of some state grazing lands is the belief that ranchers will take better care of the land if they own it, and that overall this could lead to substantial improvements in ranch viability, the economic health of local communities, as well as better habitat and ecological health. Others, including some in the environmental community, simply believe it would save taxpayers money.

²⁸ In the 1996 audit conducted by Deloitte & Touche, a similar approach was used; there a value of \$187 per acre was applied to estimate the value of DNR grazing lands.

²⁹ To validate the estimated rate of return for use, Resource Dimensions sought independent evaluations from fund managers at Waddell & Reed and Morgan Stanley. Based on the averaged performance estimates for the past 10 years of 9.8%, the rate of 9% is justified for purposes of this analysis.

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To the extent that many ranchers either would be unable or unwilling to buy these lands, other forms of development could undermine the economic stability of these rural communities. Another unresolved issue is whether additional loans and property taxes, which would be considerably more than the annual fees paid under the current system, would financially overburden ranchers. Additionally, there is a possibility that attempts to graze more livestock, in order to close this gap, would put greater stress on these lands' use than would be advisable for maintaining the ecosystem.

Whether this alternative would lead to increased ranch and community instability, or the disappearance of the small family ranch altogether, and thus the loss of a rural lifestyle considered a fundamental part of the American West, is another concern.

Alternatively, if the privatization of grazing lands was set up to minimize such costs to ranchers, then the benefits to the treasury and local communities would also be minimized.

In conversations held with key informants from the ranching and environmental communities, most environmentalists opposed privatization of state trust lands, whereas the ranchers were divided in their views. Of particular concern to both was the possibility that this may eventually lead to the development of some lands and initiate a pattern of leapfrog development and infrastructure into currently remote areas. Another argument from the environmental community is that privatization of these lands could limit public access and would thereby reduce recreation opportunities and their economic benefits to the communities.

The environmental community contends that there is no reason to believe that ranchers will take better care of land just because they own it, without some level of oversight, management planning, and monitoring to limit grazing levels and ensure ecosystem standards are being met. Some environmentalists recognize that the current structure of ownership and leasing program administered by the DNR offers regulatory protection, and if privatized, the laws to which these lands would be subject would be limited to the Endangered Species Act (ESA), and related federal or state laws protecting habitat and water quality.

However, it is not necessarily the case that overgrazing would intensify with increased financial pressures on ranchers. Economically this would be imprudent. If the rangeland is stocked to its biological optimum for long-term cattle production, any increase in the cost of using the rangeland will result in a decrease in the optimal stocking rate. While the rancher will not make as much money as before, say, an increase in the grazing fee, the rancher will maximize profits by decreasing the stocking rate to where the last pound of livestock gained is exactly equal to the cost of gaining that last pound. As the cost of gaining that last pound increases due to the increase in stocking rates, the rancher must cut back on the stocking rate so that the livestock gain is made more efficiently (Workman 1986).

The extent to which the rancher is aware of and responds to these principles will vary. In addition, there is an incentive to increase stocking rates if the tenure system is insecure, as the producer is not assured he or she can reap the long-term benefits of good stewardship. If a producer is not assured they can continue to lease lands long-term, there may a tendency to revert to the "tragedy of the commons": If you don't use the grass, someone else will.

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7.4.2 Fee Increase

Impacts of Fee Increase

Alternative 2 includes a fee increase of 50%. Implementation of such a policy change would increase annual revenues for the program and distributions to beneficiaries, but it may carry other implications. Increasing grazing fees charged for use of those lands by 50%, and assuming no ranchers stop leasing lands as a result, would have different impacts than a second scenario that assumes that 50% of ranchers would stop leasing lands as a result of a 50% fee increase. In the first case, we find that continuation of the status quo would only be changed in terms of the possibility of increased revenues. In the second case, net benefits would total \$312.4 million.

Major direct economic impacts include the income of lease holders (\$15.5 million), economic impacts of grazing activities (\$1.95 million), and the land and resource values held in trust (\$282.4 million). Indirect impacts include recreation-generated activities and income of \$17.8 million. The total positive impact would be \$318.2 million.

Under the first scenario, major sources of financial benefits and costs for this alternative would be similar to the status quo. Under the second scenario, impacts include a decrease in lease holders and their contribution to local economies, less land and related resource values held in trust, less recreation-generated activities and income, and more conversion of rural landscapes to built environments. Fencing and control of invasive species would also be major costs contributing to a range of total costs of about \$5.8 million. This is similar in magnitude to the total cost for alternative 1 (selling lands).

For a fee increase of 50%, the net benefit total is \$312.4 million. The net benefits, NPV and the BCR for this alternative are summarized in Table 45.

Table 45. Alternative 2 – 50% Fee Increase

Cost-Benefit Analysis Performance Assessment 50% Fee Increase		
	No Ranchers Stop Leasing	50% Ranchers Stop Leasing
Net Benefit/Profit	\$340.4 million	\$312.4 million
NPV @ 9%	\$30.6 million	\$28.1 million
Benefit/Cost Ratio	363.98	54.65

Washington’s grazing fees are already among the highest in the western U.S., while the state’s stockmen are among the smallest proportionally in number. Increased fees would likely result in the closure of marginal ranching operations, thus significantly impacting the income to beneficiaries. In addition, trends would continue toward larger and more efficient operations and the loss of smaller family ranching operations.

Increasing grazing fees on public lands has long been a hotly debated issue of grazing policy reform, typically pitting the ranching and environmental communities against each other. The

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opposing arguments are longstanding and fundamental. The environmental community has espoused the user-pays principle: ranchers should pay the market-based rate for renting these lands and their forage rather than be subsidized by the taxpayers. Some, particularly those within the environmental community, suspect that the real bottom line centers on positive benefits to these lands if they were not put to commodity uses.

Raising fees may increase the likelihood that marginal lands, in particular those potentially damaged as a result of overgrazing, would be taken out of production through the operation of market mechanisms. A practical concern that would impact the distribution to beneficiaries is that ranchers would simply discontinue leasing and therefore caring for these lands, forcing DNR to bear the costs of fencing them.

The ranching community also cites evidence that fee increases would lead to an array of other negative effects that begin with the loss of ranching operations. There are wide-ranging secondary impacts. Such impacts include increased subdivision and sprawl in areas undergoing growth, increases in noxious weeds, the loss of jobs in areas with stagnant or declining growth, increased deterioration of stable communities, and loss of traditional customs and culture.

Another possibility, raised by both groups, is a concern that fee increase may lead to a higher incidence of overgrazing, as ranchers may attempt to make up lost profits by increasing the number of livestock. Increased permit or lease fees would indubitably cost ranchers more and reduce their profits. The same principles and issues concerning increased costs of operations raised previously would apply. With higher lease/permit values, ranchers may be less protective of their AUM levels and more willing to accept AUM reductions that may prevent overgrazing.

Under alternative 2, the responsibility for DNR's management would remain constant. If lands continued within the same operation with grazing as part of the cycle, there would likely be little change in the short-term in land management and use of the land base, and the overall condition of the land would not likely change. One consideration underlying some arguments for increased fees is that the DNR would be better able to cover more of its costs of managing the grazing program. Thus, increased revenues would provide more funds for DNR to conduct more effective and comprehensive monitoring of its lands' condition.

In addition to increased fee revenues in some cases, the possibility of losses in number of lease holders/permit holders should be considered. The impact would be lost revenues and therefore reductions in distributions to beneficiaries.

If current regulations were revised to remove the requirement of a base ranch operation, it is conceivable that these lands would no longer be grazed. If so, DNR would bear the costs of fencing the land off and continued oversight. Thus, the revenue change resulting from this policy is difficult to estimate. However, it is beyond the scope of this analysis to determine the extent to which these factors would play out.

Further complicating this situation is an evaluation of a fair market price for forage that should provide the basis for a fee increase. The private land lease rate (PLLR) is often used as a standard to measure the equity of federal and state grazing fee rates. The central issue is whether a state agency's grazing fee is less than the PLLR. Torell et al. (1995) compared the total costs of

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operating on federal and private grazing leases in Idaho, New Mexico and Wyoming. Their database included information on 173 Bureau of Land Management (BLM) leases, 72 U.S. Forest Service (USFS) leases, and 151 private leases. They found that services provided on the private leases were a significant determinant of the lease price. Some of the services provided included maintenance of lease property and the water supply, and daily care of the livestock. Livestock care provided by the lessor added \$2.58 per AUM to the lease price and lessor-provided water added \$1.25 per AUM. The non-fee costs of operating on BLM and USFS leases averaged \$15.41 and \$21.89, respectively, and on private leases averaged \$11.33. In other words, to equate the costs of operating on federal and private leases, the grazing rate for BLM leases would need to be \$4.08 less than the PLLR, and the grazing rate for USFS leases would need to be \$10.56 less.

Questions Raised by Fee Increase

If fee increases are considered, related questions need to be addressed:

- How would lease and/or permit fee increases affect the viability of ranch operations?
- How would fee level changes affect lease and/or permit value?
- What impacts might lease/permit fee increases do for the taxpayer, or the health of the land?

Summary: Fee Increase

In summary, as discussed in Section 3, Washington's grazing lease fees are at the upper end of the spectrum across the four states evaluated. When evaluated jointly with permit range fees, overall, the fees fall within the mid-range in comparison with other nearby states. This finding suggests that the state's current fees are not unreasonable, based on the status quo. However, for those calling for reform, fee increase is seen as a solution to some of the problems identified with the grazing program. An answer that cannot be directly provided here is the real effectiveness and efficiencies that would result from this policy change. In part, a realistic assessment of impacts would depend on ranchers' response to fee increases (the price elasticity of their demand). That determination is beyond the scope of this study.

We include two scenarios here:

1. Impacts of this fee increase would be minimal on the base ranching operations and their leasing of state lands.
2. 50% of the ranchers would respond to increased fees by closing their ranching operations.

Under the first scenario, many of the impacts would be similar to the status quo alternative; where different, these impacts are noted.

With scenario 2, closures would be most likely on smaller, more marginal operations where profitability margins would be significantly impacted by fee increases. They would also include

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large operations dependent on a significant proportion of state grazing acreage, and would therefore realize a significant impact from increased fees.

Under this second scenario alternative, DNR would likely continue to require similar staff resources to be dedicated to program administration and oversight over these areas. If the DNR were to see any savings here, it would be marginal and likely less than 1 FTE.

7.4.3 100% AUM Reduction – Elimination of Livestock on State Lands

Impacts of 100% AUM Reduction

Under alternative 3, DNR would implement a 100% AUM reduction. The result would eliminate livestock grazing on DNR lands. The direct economic impact under this alternative includes the land and resource values held in trust (\$282.5 million), while positive economic impacts from grazing would be foregone as well as lease holder contributions to controlling invasive species. Indirect economic impacts are estimated at \$19.6 million for active recreation values, and the total positive impact is \$300.8 million. The need for additional fencing and increased costs of controlling invasive species would contribute to the highest total cost of any alternative of \$14.0 million, for a net benefit total of \$286.8 million. Alternative 3 would generate less revenue for distribution to beneficiaries than either the status quo or alternative 2, but more than other alternatives. Summarized in Table 46 are the net benefit, NPV, and the BCR under this alternative.

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Table 46. Alternative 3 – 100% AUM Reduction

Cost-Benefit Analysis Performance Assessment 100% AUM Reduction	
Net Benefit/Profit	\$286.8 million
NPV @ 9%	\$25.8 million
Benefit/Cost Ratio	21.5

Eliminating grazing altogether would advance the trend of a declining livestock industry and with it a unique lifestyle and set of customs and culture. Without grazing, the ecological health of some areas and overall condition of the land would likely improve, especially in riparian areas. However, the situation is not clear. Overgrazed areas in semi-arid climates like eastern Washington’s take decades to recover, if ever. Reduced grazing and site restoration efforts could slowly improve the ecosystem health in areas where overgrazing, trampling of riparian areas, and the like are attributable to livestock. Within the constraints of limited budgets, DNR land managers have been active in restoring areas of critical habitat and those where significant damage has occurred. Improvements in rangeland health are evident at several sites. Another unintended consequence of removing cattle may be the increased need for controlling invasive species and wildfire risk.

DNR has been striving to minimize its administrative and management costs at all levels over the past several years. Major positive impacts of this alternative would be in keeping with these efforts by reducing administrative and management costs (e.g., money spent on planning processes, improvements, monitoring, etc.).

The primary negative impacts of alternative 3 would be on ranch operations themselves and the communities dependent on them. Economic impacts of reducing or eliminating state grazing AUMs can be examined by determining the number of cows the operation could support given the new forage base and adjusting costs accordingly. Our analysis assesses the impacts of this reduction in terms of lost jobs and income.

This analysis assumes that the only ownership costs adjusted with the reduced number of cows are livestock interest and depreciation. The remaining ownership costs are assumed to be fixed and do not vary with the size of the cowherd, at least within the numbers being examined. This demonstrates the diseconomies of size that would occur given the loss of the leased forage and the required maintenance of the capital asset base.

DNR’s responsibility for management and associated costs would be removed. That would save DNR some costs. Given the small staff reporting directly to the current program and that most program costs are for personnel, DNR savings would be marginal, at best around 1 FTE. Although costs may be reduced, income to beneficiaries would decline.

Again, as grazing may continue on adjoining lands, the state would bear the costs of fencing them. DNR would also continue financial responsibility for management of invasive species, wildfire control, recreation access, and the like. Therefore, long-term total costs to the DNR would increase as management associated with these lands and their use for other purposes

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increase. Some lands may come to be leased by those not actively engaged in grazing or similar enterprises that would bring them regularly on-site. For this analysis, we assume that these lease holders would not be active caretakers, that oversight on a daily, regular basis would not be provided, and that additional problems from unattended lands could occur.

Summary

Compared to the status quo, this alternative (100% AUM reduction) would generally destabilize the ranching industry and local communities. Direct impacts leading to increased ranch and community instability would be at the local or regional level. However, indirect and cumulative long-term impacts, including the ongoing trend of the small family ranch disappearing altogether, would extend beyond the region.

Table 47 details these gains and losses and lists related benefits and issues raised. Tables 47 through 50 provide summary highlights of the financial costs and benefits for non-commodity/market and commodity/market valuation and issues raised. For a more detailed discussion on the data in these tables, see Appendix B.

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Table 47.
Listing and Enumeration of Financially- Related Benefits and Related Issues Raised

		TOTAL \$ VALUE (2004)*							
BENEFITS	RELATED ISSUES	STATUS QUO		SELL LANDS 50%		INCREASE FEES 50%		REDUCE AUMs 100%	
		VALUE 2004 (\$)	Notes	VALUE 2004 (\$)	Notes	VALUE 2004 (\$)	Notes	VALUE 2004 (\$)	Notes
Income to Beneficiaries <i>(75% of gross revenues)</i>	Marginal land (particularly currently leased lands) are now put to best/highest use; only other alternative is to sell land and put funds received into a trust account to be managed by the SIB; may earn higher rate of return; 9% return used here.	\$580,500	75% return on some revenue, but not all.	\$12.9 million	Annualized return on capitalized value of land sold at 9%	\$870,000	Assume no ranchers stop leasing	\$0	No grazing fees collected; any income based on other fees (e.g., special-use permits for lands available for access or other uses); no major income.
				\$143.8 million	Value of land sold (50% acreage purchased at \$295/ac + 9% annual interest)	\$435,000	Assumes 50% ranchers stop leasing		
Market value of land	Tradition of state maintaining resource base Retention of grazing use and ecosystem services it affords (forage, care-taking, etc.)	\$295/acre \$287.6 million	Avg/acre (includes \$6/a. lease value, \$45/AUM) TOTAL (incl. \$5.8 million for lease value; \$4.2 million for AUM capacity - \$10 million total)	\$143.8 million \$5.0 million	Value of land without lease/permit: (less \$2.9 million for lease value; \$2.1 million for AUM capacity) Total value foregone	<i>\$287.6 million</i> <i>\$282.6 million</i> <i>\$5.0 million</i>	<i>No ranchers stop leasing.</i> <i>50% ranchers stop leasing (depends on elasticity of demand)</i> Total value foregone if 50% stop leasing.	\$282.5 million \$4.2 million	Assumes 100% AUMs removed; lands leased for other uses Total value foregone

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Table 47.
Listing and Enumeration of Financially- Related Benefits and Related Issues Raised

BENEFITS	RELATED ISSUES	TOTAL \$ VALUE (2004)*		STATUS QUO		SELL LANDS 50%		INCREASE FEES 50%		REDUCE AUMs 100%	
		VALUE 2004 (\$)	Notes	VALUE 2004 (\$)	Notes	VALUE 2004 (\$)	Notes	VALUE 2004 (\$)	Notes		
Land management	Invasive species control	(\$1.5) million	Deficit funding for control	(\$750,000)	Responsibility & costs for care transfers to private owners may max. benefits; protection may be greater	(\$1.2) million	No ranchers stop leasing. Assume 50% stop leasing	(\$1.5) million	Deficit funding for control; = status quo		
	Reduced illegal activities and trespassing	\$68,364	estimate ~ 5 incidents/year	\$34,182	estimate ~ 16 incidents/year	\$68,364	No ranchers stop leasing 50% ranchers stop leasing	\$0	Increase in # incidents/yr.		
	Reduced trash and litter	\$900,000	Trash/litter removed	\$450,000	Trash/litter removed	\$900,000	No ranchers stop leasing. 50% ranchers stop leasing	\$1.0 million	Trash/litter removed		
	Decreased wildfire impacts		Uncertain; contingent on many factors		Uncertain; contingent on many factors		Uncertain; contingent on many factors		Uncertain; contingent on many factors		

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Table 47.
Listing and Enumeration of Financially- Related Benefits and Related Issues Raised

		TOTAL \$ VALUE (2004)*							
BENEFITS	RELATED ISSUES	STATUS QUO		SELL LANDS 50%		INCREASE FEES 50%		REDUCE AUMs 100%	
		VALUE 2004 (\$)	Notes	VALUE 2004 (\$)	Notes	VALUE 2004 (\$)	Notes	VALUE 2004 (\$)	Notes
Regional economic impacts	Direct, indirect, and induced impacts – regional economic development and impacts; community stability; jobs: - Government (e.g., state, county, local) - Ranching (direct hired labor) - Farmers producing feed - Feed stores, tack shops, horse shodders, equipment dealers, etc. - Veterinarians - Fuel distributors, automobile dealerships, - Repair shops, tire dealers - Meat processors - Land restoration - Hunting and recreation	\$3.9 million 130 None paid \$165,424	Income Jobs Property tax Tax value for AUMs (based on CC)	\$1.95 million 65 No change \$82,712	Income Jobs Property taxes Loss of tax value for AUMs	<i>\$3.9 million</i> <i>\$1.95 million</i> <i>130/65</i> <i>No change</i> <i>\$82,712</i>	<i>Income: none stop leasing</i> <i>50% ranchers stop leasing</i> <i>Jobs (0/50%)</i> Property tax if none stop leasing Tax revenues for loss of 50% AUMs	\$1.95 million 65 No change \$165,424	Income Jobs Property tax Loss of Tax value for AUMs (based on CC)
Job creation - program management - lease holders/permit holders - direct regional	Direct jobs currently include DNR land management staff and lease holders/permit holders.	\$232,970 \$31 million	6.0 FTEs 1,033 lease holders & permit holders at \$30,000 per capita income.	\$194,142 \$15.5 million	Estimate 5.0 FTEs; no other uses/similar compensation for extent of economic impacts to economy, ~65,000 more recreation user days would be required	\$232,970 \$31 million \$194,142 \$15.5 million	6.0 FTEs; no ranchers stop leasing. lease holders / permit holders same as status quo. 5.0 FTEs; 50% of ranchers stop leasing; 50% lease holders / permit holders.		<i>5.0 FTEs</i> <i>Other uses would have to compensate e.g., ~120,000 additional recreation user days would need to be attracted</i>

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Table 47.
Listing and Enumeration of Financially- Related Benefits and Related Issues Raised

		TOTAL \$ VALUE (2004)*							
BENEFITS	RELATED ISSUES	STATUS QUO		SELL LANDS 50%		INCREASE FEES 50%		REDUCE AUMs 100%	
		VALUE 2004 (\$)	Notes	VALUE 2004 (\$)	Notes	VALUE 2004 (\$)	Notes	VALUE 2004 (\$)	Notes
Red meat production	<p>Only 5% of WA rangeland is state grazing land -- # livestock/year actually grazed is unknown; rough estimate of 7,710 head.</p> <p>Economic impact analysis based on capacity of land for grazing.</p> <p>Permit holders must graze; Only rights to forage – estimated # head of cattle: 2,800.</p> <p>Lease holders do not have to graze; hold greater rights – estimated # head of cattle: 5,000.</p>	<p>35,556 AUM</p> <p>58,972 AUM</p> <p>94,528 AUM Total</p>	<p>Carrying Capacity (CC)</p> <p>Permits</p> <p>Leases</p> <p>TOTAL at -\$200/head Actual number of livestock unknown (est.) 7,800 head</p>	<p>7,710 head</p> <p>94,528 AUM.</p>	<p>Loss of (est.) Total CC</p> <p>3,855 head (est.)</p> <p>See: Regional economic impacts related to AUM.</p>	<p>If no response to fee raise, no change in Status Quo.</p> <p>If assume reduction of 50%, same as selling lands</p>	<p>Production reduction uncertain depends on elasticity (unknown) of demand, given fee increase.</p> <p>See: Regional economic impacts related to AUM.</p>	<p>94,528 AUM</p>	<p>No red meat production – Loss of 7,710 head (est.)</p> <p>Total CC.</p> <p>See: Regional economic impacts related to AUM.</p>

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Table 48.
Listing and Enumeration of Non-Commodity Benefits – Non-Market Valuations, and Related Issues Raised

COSTS	RELATED ISSUES	TOTAL \$ Value (2004)*			
		STATUS QUO / NO ACTION	SELL LANDS 50%	INCREASE FEES 50%	REDUCE AUMs 100%
Active recreation-related non-market benefits vs. passive recreation	Non-market active recreation values Passive use non-market values	\$17.8 million/yr \$11.0 billion lump sum	Lands unavailable for public use/recreation or extent of availability & access unknown.	Assuming a 5% increase in recreation of 37,900 user-days: \$.9 million	Assuming a 10% increase in recreation of 75,800 user-days: \$1.8 million
Resource stewardship	Restoration and enhancement Increased water and ecosystem quality Enhanced resource productivity Rangeland conditions & monitoring Social stability	- Ongoing improvements - 10% increase in improved area, 1984 - 2004	- Mixed results in improvement vs. deterioration in land condition; particularly riparian & critical habitat - Increase in conversion of acreage to residential development	- <i>Less use of land for production</i> - Less use of grazing & leasing as management tools	- Mixed results in improvement v. deterioration in land condition - No use of grazing as management tool - Potentially less use of leasing as management tool
Resource stewardship	Ecosystem services	No change in status quo for ecological services: Recent change in 60 lease holders	Moderate improvement in ecosystem health	Slight improvement in ecosystem health	Passive use non-market values: \$252/yr per household = \$1.3 billion/yr
ADDED BENEFITS					
Administrative/collection services	DNR collects various assessments and makes disbursement payments (e.g. ~\$26,000 in weed, conservation district, other assessments)	~\$26,000 collected for weed district, conservation district, other assessments.	Private owners would be responsible for these lands	State managers responsible for more lands – greater accountability	State managers responsible for more lands – greater accountability

Note: Dollar values, where shown, are approximate estimates. Where estimates were not possible given project limitations and data availability qualitative evaluation of impacts are noted and further discussed within the text and Appendix B.

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Table 49.
Related Financial Costs Associated with Alternatives Summary Analysis

COSTS	RELATED ISSUES	STATUS QUO / NO ACTION	TOTAL \$ Value (2004)		
			SELL LANDS 50%	INCREASE FEES 50%	REDUCE AUMs 100%
Foregone revenues (grazing and AUMs)	Alternative land uses would result in costs equaling the amount of current income and values foregone; other land uses would have some value (e.g., ecosystem services, wind turbines) Grazing and some other uses such as wind turbines not mutually exclusive	None	- <i>Current revenue lost: \$290,250</i> - Sales costs should include market value of lease/AUMs	- If no response to fee increase: None - If 50% of ranchers stop leasing: some increase in total revenues likely, but amount uncertain	- Current revenue lost: \$580,500 FY04
Program expenditures (management)	Personnel costs as fixed cost Issue of whether marginal costs of employing firefighters (sunk cost) to complete other tasks greater than marginal benefits	DNR costs (85% of personnel) of \$232,970 in FY04	- <i>Some reduced personnel costs (1 FTE), given 50% fewer lands:</i> - \$187,727 - \$5.05 million - <i>Costs of fencing of 50% of rangelands:</i> - \$5.05 million	- <i>If no response to fee increase, same as status quo:</i> \$232,970 - <i>If 50% of ranchers stop leasing: Some reduced personnel costs (1 FTE), given 50% fewer lands:</i> \$187,727 - <i>Costs of fencing likely be same as selling rangelands:</i> \$5.05 million	<i>Program is eliminated; expenditures: \$0</i> <i>Costs of fencing: \$10.1 M</i>
Invasive species control	Weed problem could worsen under private ownership; state requires noxious weed control. Control by: - DNR - Lease holders - Private owners	DNR: \$300,000 /yr Lease holders: \$25,000	Lease holders: \$900,000/yr	50% Lease holders: \$312,500/yr	\$2.25 million (between DNR and lease holders)

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COSTS	RELATED ISSUES	STATUS QUO / NO ACTION	TOTAL \$ Value (2004)		
			SELL LANDS 50%	INCREASE FEES 50%	REDUCE AUMs 100%
Costs of wildfire (impacts & suppression)	- Evidence that grazing alters fire behavior, regimes; fire suppression's real costs in \$\$\$ and human lives - <i>Cost of suppression:</i> ~\$1.0 million/day for major fire complexes	Moderate fire danger; infrequent fires on rangelands, DNR firefighters a sunk cost & available for fires on any state lands	Same as status quo; given interspersed lands, firefighting would continue on all lands	Same as status quo; given interspersed lands, firefighting would continue on all lands	Increased fire risk, higher suppression costs, greater likelihood of property damage

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Table 50.
Related Non-Commodity Costs Associated with Alternatives Summary Analysis – Non-Market Valuations, and Related Issues Raised

COSTS	RELATED ISSUES	TOTAL \$ Value (2004)			
		STATUS QUO / NO ACTION	SELL LANDS 50%	INCREASE FEES 50%	REDUCE AUMs 100%
Opportunity costs -- Use of capital and other, more productive or worthy uses	Grazing fees charged by government are lower than private leases vs. WA fees higher than most other states'	Low	High	Moderate	Moderate
Support of special interests	Balancing of several duties for beneficiaries and the public trust with practicalities of rangeland management Political power of ranchers – Does this contradict provisions of trust land management (one group given priority over another, to detriment of beneficiaries)	Moderate	Low	Moderate.	High
Damages to land, water, ecosystem services	Competition with wildlife of livestock: Mixed	*** NE	*** NE	*** NE	None
	Reduced recreation: Less access on some lands	*** NE	*** NE	*** NE	*** NE
	Riparian damage: Trampling & bank failure, vegetation loss, compaction due to livestock – ecological conditions would likely worsen under private ownership without state ecosystem standards.	8% in key stock-gathering areas	30% in key stock-gathering areas	** VAR	Low
	Loss of wetlands benefits: Wildlife habitat, water quality (fecal contamination), erosion, sedimentation, chemical filtering, channel stabilization & protection, etc.	Low	Low - High	Moderate	Low
	Effects of grazing on habitat groups: seral forest communities	Mixed	Mixed	Mixed	Mixed
Costs of water sources, fencing, and other livestock improvements	\$2/AUM foregone by DNR for not providing these	\$306,996 in foregone revenues	\$10.1 million	? unknown	

7.5 Conclusions

This analysis of the benefits and costs of the DNR grazing program seeks to promote decision-making based on more than monetary measures of benefits and costs. Not all costs and benefits can be quantified, much less assigned a dollar value within the scope of this study. Also, decision-making concerning the public welfare should be based on other criteria including:

- Effectiveness (particularly maintenance and protection of biophysical and ecological functions)
- Equity (fairness to the diverse parties and interests with a stake in policy changes)
- Socio-cultural acceptability (especially to the citizens of Washington, whose interests are supposed to be guarded and promoted by their Legislature)
- Feasibility.

Each alternative considered has its strengths and weaknesses. Some pose significant opportunities. Each opportunity, however, has drawbacks that must be considered. Perhaps most striking of these is the continuation of a shrinking rural lifestyle, as population growth and urban sprawl reduce the agricultural land base of the region. This trend will only increase the value of all lands—including state grazing lands—into the future. Balancing these varied interests is key to evaluating the question of maximizing beneficiary distributions while simultaneously seeking fair and effective resolution of concerns over the management of the DNR's grazing program and improving the health of grazing land resources.

Monetizing benefits and costs in a fairly gross analysis such as this provides a rough indicator of the relative welfare gains and losses that can be attributed to different policy alternatives. The orders of magnitude of differences in the net benefits of the alternatives considered clearly indicate the most-preferred alternative from a monetary measure of social welfare is the status quo, or no action alternative. The status quo is roughly equal in net benefits (\$339.8 million) to the alternative of raising grazing fees (\$340.4 million), with the stipulation that no ranchers would stop ranching. If, however, half of the ranchers stopped leasing, this net benefit amount drops to about 8% to \$312.4 million. Realistically, we expect the outcome of a fee increase to fall somewhere between the bounds of no ranchers being negatively affected by it and 50% being sufficiently affected that they would stop leasing state rangelands.

The net benefits for the status quo are nearly two times greater than alternative 2, the option for selling state rangelands. Alternative 1 (selling lands) was found to have a net benefit of \$176.4 million dollars. The next lowest-valued alternative was alternative 3, 100% AUM reduction on state grazing lands. Alternative 3 would result in the elimination of the state's grazing program. It received a net benefit score of \$286.8 million. The status quo was approximately 20 % higher than this amount.

As noted throughout, dollar measures suggest only part of the ramifications of policy alternatives. Selling off lands would likely contribute to continued loss of open lands to residential, recreational and commercial development. Where undeveloped lands remain, many

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of the problems sought to be resolved would be faced by private landowners, without public oversight.

Fees could be increased, but already Washington's fees are among the highest in the western U.S., while the state's stockmen are proportionally fewest in number. Small and marginal ranching operations would likely close if fees were increased to the point necessary to have a significant effect on income to beneficiaries, and the trend toward larger and more efficient operations would continue.

Eliminating the grazing program altogether would also advance the decline of the livestock industry, and with it a unique lifestyle and set of customs and culture. Without grazing, the ecological health of some areas would likely improve, particularly in riparian areas. However, overgrazed areas in semi-arid climates like eastern Washington's will take decades to recover. DNR has taken remedial actions, within budget limitations, aided by cooperative arrangements with other agencies, lease holders and permit holders, and targeted grant funds over the period. Improvement in the health of rangelands is becoming evident at project sites. Eliminating grazing could have many unintended consequences and increase expenditures required for invasive species control, wildfire management, and monitoring, for example.

Finally, there is the status quo. Tradition carries certain powers. Some view its force negatively as inertia. Others see it positively as adaptive management. With a small staff, the grazing program is trying not only to retain the state's grazing lands and their traditional uses, but also to increase stewardship of the land to improve the resource base. At the same time, income is being generated and actions taken to promote the sustainability of these resources for generations to come. These efforts are in the best spirit, and follow the letter of laws governing public trust lands and their management for the benefit of future as well as present beneficiaries.

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Appendices

Appendix A: Budgets for North Central and Southeast Subareas Representative Ranches at 50% and 100% Reductions

Appendix B: Explanation and Justification of Data: Section 7 Table Entries

Grazing Program Assessment and Economic Impact Analysis

Appendix A

Budgets for North Central and Southeast Subareas Representative Ranches at 50% and 100% Reductions

North Central Washington 300 Head Cow-calf Cost and Return Budget with State Grazing Reduced 50%.						
Item	Production or Weight per Animal	Units	Total Number of Head/Units		Total Value	Value per Herd Unit
VALUE OF PRODUCTION						
Steer calves	6.00	cwt	133	\$92.50	\$73,815.00	\$258.09
Heifer calves	5.25	cwt	76	\$90.00	\$35,910.00	\$125.56
Cull replacement heifer	8.25	cwt	11	\$81.00	\$7,350.75	\$25.70
Aged bull	18.00	cwt	5	\$50.00	\$4,500.00	\$15.73
Cull cows	12.00	cwt	43	\$44.00	\$22,704.00	\$79.38
Gross Returns					\$144,279.75	\$504.46
OPERATING COSTS						
Hay		ton	742	\$60.00	\$44,520.00	\$155.66
Feed barley		cwt	257	\$4.85	\$1,246.45	\$4.36
Protein supplement-20%		cwt	429	\$9.00	\$3,861.00	\$13.50
Federal range		AUM	901	\$1.43	\$1,288.43	\$4.50
State permits		AUM	160	\$5.41	\$865.60	\$3.03
State lease		AUM	67	\$7.76	\$519.92	\$1.82
Salt/trace mineral		lb	5720	\$0.12	\$686.40	\$2.40
Checkoff/brand inspection		head	264	\$2.35	\$620.40	\$2.17
Commission--video sales		head	209	\$6.00	\$1,254.00	\$4.38
Commission--auction sales		head	59	\$10.40	\$613.60	\$2.15
Freight/trucking		head	59	\$9.77	\$576.43	\$2.02
Veterinary Medicine	\$		4290	1	\$4,290.00	\$15.00
Machinery (fuel, lube, repair)	\$		\$2,339.10	1	\$2,339.10	\$8.18
Vehicles (fuel, repair)	\$		\$7,868.88	1	\$7,868.88	\$27.51
Equipment (repair)	\$		\$548.63	1	\$548.63	\$1.92
Housing and improvement (repair)	\$		\$1,446.80	1	\$1,446.80	\$5.06
Interest on operating capital	\$		\$32,105.49	\$0.06	\$1,926.33	\$6.74
Total Operating Costs					\$74,471.97	\$260.40
OWNERSHIP COSTS						
Machinery Depreciation	\$				\$6,969.56	\$24.37
Machinery Interest	\$				\$3,384.68	\$11.83
Machinery THILM	\$				\$695.59	\$2.43
Purchased Livestock Depreciation	\$				\$6,127.00	\$21.42
Purchased Livestock Interest	\$				\$2,244.62	\$7.85
Retained Livestock Interest	\$				\$12,005.00	\$41.98
Building Depreciation	\$				\$5,260.33	\$18.39
Building Interest	\$				\$4,873.05	\$17.04
Building TRIM	\$				\$417.69	\$1.46
Taxes and insurance	\$		\$788.90	1	\$788.90	\$2.76
Overhead	\$		\$2,000.00	1	\$2,000.00	\$6.99
Total Ownership Costs					\$44,766.42	\$156.52
Total Costs					\$119,238.39	\$416.92
NET RETURNS					\$25,041.36	\$87.54

Note: Net Returns are Returns to Land, Labor and Management.

Grazing Program Assessment and Economic Impact Analysis

Southeast Washington 400 Head Cow-calf Cost and Return Budget with State Grazing Reduced 50%.						
Item	Production or Weight per Animal	Units	Total Number of Head/Units	Price/Cost per Unit	Total Value	Value per Herd Unit
VALUE OF PRODUCTION						
Steer calves	6.20	cwt	179.00	\$92.50	\$102,656.50	\$265.95
Heifer calves	5.80	cwt	103.00	\$88.50	\$52,869.90	\$136.97
Cull replacement heifer	8.50	cwt	15.00	\$80.00	\$10,200.00	\$26.42
Aged bull	20.00	cwt	4.00	\$50.00	\$4,000.00	\$10.36
Cull cows	12.00	cwt	58.00	\$44.00	\$30,624.00	\$79.34
Gross Returns					\$200,350.40	\$519.04
OPERATING COSTS						
Hay		ton	764.00	\$60.00	\$45,840.00	\$118.76
State lease		AUM	189.00	\$7.76	\$1,466.64	\$3.80
Salt/trace mineral		lb	7720.00	\$0.12	\$926.40	\$2.40
Checkoff/brand inspection		head	359.00	\$2.35	\$843.65	\$2.19
Commission--video sales		head	282.00	\$6.00	\$1,692.00	\$4.38
Commission--auction sales		head	77.00	\$10.40	\$800.80	\$2.07
Freight/trucking		head	77.00	\$9.77	\$752.29	\$1.95
Veterinary Medicine		\$	\$5,790.00	1	\$5,790.00	\$15.00
Machinery (fuel, lube, repair)		\$	\$2,434.00	1	\$2,434.00	\$6.31
Vehicles (fuel, repair)		\$	\$6,299.00	1	\$6,299.00	\$16.32
Equipment (repair)		\$	\$732.00	1	\$732.00	\$1.90
Housing and improvement (repair)		\$	\$1,800.00	1	\$1,800.00	\$4.66
Full-time labor		person	1.00	\$40,000.00	\$40,000.00	\$103.63
Interest on operating capital		\$	\$32,105.49	\$0.06	\$1,926.33	\$4.99
Total Operating Costs					\$111,303.11	\$288.36
OWNERSHIP COSTS						
Machinery Depreciation					\$6,536.22	\$16.93
Machinery Interest					\$2,999.68	\$7.77
Machinery THILM					\$613.09	\$1.59
Purchased Livestock Depreciation					\$4,955.00	\$12.84
Purchased Livestock Interest					\$1,848.70	\$4.79
Retained Livestock Interest					\$15,680.00	\$40.62
Building Depreciation					\$6,659.67	\$17.25
Building Interest					\$5,982.20	\$15.50
Building TRIM					\$512.76	\$1.33
Taxes and insurance		\$	\$788.90	1	\$788.90	\$2.04
Overhead		\$	\$2,000.00	1	\$2,000.00	\$5.18
Total Ownership Costs					\$48,576.22	\$125.84
Total Costs					\$159,879.33	\$414.20
NET RETURNS					\$40,471.07	\$104.84

Note: Net Returns are Returns to Land, Labor and Management.

Grazing Program Assessment and Economic Impact Analysis

North Central Washington 300 Head Cow-calf Cost and Return Budget with State Grazing Reduced 100%.

Item	Production or Weight per Animal	Units	Total Number of Head/Units	Price/Cost per Unit	Total Value	Value per Herd Unit
VALUE OF PRODUCTION						
Steer calves	6.00	cwt	125	\$92.50	\$69,375.00	\$256.94
Heifer calves	5.25	cwt	72	\$90.00	\$34,020.00	\$126.00
Cull replacement heifer	8.25	cwt	11	\$81.00	\$7,350.75	\$27.23
Aged bull	18.00	cwt	4	\$50.00	\$3,600.00	\$13.33
Cull cows	12.00	cwt	40	\$44.00	\$21,120.00	\$78.22
Gross Returns					\$135,465.75	\$501.72
OPERATING COSTS						
Hay		ton	742	\$60.00	\$44,520.00	\$164.89
Feed barley		cwt	250	\$4.85	\$1,212.50	\$4.49
Protein supplement-20%		cwt	405	\$9.00	\$3,645.00	\$13.50
Federal range		AUM	901	\$1.43	\$1,288.43	\$4.77
State permits		AUM	0	\$5.41	\$0.00	\$0.00
State lease		AUM	0	\$7.76	\$0.00	\$0.00
Salt/trace mineral		lb	5400	\$0.12	\$648.00	\$2.40
Checkoff/brand inspection		head	252	\$2.35	\$592.20	\$2.19
Commission--video sales		head	197	\$6.00	\$1,182.00	\$4.38
Commission--auction sales		head	55	\$10.40	\$572.00	\$2.12
Freight/trucking		head	55	\$9.77	\$537.35	\$1.99
Veterinary Medicine	\$		\$4,050.00	1	\$4,050.00	\$15.00
Machinery (fuel, lube, repair)	\$		\$2,339.10	1	\$2,339.10	\$8.66
Vehicles (fuel, repair)	\$		\$7,868.88	1	\$7,868.88	\$29.14
Equipment (repair)	\$		\$548.63	1	\$548.63	\$2.03
Housing and improvement (repair)	\$		\$1,446.80	1	\$1,446.80	\$5.36
Interest on operating capital	\$		\$32,105.49	\$0.06	\$1,926.33	\$7.13
Total Operating Costs					\$72,377.22	\$268.05
OWNERSHIP COSTS						
Machinery Depreciation	\$				\$6,969.56	\$25.81
Machinery Interest	\$				\$3,384.68	\$12.54
Machinery THILM	\$				\$695.59	\$2.58
Purchased Livestock Depreciation	\$				\$5,834.00	\$21.61
Purchased Livestock Interest	\$				\$2,145.64	\$7.95
Retained Livestock Interest	\$				\$11,340.00	\$42.00
Building Depreciation	\$				\$5,260.33	\$19.48
Building Interest	\$				\$4,873.05	\$18.05
Building TRIM	\$				\$417.69	\$1.55
Taxes and insurance	\$		\$788.90	1	\$788.90	\$2.92
Overhead	\$		\$2,000.00	1	\$2,000.00	\$7.41
Total Ownership Costs					\$43,709.44	\$161.90
Total Costs					\$116,086.66	\$429.95
NET RETURNS					\$19,379.09	\$71.77

Note: Net Returns are Returns to Land, Labor and Management.

Grazing Program Assessment and Economic Impact Analysis

Southeast Washington 400 Head Cow-calf Cost and Return Budget with State Grazing Reduced 100%.						
Item	Production or Weight per Animal	Units	Total Number of Head/Units	Price/Cost per Unit	Total Value	Value per Herd Unit
VALUE OF PRODUCTION						
Steer calves	6.20	cwt	174.00	\$92.50	\$99,789.00	\$268.25
Heifer calves	5.80	cwt	99.00	\$88.50	\$50,816.70	\$136.60
Cull replacement heifer	8.50	cwt	15.00	\$80.00	\$10,200.00	\$27.42
Aged bull	20.00	cwt	4.00	\$50.00	\$4,000.00	\$10.75
Cull cows	12.00	cwt	55.00	\$44.00	\$29,040.00	\$78.06
Gross Returns					\$193,845.70	\$521.08
OPERATING COSTS						
Hay		ton	764.00	\$60.00	\$45,840.00	\$123.23
State lease		AUM	0.00	\$7.76	\$0.00	\$0.00
Salt/trace mineral		lb	7440.00	\$0.12	\$892.80	\$2.40
Checkoff/brand inspection		head	347.00	\$2.35	\$815.45	\$2.19
Commission--video sales		head	273.00	\$6.00	\$1,638.00	\$4.40
Commission--auction sales		head	74.00	\$10.40	\$769.60	\$2.07
Freight/trucking		head	74.00	\$9.77	\$722.98	\$1.94
Veterinary Medicine		\$	\$5,580.00	1	\$5,580.00	\$15.00
Machinery (fuel, lube, repair)		\$	\$2,434.00	1	\$2,434.00	\$6.54
Vehicles (fuel, repair)		\$	\$6,299.00	1	\$6,299.00	\$16.93
Equipment (repair)		\$	\$732.00	1	\$732.00	\$1.97
Housing and improvement (repair)		\$	\$1,800.00	1	\$1,800.00	\$4.84
Full-time labor		person	\$1.00	\$40,000.00	\$40,000.00	\$107.53
Interest on operating capital		\$	\$32,105.49	\$0.06	\$1,926.33	\$5.18
Total Operating Costs					\$109,450.16	\$294.22
OWNERSHIP COSTS						
Machinery Depreciation		\$			\$6,536.22	\$17.57
Machinery Interest		\$			\$2,999.68	\$8.06
Machinery THILM		\$			\$613.09	\$1.65
Purchased Livestock Depreciation		\$			\$4,955.00	\$13.32
Purchased Livestock Interest		\$			\$1,848.70	\$4.97
Retained Livestock Interest		\$			\$15,610.00	\$41.96
Building Depreciation		\$			\$6,659.67	\$17.90
Building Interest		\$			\$5,982.20	\$16.08
Building TRIM		\$			\$512.76	\$1.38
Taxes and insurance		\$	\$788.90	1	\$788.90	\$2.12
Overhead		\$	\$2,000.00	1	\$2,000.00	\$5.38
Total Ownership Costs					\$48,506.22	\$130.39
Total Costs					\$157,956.38	\$424.61
NET RETURNS					\$35,889.32	\$96.47

Note: Net Returns are Returns to Land, Labor and Management.

Appendix B

Explanation and Justification Data: Section 7 Table Entries

The following explanations and justifications support summary information provided in Section 7, Tables 43, and 47 through 50.

B.1 Direct Benefits and Positive Impacts

B.1.1 Income to Beneficiaries and Net Grazing Revenues

Revenues and expenditures associated with the DNR grazing program have increased and decreased over the last decade, not necessarily in tandem. During this period, maximum net revenues were achieved in Fiscal Year (FY) 2004 (\$679,174), while the lowest net revenue was in FY1999 (\$475,097). Since 2001, net revenues have increased each year, with the exception of 2003, during which the state was in a significant recession period.

We would note that the accounting for FY 2004 is not fully consistent with our analysis of current billing amounts by commodity. Acreages and billing amounts based on records provided by DNR vary by year. Nonetheless, with all rents and assessments included, the difference in the totals for FY2004 calculated from the DNR's data (\$672,016) is within 1% of the total of \$679,174 reported by DNR to have been collected in range permit and grazing land lease fees.

In 2004, DNR reported that its distribution to beneficiaries totaled 75% of this amount or \$97,500 for grazing permits, \$356,000 from grazing leases, and \$127,500 from WDFW permits and leases, for a total of \$580,500 (Tables 43 and 47).

B.1.2 Market value of land

As noted earlier in this report, the current fair market value of these lands in the private real estate market range between \$90 and \$1,000+ per acre. The more highly valued of these lands are in counties as Okanogan, may be forested with grazing as a secondary use. In other areas, as Douglas County, much of the grazing land is of a lower value consisting of semi-arid steppe-land with no water, and a lower overall production capacity.

Research in Wyoming used hedonic modeling to value real estate located near the resort community of Jackson and agricultural property located elsewhere in the state (Spahr and Sunderman 1998). Between 1989 and 1997, ranch values increased by about 3.8% per year. Holding all other attributes constant, this research found that the existence of an AUM of state lease increased the value of a ranch, with an average ranch of 640 acres and 224 AUMs selling for about \$6 more per acre than an average ranch without a state lease. Also

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significant for the present analysis is the finding that one additional AUM per acre has a value of approximately \$45.

These dollar amounts were used as rough indicators to assess the portion of the current land's value accruing to the leases/permits associated with them (that is, the value of the productive capacity of the state lands to current ranchers), as well as the value of the AUMs also associated with them (based on the land's carrying capacity).

Under the status quo, there would be no change in current property values, and the estimated value totals \$287.6 million. This includes \$5.8 million in the lease value, and \$4.2 million associated with the 94,528 AUMs.

If 50% of the lands were sold (alternative 1), half of the acreage and its lease value would be foregone, as would half of the AUM production; these amounts total \$5 million, for a net amount of \$143.8 million. Similarly, under alternative 2 (50% fee increase), the amount of AUMs produced and leases surrendered would result in reduced values of \$5 million, for a net \$282.6 million where 50% of all ranchers stop leasing. In the scenario where no ranchers stop leasing under alternative 2, the market value would remain similar to the status quo. Estimates are provided for these two ranges, however uncertainty exists as to which scenario is most likely (Tables 43 and 47).

Alternative 3 eliminates AUMs, no red meat production would occur, and there would be no change in lease value. The loss in values associated with the AUMs would be \$4.2 million, plus \$870,000 for the value of the 30% of the nonleasable (i.e. landlocked) lands, resulting in a net of \$282.5 million.

B.1.3 Resource stewardship activities

DNR land managers largely resolve management problems related to grazing and permit lands on a case-by-case basis, practicing triage management by identifying areas with the most significant and serious problems, and then acting to resolve or at least minimize those problems. These activities include projects to restore natural areas, particularly riparian areas, from the impacts of livestock grazing, and to provide improvements, including fencing, grass planting, bank stabilization, in-stream structures and cattle-crossing hardening, as well as prescribed burning. These efforts are discussed earlier in this report.

In addition to special projects related specifically to the management of grazing lands, the DNR grazing program also deals with the daily problems of scattered, open and unattended lands. Benefits of the current program and the collaborative relationship between the DNR and its lease holders include minimizing the impacts of management threats. Because many of the DNR's management functions are unfunded or under-funded, they may appear as deficit amounts herein. Alternative 1 (selling 50% of grazing lands) would rid the DNR of responsibility for these functions. Alternative 2 (50% fee increase) would be mixed in its impacts, in that it might provide increased revenues for these functions. However, more problems might arise if fewer lease holders are caring for these lands. Similarly, without grazing, as in alternative 3 (100% AUM reduction), the beneficial effects of grazing are removed. Thus, some portion of the care-

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taking functions of lease holders would be reduced in terms of grazing, but they could increase for other activities affected by the loss of grazing benefits for the lands having public access.

B.1.3.1 Invasive species control

The control of invasive species is a major problem throughout the western United States. In Oregon, a study conducted for the Oregon Department of Agriculture's Noxious Weed Control Program in 2000 estimated that 21 of the 99 weeds listed as noxious reduce the total personal income of state citizens by about \$83,000,000. This is an equivalent of 3,329 annual jobs lost from production foregone by the presence of these noxious weeds. The study projected that the presence of existing and potential invasive weeds cost Oregon citizens a total of about \$100 million dollars per year (The Research Group, 2000).

Washington's situation is not that different from Oregon's. According to DNR officials, weed control efforts in the state have cost hundreds of millions of dollars. Annually the Department alone spends close to \$1 million; with lease holders spending tens of millions of dollars. In terms of lost production and revenue, the DNR estimates that weeds cause the loss of 24% of Washington's gross agricultural product annually.

As noted earlier in the report, DNR's focus has been on aggressively treating known and high priority infestations on unleased lands in eastern Washington, ensuring compliance on leased lands through RMPs, and responding to county weed control requests.

Activities for 1995-1997 reported in a 1996 DNR Fact Sheet included roadside vegetation control costs of \$284,000, surveying of 324,000 acres for weed problems at a cost of \$124,000, of which lease holders paid \$88,000, and \$90,000 in expenses for additional weed control. Treatment occurred on more than 5,200 acres at 40 sites and along 1,200 miles of roadsides. As of 2004, the DNR estimates annual costs for weed control to be about \$300,000, across all programs areas.

Expenditures for weed control efforts related to the grazing program are captured, in part, within program related expenditures shown in Tables 5 and 6 earlier in the report. In that, it is difficult to identify all expenditures for weed control given the various requirements for reporting to DNR programs, for the purpose of the cost-benefit analysis we have constructed estimates for the analysis based on information obtained through interviews with DNR staff and have extrapolated data to facilitate the BCA. These estimates do not reflect actual expenditures.

Currently, about 4% of unleased lands are treated annually at an average cost of about \$54 per acre. If all DNR grazing lands went unleased, a baseline estimate of costs associated with treating these lands would be approximately \$1.8 million per year. Until substantial budget cuts in FY2000, \$2.25 million was regularly appropriated for invasive species control on all state lands. These budget cuts have shifted DNR control efforts to a maintenance-level approach aimed at treating worst-case outbreaks.

Benefits, measured in dollars, of invasive species control efforts are presented in Tables 43 and 47. Program or policy alternatives and status quo are viewed against the estimated \$1.8 million necessary to fully control invasive species and their spread. These vary from -\$750,000 under alternative 1 (50% of state rangelands sold), -\$1.2 million under alternative 2 (increase fees

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50%), and -\$1.5 million under the status quo and alternative 3 (100% AUM reduction); see Tables 43 and 47.

B.1.3.2 Reduced illegal activities, theft and trespassing

With the presence of local lease holders and the relatively minimal manpower allocated to managing DNR's grazing lands, problems due to illegal activities (e.g., drug production and distribution, vehicle abandonment, garbage dumping, off-road driving, timber theft, and trespassing) are effectively and efficiently reduced under the status quo.

Documentation from DNR's Northeast Region for the period 2001 - 2004, indicates a total of 64 reported incidents of these only 5 (about 8 %) occurred on leased land. The estimated cost of responding to these incidents is \$12,800 annually. Extrapolating this on a per-acre basis to the SE Region, the amount is about \$14,545, for a total cost of \$27,345 annually. One interpretation of these data is that there would be an increase in the occurrence of such incidences without the presence and oversight of lease holders/permittees keeping a watch over these rangelands thereby deterring some of this activity. The estimated magnitude of increase is about 11 times. For nonleased lands in the NE region, this represents a cost of \$140,800 for the period, and an annual rate of \$35,200. Applied to the SE region grazing lands, this amount is \$40,000 annually, with a two-region total of about \$75,200 per year for all state rangelands.

This represents a net increase of \$128,000 for the NE and \$145,454 for the SE, for a total net impact of \$273,454, or a net annual impact of \$68,364 for all state grazing lands.

Under the status quo, no net change in these activities occurs and estimated annual benefits are \$68,384 while costs are \$27,345. Applying this estimate to the scenario presented by alternative 3, the foregone annual cost would be \$68,364 (Table 43). In eliminating 100% of all AUMs, no grazing would occur, presumably resulting in change in oversight and care-taking by lease holders, with some of these lands being leased by other types of organizations; we suggest there is no net change in foregone costs of reduced activities.

If, as in alternative 1, 50% of these lands were sold, the state would no longer responsible for them, and such activities would no longer pose a problem for the DNR, the net annual benefit would be \$34,182 and annual costs would drop to \$13,673. However, the evidence above suggests that the social costs for other landholders would increase significantly.

The impacts related to alternative 2 (increasing fees) would mirror those of the status quo where no ranchers stopped leasing in response to fee increases. Where such fee increases result in 50% reduction of ranchers leasing state lands, the annual benefits and costs would be similar to those resulting from alternative 1. Table 43 summarizes the benefits and costs associated with all alternative policy actions.

Expenditures related to the control, monitoring of illegal activities, theft, and trespassing, are largely reflected within program related expenditures shown in Tables 5 and 6 earlier in the report. However, given the method of reporting by DNR staff, it is difficult to explicitly identify exact expenditures. For the purpose of the cost-benefit analysis, we have constructed estimates based on information obtained through interviews with DNR staff and records kept by DNR

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regional offices to derive a reasonable estimate to facilitate the BCA. This estimate, however, does not reflect actual expenditures and should not be construed as such.

B.1.3.3 Reduced litter and trash

Historically, trash and its removal have been major problems resulting from public use and access to state grazing lands. Some non-leased lands nearer urban centers require weekly site visits and clean-ups. Examples of the joint production based management discussed above include the use of DNR seasonal fire crews and Airway Heights Correctional Crews (approximately \$6,500 each year) to assist in trash and litter removal.

Annually, trash removal expenditures are about \$100,000. As with illegal activities, theft and trespassing, there is evidence that the dumping of trash on state grazing lands would increase without oversight and monitoring provided by permittees and lease holders. Thus, increasing related trash removal and monitoring costs. Using the same estimated increase in occurrences of 11 times, we estimate a rough additional cost of about \$1.0 million would be experienced under alternative 3 (100% AUM reduction).

If, as in alternative 1, 50% of state grazing lands were sold, related cleanup costs would no longer be incurred, and trash removal costs would decrease to \$50,000. However, there may be associated social costs related to the “trashing” of these lands.

For the BCA, we assume that the above dollar costs are the primary ones that would be affected under various alternatives presented. Under the status quo, there would be no net change in the occurrence of these activities. Applying the above estimates to all state rangelands the net cost foregone (or benefit) of having rangeland caretakers reducing trash, and thus trash removal costs, is \$900,000. This estimate, however, does not reflect actual expenditures and should not be so construed.

Expenditures associated with litter and trash removal are principally found within reported program expenditures shown in Tables 5 and 6 earlier in the report. As with those expenditures for invasive species and controlling illegal activities, due to reporting requirements for DNR staff, it is not possible to identify exact expenditures. As mentioned elsewhere in the report, DNR land managers and other regional field staff frequently carry out trash and litter removal as a matter of course in their day-to-day activities and do not necessarily report every activity undertaken during the course of a day. Therefore, for the purpose of the cost-benefit analysis we have constructed estimates based on information obtained through interviews with DNR staff and records kept by DNR regional offices to derive a reasonable estimate to facilitate the BCA.

Under alternative 1 (50% of state grazing lands sold) the state would no longer be responsible for these lands, and related activities would no longer pose a problem for DNR. The net annual benefit would be \$450,000 (50% of \$900,000) with a net annual cost of \$50,000.

Under alternative 3, with a 100% AUM reduction, although there would be no grazing on these lands, there would likely be some change in oversight and care-taking by lease holders. The extent of oversight and care-taking by new lease holders is unknown. Our assumption is that all costs would be born by DNR under alternative 1, with total foregone costs of \$0.

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The impacts related to alternative 2 (fee increase) would likely mirror those of the status quo, where no ranchers stopped leasing in response to fee hikes. If, however, 50% of all ranchers stopped leasing state lands in response to increased fees, net impacts would be similar to those of alternative 1 for both benefits and costs associated with reduced litter and trash.

B.1.4 Decreased wildfire impacts

Given the degree of variability and the unpredictable nature of wildfire, we limit our discussion below to a qualitative assessment of associated economic costs and benefits. Summary of the following qualitative discussion is provided in Table 49.

Livestock foraging has been effectively used within wildfire management plans to reduce fire risk (Kolb 2003). Foraging reduces grasses and understory that contribute to increased fuel loading and the likelihood of ignition and spread (Kolb 2003; Conard and Hilbruner, 2003). Additionally, fire incidents are more likely to be noticed and reported in the initial period, when containment is most effective, where lease holders or permittees are present and keeping watch within an area. The DNR has not, however, historically documented the extent to which wildfire risk is reduced or minimized on its lease or permit lands. Regardless of the alternative selected, wildfires occurring on DNR grazing lands will vary in frequency, size, and intensity. Generally, we can say that lands with a higher degree of oversight, whether by lease holders, permit holders, or owners, will be less prone to the spread of major fires.

Wildfire risk is a function of many uncertain variables, including climate, recent weather patterns, topography, grass and woody fuels, and other factors that affect a fire's likelihood of ignition and spread. The western U.S. is widely recognized to be in a drought cycle combined with general acknowledgement from the scientific community that global climate change is occurring, bringing with it warmer average annual temperatures over recent years. These conditions, combined with increased fuels, augment the likelihood of larger, more catastrophic, and more frequent wildfires.

In addition, severe wildfires can result in grasslands becoming seedbeds for invasive plant species. Thus, increasing costs associated with weed control. Dollar costs of increased fire risk vary with the scope and severity of a fire, as would costs for damage to property and equipment, medical treatment and the loss of human lives.

Wildfire may also have positive impacts, for example, opening up canopy for improved viewsheds, thereby increasing recreation values, and improving habitat for certain species. The impact of which may include promoting wildlife production and increased hunting activity. Research on the monetary values of fire risk associated with recreation use have found that differences in the value of active recreation are minimal in the short term and vary over the long-term (Elgin et al. 2001, Hessel et al. 2002, Loomis et al. 2002). Likewise, while fire in the form of prescribed burning has been found to increase deer harvest in forested areas, the increase in value attributed to wildlife production was minimal and well below the cost of this management activity, suggesting that other joint production impacts of wildfire may be more significant.

Under the status quo, there would be no net change in the occurrence of wildfires, which is currently fairly low. If, as in alternative 1, 50% of grazing lands are sold DNR's responsibility

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for fire-fighting activities would be removed and the burden would shift to other land holders. Greater vigilance might reduce wildfire spread, although these lands are already largely interspersed with private holdings; minimal net effects are expected.

Under alternative 3 (100% AUM reduction) no grazing would occur, and there would likely be changes in lease holders, oversight and management of at least some lands. Given the extent of uncertainty and expectation that there would likely be less direct oversight by lease holders, this scenario is most likely to result in a higher incidence of spreading fire.

The impacts related to alternative 2 (fee increase) would echo those of the status quo, where no rancher's stopped leasing in response to fee hikes. If, however, 50% of all ranchers stopped leasing DNR lands due to fee increases, we would expect net impacts similar to those of alternative 1 for both benefits and costs.

B.1.5 Job Creation: Program management

As discussed earlier in the report, no one DNR employee is 100% dedicated to the grazing lands program. Program staffing was estimated based on hours reported directly to the program and interviews with DNR regional staff. Generally, staffing for management of the grazing program increased until about 2001, and has since decreased.

Current staff months estimated for the NE Region is 43 FTE, or 3.5 people, which is approximately ~\$157,946 in total salary expenditures. The estimate for the SE Region is 52 FTE months, or 4.3 people, for total salary expenditures of ~\$194,946. In total, an estimated FTE of 7.8, and ~\$352,892.43 in salaries expended. This FTE estimate is higher than the 6.0 FTE at \$232,970 in salaries provided in FY 2004 reports of direct program hours provided by staff and likely reflects differences in estimated man-power involved in managing the grazing program. For the purposes of the BCA, we use the salary figure of \$232,970 reported by the DNR for FY2004 (Tables 43 and 47). In addition, there are about 1,033 lease holders/permit holders statewide with direct program related income estimated at approximately \$30,000 per capita; a benefit of \$31 million annually.

Personnel salaries and benefits comprise approximately 85% of all program costs, and include support staff, regional supervisory, and district field staff (Tables 5 and 6). This expenditure ratio is typical of most large organizations, including state government agencies. These expenditures are included in the enumeration of all costs in the next section, but economic efficiencies related to current management practices are briefly discussed below as benefits provided by the DNR grazing program.

The DNR has been actively engaged in a multiyear process aimed at consolidating its leases (where practical) and minimizing leasing and billing activities to reduce administrative time and paperwork requirements of its programs. The grazing program is no exception. The net effect of actions taken or planned are intended to increase DNR's cost effectiveness in managing its lands—particularly those facing increasing problems as invasive species, trash, and illegal activities, such as the manufacture of illegal drugs.

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DNR lands have long been managed under what economists' term "joint production." Efficiencies of scale are realized not only by the resources being managed, but also because of the diversity of uses and multiple management activities being carried out on them. While one could view, say, the activities of firefighters involved in trash removal or fence building when there are few fires to fight as questionable or even a "subsidy", another perspective would be that employment of these workers represents a fixed cost. That is, salaries are incurred regardless of the level of fire suppression activity (and labor cost is the majority of suppression cost). Thus, it could be viewed as economically efficient to apply this labor to accomplish other activities as well. Another way to understand this situation is to consider the existing labor as representing a fixed amount of marginal costs, and that the marginal benefits of employing this labor are increased when this labor is put to work to accomplish additional tasks in their down-time that they would not otherwise be completing. In addition, it should be noted that DNR land managers and field staff are similarly called on to assist in firefighting activities as necessary.

B.1.6 Regional economic impacts (jobs and related income)

The economic impact model (IMPLAN) employed used industry sector 11 "cattle ranching and farming" income coefficients to estimate employment and income impacts to assess the economic contribution of state grazing land AUMs to the economy. Based on our survey of lease holder's budgets (Section 5), the disaggregated sector most applicable to the expenditure categories was identified. If the recommended alternatives result in changed budgets, the economic impacts will shift with the expenditure flows.

On a per cow unit, an AUM generates about \$44.95 (\$674.32 per cow unit) using the expenditure patterns of a 400 head cow-calf operation for SE Washington (Table 20). A 300 head cow-calf operation for NC Washington (Table 21) generates about \$37.57 per AUM unit (\$563.59 per cow unit). State grazing lands currently produce approximately 94,528 equivalent AUMs. The total contribution of these AUMs is \$3.9 million (Table 43). It is estimated that DNR grazing lands generate about 130 indirect jobs annually statewide (Table 47).

In assessing the economic impacts of identified program alternatives to trust beneficiaries and the state, we assume 94,528 AUMs is what could be produced, and that if 50% of the lands were sold as in alternative 1; half of this number would be produced or 47,264. Using a proportional share approach to estimate impacts, the total income, and jobs produced under alternative 1 would be reduced by half resulting in \$1.95 million in income, and about 65 jobs (Table 47).

Under Alternative 3 (100% AUM reduction), no red meat production would occur, and all income and jobs associated with red meat production would be foregone.

The number of AUMs produced under alternative 2 (50% fee increase) will depend on the ranchers' elasticity of demand in response to a price change – that is their sensitivity to increased fees in terms of their livestock production. The economic impact assessment in Section 6 suggests that an increased fee of 50% would not significantly affect local income or associated jobs. Following our assumptions for the two ends of the range of possible responses from ranchers currently holding permits or leases on DNR rangeland, if no ranchers stopped leasing impacts would follow the status quo. If, however, 50% of the ranchers stopped leasing, impacts would be comparable to those of alternative 1.

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B.1.7 Property taxes

This analysis assumes that impacts on tax values are primarily reflected in changes in property and carrying capacity. Any increased tax revenues would be received by the counties. Currently, there is some tax revenue associated with AUMs. These positive fiscal impacts need to be included in this analysis.

Under the status quo, there would be no net change in taxable property, thus no change in tax revenue. Revenues associated with the 94,528 AUMs total \$165,424.

If 50% of the lands were sold (alternative 1), half the AUM production would be taxable, totaling \$87,712, and half the acreage would be taxed by counties as property taxes. As noted earlier, lands sold for residential development, when developed, would generate higher property taxes than those currently received. Estimating lands with development potential and the fiscal impacts of that development are beyond the scope of this analysis; accordingly, we are conservative and use the lesser amount.

Under alternative 3 (100% AUM reduction) no red meat production occurs, and there would be no change in property taxes. Total tax loss associated with AUMs is \$165,424.

AUMs produced under alternative 2 (50% fee increase) would determine the amount of tax revenue associated with decreased red meat production, but this amount would likely be negligible; no change in property tax would result under the scenario where no ranchers stopped leasing as a result of fee increase. Where 50% of all ranchers stop leasing the future use of the unleased lands is unpredictable; however, we estimate that impacts would be similar to those under alternative 1.

B.1.8 Red meat production

Given the diversity of its lands and lease/permit conditions, DNR does not attempt to estimate the total number of AUMs provided on its trust lands. For purposes of our analysis, we derived an estimate of about 7,710 head of cattle. As total AUMs were not provided, assumptions were made and an estimate calculated based on the lands' carrying capacity in AUMs. Figures for itemized calculations by lease types are based on DNR's responses to the GAO questions, as follows:

Grazing leases: 520,000 acres for grazing 1,025 leases, or 507 acres per lease, raising revenues of \$457,619 in 2004; each AUM was worth \$7.76 for cattle. This allows the calculation of 8.82 acres per AUM, or 58,972 AUMs.

Range permits: Using a similar approach for 327,000 acres for 48 range permits, or 6,813 acres per permit, yields an estimate of 35,556 AUMs, which would support 7,710 head for one year.

Therefore, the total estimated AUMs under the status quo program is 94,528 AUMs.

In our analysis of the three alternatives, we assume that, under the status quo, 94,528 AUMs could be produced. If, as in alternative 1, 50% of the DNR grazing lands were sold; 47,264 would be produced. Under alternative 3, 100% AUM reduction, no red meat production would

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occur. Under alternative 2 (50% increase in fees), the number of AUMs produced will depend on the ranchers' elasticity of demand in response to the fee increase. Our economic impact assessment suggests that an increased the level of 50% would not significantly affect local income. If no ranchers holding DNR rangeland leases or permits stopped leasing in response to increased fees the impacts would be the same as the status quo; however, if 50% of the ranchers stopped leasing, impacts would align with those of alternative 1. Table 47 summarizes the implications of related impacts for the three policy alternatives.

B.2 Direct Costs and Negative Impacts

B.2.1 Foregone revenues (grazing & AUM)

Under the status quo, there would be no change in revenues, therefore no foregone income; distributions would remain constant.

If, as in alternative 1, 50% of DNR grazing lands were sold, half of this acreage and its lease value would be foregone, as would half of its AUM production. Therefore, half of the current income from these lands would be foregone. This translates to \$290,250 in foregone income to beneficiaries.

Under alternative 3 (100% AUM reduction), no red meat production would occur, there would be no change in lease value, but the loss in revenues associated with these AUMs totals \$580,500 (Table 49). There is a possibility of some gain in land value, however, if other leases and land uses contribute revenues.

Although alternative 2 assumes a 50% fee increase, it is uncertain how ranchers would actually react. Some undetermined reduction in leases would result in some amount of AUM-related value to be foregone. Some change in total revenues would also likely result; thereby affecting income to beneficiaries, however, it is beyond the scope and time available for this analysis to forecast the actual response of ranchers and estimate the impacts of those responses in dollar terms.

B.2.2 Program expenditures (management)

DNR grazing program expenditures have fluctuated over the 1995 to 2004 period; and are not necessarily aligned with fluctuations in revenue. During this period, maximum expenditures were born in FY2000 (\$517,620), while the lowest were in FY1998 (\$293,423); since 2000, expenditures have remained near the decadal average.

As noted earlier in the report, the largest proportion of expenditures was for personnel salaries (Tables 5 and 6). About 85 % of grazing program expenditures can be attributed to salaries, as is typical for most organizations.

One concern of critics of the grazing program is that it involves the management of a relatively large land base, but revenues generated are relatively small. Acreage in the grazing program represents about 29 % of all state trust lands, with 9.2% primarily used for grazing. However, the

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DNR audit conducted in 1996 estimates that these lands generate less than 1.4 % of DNR trust fund allocations (Deloitte & Touché 1996).

As discussed earlier in the report, the grazing program covers its costs by retaining 25% of the revenues generated from leases and permits and depositing it into its Resource Management Cost Account (RMCA). While it appears that DNR expenditures for the program are larger than funds deposited into this account, with additional funds coming from other program areas, it has been previously noted that not all revenues are deposited in the RMCA; thus, making any comparison difficult at best. While some have questioned whether this situation represents the best financial management of the trusts, in particular acting with “undivided loyalty to trust beneficiaries, to the exclusion of all other interests,” the DNR, as noted previously, must balance this duty with other goals represented in the regulations governing the grazing program. Like other multiple use resource management programs, the economic principle of joint production suggests that, as is the case for many resource management agencies, the DNR is providing an array of resource and ecological goods and services in addition to a sole focus on forage and grazing; the benefits discussed above suggest a wide array of these resource values.

In assessing the economic impacts of the status quo and possible alternatives, the costs of staff and likely changes under various alternatives must be tracked. The status quo, presents current costs of \$232,970.

Under alternative 1, DNR staff directly reporting time to the program would not need to be as large. Although, in that the grazing program represents only a portion of the overall responsibilities of DNR land managers and regional staff it is expected that most positions would remain. Management of the remaining 50% of lands not sold could be adequately carried out with 1 FTE reduction to current staff. Resulting expenditures would be \$187,727 (Table 49).

Alternative 3 (100% AUM reduction) no red meat production would occur, and all grazing management positions could be foregone. Our assumption is that other management units could manage the non-grazing lands, which would result in cost reductions for program staff, for a savings of \$232,970.

Staff expenditures under alternative 2 (fee increase) would be similar to those under the status quo. While there might be some reduction in leases, staff will still be required. Additional revenues could potentially help fund increased site monitoring and restoration.

B.2.3 Fencing

Fencing is a significant cost that must be considered should land be sold (alternative 1) or otherwise used for non-grazing purposes (alternatives 1 and 3). As discussed earlier in the report, a significant proportion of state grazing lands are often landlocked within private land-holdings, or interspersed among other state or federal lands. For these lands, fencing is a major issue. More than half of the trust lands historically grazed are open range and would require the state to fence out cattle from neighboring private and public lands if DNR lands were no longer included within the mix of grazing lands in a given area.

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Keeping livestock off lands over which AUMs were being eliminated would present a direct cost to DNR, and indirectly to state taxpayers. Conservative DNR estimates indicate that about 500,000 acres of its grazing lands are open range and that about 25% of the perimeter of these acres would likely need to be fenced. This equates to about 780 miles of new fencing, at a cost of about \$6,500 per mile, or a total of \$5 million. Additionally, DNR would need to buy existing fences from lease holders per leasing agreements, at an estimated cost of about \$5 million. Further, costs for the current year, and maintaining fencing is projected to be approximately \$100,000. Thus, the net benefits of divestiture of these lands or their allocation for non-grazing uses need must include this additional cost of \$10.1 million (Table 43).

Under the status quo, no fencing is required. Thus, no costs would be incurred. If, however, as in alternative 3, grazing were eliminated from these lands, fencing, as described above, would be required, at an estimated cost of \$10.1 million.

Alternative 1 would involve some loss of leases or permits. As adjoining lands may continue open grazing in many cases, some fencing would be required. Using our 50% estimate the cost would be approximately \$5.05 million.

Under alternative 2 (50% fee increase) where 50% of all ranchers stop leasing the use of the unleased lands is unpredictable, however, we estimate impacts would be similar to those under alternative 1. If, however, no ranchers stopped leasing in response to the increased fees, there would be no impacts as under the status quo (Table 43).

B.2.4 Invasive species control

As previously discussed, the control of invasive species is a major problem throughout the western United States. A major concern of critics of the current grazing program is that studies, as reported in an analyses of the issue by the Oregon Natural Desert Association, suggests that sheep and cattle may be a major cause of weed invasions on grazing lands (Belsky and Gelbard 2000). One source of documentation concerning this damage to Washington trust lands can be found in a 1994 Loomis State Forest report. The first assessment of the extent of the invasive species problem in terms of terrestrial weeds on state lands is relatively recent, having been conducted in 1996. However, a full assessment of this issue is beyond the scope of this analysis.

Yet, as long as lands are under state control, its agencies are ultimately responsible for managing and controlling the spread of invasive weed species. While livestock may be a vehicle for spreading weed seeds, so too are the wind, motor vehicles, humans, wild animals, and others. Livestock grazing similarly may facilitate reducing their occurrence and spread.

Current expenditures estimated for weed control are about \$300,000. Lease holders pay approximately \$25,000 in weed assessments. Under alternative 1, costs related to treatment on 50% of these lands would pass to new landowners. Associated costs for control are estimated to be about half that of the total acreage needs for annual treatment (\$1.8 million), or about \$900,000.

If fees and revenues increased (alternative 2), it is estimated that costs similar to current program expenditures would be likely for DNR grazing lands, or \$300,000. If grazing were discontinued

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because of higher fees on 50% of lands under alternative 2, 50% of current lease holders would pay approximately \$12,500 in weed assessments

Under alternative 3 (100% AUM reduction, with no controls of invasive species by lease holders), increased invasive species spread could require some \$2.25 million to be spent for control measures on state grazing lands.

B.2.5 Resource stewardship and management activities

As discussed in earlier in the report, Resource Management Plans (RMPs) have been developed by the DNR to encourage lease holders to improve the stewardship of its lands by promoting restorative and preventative resource-use practices. As a result, DNR has incurred costs, both in terms of providing grazing-related improvements, and through its more routine management activities such as trash and garbage clean-up.

B.2.5.1 Resource improvements

Over the period 1995 through 2004, the DNR has helped to fund and implement resource maintenance, restoration, and improvement projects, with a particular focus on problem “hotspots”. Annualized for the NE and SE regions we find a total of \$63,426 per year. Were half of these lands to be sold (alternative 1) or grazing discontinued because of higher fees (alternative 2), this total would presumably remain the same, but be available for fewer acres. If AUMs were eliminated under alternative 3, it is most likely that these projects would be unnecessary, and their cost would be \$0.

B.2.5.2 Costs of wildfire

As mentioned earlier the degree of variability and the unpredictable nature of wildfire, requires that we limit our discussion below to a qualitative assessment of associated economic costs.

The obvious dangers of wildfire to human safety and property are widely recognized. An alternate view to the benefits of grazing that serve to reduce ladder fuels is that grazing promotes the growth of scrub and woody thickets in ponderosa pine forests that can increase the risk of wildfire spread (Belsky and Blumenthal 1995).

Costs associated with increased fire risk would vary with the extent and severity of fire, and potential replacement costs of harm to property and equipment. Similarly, costs of medical treatment for human injury are unpredictable and the irreplaceable value of human lives is impossible to estimate without specific circumstances.

In addition, severe wildfires can result in grasslands becoming seedbeds for invasive plant species. Thus, increasing costs associated with weed control.

B.2.5.3 Reduced illegal activities, theft and trespassing

Under the status quo, DNR has incurred estimated costs of \$27,345 annually due to illegal activities. A similar cost would be incurred if grazing fees were increased.

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If, as in alternative 1, 50 % of these lands were sold, the total would be \$13,673. If, as in alternative 3, 100% of all AUMs were eliminated, given the lack of care-taking presence, illegal activities and associated impacts would likely be more prevalent with annual projected costs of \$68,364 (Tables 43 and 49).

B.2.5.4 Reduced litter and trash

As discussed in Section B.1.3.3, DNR incurs an estimated annual cost of \$100,000 to reduce trash, under the status quo. A similar cost would be incurred if grazing fees were increased. Were half of these lands sold or grazing discontinued because of higher fees, this total would be \$50,000. If 100% of AUMs were eliminated per alternative 3, these impacts would be more prevalent, given the lack of any care-taking presence. The total costs are projected to be \$1.0 million each year (Table 43).

B.2.5.5 Management costs forgone

An important feature of the DNR's current grazing program are the responsibilities borne by lease holders for the management of livestock on state grazing lands. Costs associated with materials, labor, and other services involved in livestock management belong to lease holders. Given lease holder accountability for ensuring improvements as springs, fencing, and other land management objectives are installed and maintained as a condition for the use of state grazing lands this may be perceived as an advantage of the current grazing program.

In recognition of the various contributions and responsibilities of a lease holder, the current fee formula includes a \$2 per AUM reduction. The reduction in grazing fees, based on the total 94,528-estimated number of AUMs provided under program is \$189,056 (Table 43).

If, as in alternative 1, 50% of state grazing lands were sold associated management activities would transfer with ownership, thus removing responsibility from the DNR. However, the evidence cited earlier suggests that the social costs for other landholders on divestment of these lands would increase significantly. For the 50% of grazing lands remaining in state ownership we estimate a net annual cost of about \$94,528.

Under alternative 2 (50% fee increase), associated management impacts would mirror those of the status quo (for the no rancher response scenario) and alternative 1, if 50% of ranchers stopped leasing, resulting in a 50% reduction in AUMs.

Alternative 3, presents a no grazing scenario, and there be \$0 dollars associated with foregone revenues.

B.3 Indirect Benefits—Positive Social & Economic Impacts

B.3.1 Active recreation and open space (non-market values)

In addition to the value to beneficiaries of direct income, recreation and non-market values are also associated with trust lands. These include active-consumptive values (hunting and fishing),

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active-non-consumptive values (hiking and camping), and passive-use values, such as the value of knowing that a given resource exists for the benefit of future generations.

Hunting is the primary active recreation use of DNR grazing lands. The DNR, however, has no data on the numbers or frequency of use for this activity. An extensive search of the literature, contacts made with other state land departments, as well as WA DNR, indicates that these types of records are not typically kept. Consequently, it is not possible to attain a dollar estimate for this use.

The use of permitted lands for recreation involves a more diverse set of active recreation activities, including snowmobiling, camping, hiking, horseback riding, off-highway-vehicle driving, and fishing, as well as hunting. As above, an extensive search indicates records, which may aid in devising an estimate for these activities, are not regularly kept. Therefore, it is not possible to develop a dollar-value estimate.

Several studies have been conducted on willingness to pay for recreation and related benefits of rangelands, such as open space. In 1996, Deloitte & Touche LLP estimated dollar values of active non-market values using surveys applying the contingent valuation method and the trouble cost-benefit. Estimates of annual active non-market benefits from grazing totaled \$17.8 million, and non-use values were estimated to equal \$6.60 per household per thousand acres, or roughly \$13,200 per acre.

Open space use within a rangeland setting, focus on benefits of that setting, and include social and ecological services. These studies provide some indication of the potential value of the availability of these lands for, in particular, aesthetic, passive-use and active recreation. Rameker (2000) reports a model developed in Colorado that tested for the influence of 36 attributes of open space. The model indicates that an open-space parcel with access to or including a water body increases the value per acre by nearly 70 %; carbon sequestration potential more than doubles the value per acre, while capacity as a working farm/ranch adds nearly \$11,000 to the average price per acre.

Applying a benefits-transfer approach, these results suggest a range from \$11,000 to \$13,000 per acre is a reasonable dollar amount to apply in developing a conservative estimate for DNR's 975,000 acres of grazing lands. In aggregate a total of about \$11 billion.

Applying a hedonic pricing model that differentiated among parks, cemeteries, golf courses, natural areas, and the like in an urban area in Oregon, researchers report a comparable increase in value, an average of \$11,000 per home, based on proximity to a "natural area".

Under the status quo, we estimate the active recreation values at \$17.8 million/yr. If, as in alternative 1, 50% of DNR grazing lands were sold, and responsibilities for them transferred with ownership, these activities would no longer provide benefits for the public, reducing these benefits by half for a total of \$8.9 million.

Alternative 2 (50% fee increase) would have impacts similar to those of the status quo if there were no rancher response to increased fees. Building on alternative 1, which includes the sale of 50% of DNR grazing lands, we assume some increase in recreational use of these lands due to increases in populations and increased promotion. Using results from similar studies, we assume

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a representative 5% increase, which would increase active recreation values by \$.9 million, for a total of \$9.8 million.

Under alternative 3 (100% AUM reduction), no grazing would occur, and based on the assumption of a 10% increase in the recreational use of these lands, the active recreation value would increase by \$1.8 million, for a total of \$19.6 million (Tables 43 and 48).

B.3.2 Passive use (non-market values)

Rangelands are valuable not only for current consumptive and non-consumptive uses, but they are also important for aesthetic values and other economically valued uses. These can include as-yet unidentified goods and services of value to people, as well as important components of natural cycles (West 1993).

While nonmarket benefits have value as indicated by measures of consumer surplus applied through travel-cost models and methods as contingent valuation, their accounting is applied here only in terms of active recreation use values. Passive use non-market valuation studies require significant time and resources, and are outside the scope of this project. Therefore, our assessment is limited to one of a qualitative discussion, and we have not included actual or estimated dollar values in the BCA, or the accounting of direct and financially-based measures used to derive a net benefit estimate for each alternative under consideration. However, a rough estimate of total passive use benefit has been projected to be \$1.3 billion, based on the state's population.

B.3.3 Resource stewardship activities

DNR Resource Management Plans (RMPs) play a key role in improving lease holder's stewardship over its lands by promoting restorative and preventative resource-use practices. The 1984 Washington State Grazing Land Assessment documented that about 30% of the states grazing lands (private and public) were in good or excellent condition. Today, DNR land managers estimate that this situation, which applies to trust lands as well, has improved and that a higher proportion of lands are in this condition class – although they do not venture a proportional estimate. Moreover, they believe that due to DNR efforts, lease holders acting as on-site stewards are using lands in ways that, overall, are improving their condition.

Loomis (2000) reports the results of a study eliciting household willingness to pay for increasing ecosystem services in the South Platte River:

“Land management actions necessary to restore ecosystem services were illustrated on a schematic map of the study area. Along 72 km of the South Platte River, the government would purchase conservation easements on both sides over a 10-year period from willing farmers. Respondents were told that conservation easements would keep the land in private ownership and would be used to pay farmers to manage this land to improve wildlife habitat and water quality. For example, cows would be fenced out of the area along the river banks so vegetation could regrow and the stream banks could be stabilized. This area would be restored to natural vegetation such as grasslands, wetlands, and streamside trees. Some areas would be replanted with native vegetation. The revegetated stream-side would reduce erosion, increase natural water purification by plants, noon water quality and wildlife habitat in and in tat, help preserve native

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fish populations so they would not go extinct, and provide public access to restored natural areas for wildlife viewing, including hiking trails.”

A mean of \$21 per month per household was estimated for increased ecosystem services on this stretch of river.

Under the status quo, there would be no change in the ecological services that DNR grazing lands provide. The use and implementation of RMPs has resulted in a shift of lease holders to ones more willing to comply with the DNR’s rangeland health standards. If, 50% of DNR grazing lands were sold (alternative 1) or a similar percentage of ranchers discontinued leasing due to an increase in fees (alternative 2), there would be a slight to moderate improvement in ecosystem services (Table 48). If AUMs were eliminated under alternative 3, there would presumably be a greater prevalence of these positive services.

In B.3.4 through B.3.8 below some of the actions and activities in which DNR managers and lease holders are involved are detailed for purposes of this BCA.

B.3.4 Restoration and enhancements of land productivity

As mentioned earlier, a specific benefit of the grazing program has been the promotion of management of state rangelands by lease holders more apt to manage their holdings and implement practices to help restore grazing lands from past damage and enhance the productivity. One caveat is that many of these holdings are on semiarid lands that do not recover well, and certainly not quickly, from impacts such as overgrazing. However, in riparian areas, actions leading the way for significant improvement in the ecological integrity of the resource can be taken.

As a result of RMP implementation and efforts to meet rangeland health assessment standards recently adopted by Washington state, it is estimated that roughly 60 (or 5%) lease/permit-holders surrendered their agreements with the DNR to others more willing to make the effort to be good stewards of the land. This is part of an overall trend in DNR management, and efforts to become more efficient and cost-effective in meeting its trust responsibilities of ensuring the long-term viability and ecological health of its trust lands.

In addition, riparian areas and other improvements to these lands implemented by DNR itself have improved their condition. These improvements are summarized for the various alternatives in Table 48.

B.3.5 Riparian area and other rangeland improvements

One program that aided in seeing these restoration efforts through was Jobs for the Environment (JFE) Grant Program. JFE secured funds through cost-share grants in collaboration with the Washington State Conservation Commission, Okanogan Conservation District and other conservation agencies. Depending on the project, the DNR’s contributions for JFE projects typically involved project oversight, supplies, and labor, between 1994 and 1998. Tables 8 and 9 provide detailed listings of various projects accomplished over the study period. Notable projects include Simmons Creek, Kellog Creek, in the Southeast region. The Northeast Region completed

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numerous projects over the period, including Three Creeks, Loomis State Forest, Loup Loup Creek, Omak Creek, as well as the Cecile Permit, Loomis State Forest Riparian Inventory Summary, as well as timber worker projects for stream bank enhancement and vegetation planting to improve riparian area conditions and minimize degraded streams and water quality. Other projects with contributions from various public and private organizations, lease holders/permit holders, and the DNR have been completed in the Northeast Region.

A USDA Forest Service General Technical Report (Mitchell 2000) reports that, efforts like these have been improving conditions on non-federal rangelands across the west in recent decades. Data collected by the 1982 National Resource Inventory (NRI) conducted by the USDA Soil Conservation Service, and from the 1992 NRI, found that the state's rangeland conditions have improved, with those rated as good to excellent having increased from 32% in 1982 to 42% in 1992.

B.3.6 Rangeland conditions and resource monitoring

The ability to document changes in the resource due to both its uses and DNR management activities is critical to the setting of future goals and implementing actions to maximize their effectiveness.

In the Northeast Region, several significant monitoring efforts were initiated over the past decade. Receiving special attention are state forest areas where permit ranges are located, and where management of grazing has warranted attention and the implementation of ecosystem restoration and resource improvement projects.

Through special grant funds, baseline data have been collected in a number of areas, including the Loomis State Forest where baseline data for a Riparian Inventory was collected in 1996. Transect measurements were repeated in 2001 and 2004, with work continuing through 2005. This partnership project inventoried land and stream bank conditions to provide a baseline for regular periodic monitoring of the inventory area. Photo point records reviewed from the 1996, 2001, and 2004 monitoring reports reflect substantial improvements in riparian area environments at several locations.

To reiterate, a substantial proportion of state grazing lands were received in poor condition. Historical assessments of the lands status from time of granting to the present, suggest the probability that at least a portion of these lands would have been less well managed and subsequently the resources they represent would likely be in poorer condition today had they not transferred into the state's trust lands system.

B.3.7 Social stability and traditional land uses

Traditional land uses, in particular, the maintenance of heritage values and traditional ranching lifestyles, can contribute significantly to social stability and the sense of place values vested in those citizens whose lives are grounded in a set of rural customs and culture. DNR records reflect that about 80% of all leases and permits have been held for 10 or more years by the same lease holder/permit holder. Interviews with ranchers suggest that the majority have held leases and permits on these lands for several generations.

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One economic indicator for valuing this use and the impacts related to the loss of state grazing lands, were they to be divested, on ranching operations is that an estimated 25% of these are operations are now marginal. That is, the loss of state leases would significantly adversely affect them, and approximately 5% of these operations would be forced out of business.

B.3.8 Permit value: transformation of permits into forms of perpetual vested property rights appurtenant to private land

This factor is relevant to the extent that loans are based on the possession of a lease or permit. That this is a factor in banking decisions in lending money to ranchers suggests that permits have value that may be accounted for in the valuation of the base ranch.

A second factor is the issue raised by some on the transformation of permits into forms of perpetual vested property rights appurtenant to private land, which can contribute to stability in land-holding and their use for ranching. However, this is only relevant to the extent that loans are based on the possession of a lease or permit. Base ranches with a history of permits used as a factor in lending decisions suggests that permits/leases carry a form of value that is often accounted for in determining the value of the base ranch.

B.4 Indirect Costs – Negative Social and Economic Impacts

B.4.1 Opportunity Costs: Subsidies – Equity/Inequity in sharing of benefits and cost burdens

The current system of preference permitting requires the applicant to own or control a base ranch property. While this type of permit technically expires after 10 years, it is typically awarded to the same family or company for several decades. Under current law, this permit is passed on with the base ranch property when it is inherited, sold, or gifted to another party; and one rancher has noted that larger loans can be obtained based on these additional public-land holdings. Hedonic pricing studies of open space as one conducted in Wyoming found per acre land values were higher due to the proximity of public lands.

Some may view this as creating a form of long-term private ownership over public resources that serves to protect insiders from competition (NWEA 2004). However, as formerly noted, this system also provides for social stability. Further, it has served to shift leases and permits to those more willing to adhere to the requirements of the RMPs and ecosystem standards. The program has generally sought to provide continuity both in the provision of land management services, and in the relationship between state managers and permit holders.

It may be true that current grazing program regulations were created in the 1950's by a committee structured to ensure stockmen had a majority vote (Harris and Hoffman 1963). Yet, the preamble to these regulations makes clear the divided priorities that the DNR must strive to balance. They include ensuring the highest return to beneficiaries under good management, perpetuating natural resources through wise use, protection and development, while providing the best practical and socio-economic “correlation” of state land use with adjacent lands, and

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ensuring stability for the livestock industry in use of state lands through policies and practices that conform to the realities of practical grazing operations (WAC 332-20-010).

The practical realities of politics and the long-standing tradition of this system are such that, until the state legislature deems changes necessary, legally the onus of making the case for something other than the status quo lies with opponents of the current system.

Among the concerns expressed about the grazing program is that some expenditures have been for site restoration or protection projects, which would be unnecessary if grazing operations had not caused resource impacts. One view of funding for such projects is that they are a direct result of poor management practices, and that funding of such represents subsidies to the DNR grazing program. It could also be argued that this is an effective use of resources in accomplishing management objectives for improving resource conditions resulting from over a century of traditional land use practices. Indeed resource inventory data suggest the conditions of these lands are improving. On assessment of the various programs and grant sources, we found that the extenuating circumstances surrounding projects and funding sources contributing to them are more complex than critics likely recognize.

For example, the JFE program, designed to employ displaced natural resource workers in environmental restoration projects between 1994 and 2000, is no longer in existence. It was in reality a public-works program funded by various sources, and was consistent with the multiple use management and joint production philosophy of the DNR. Projects undertaken were make-work projects that sought as much to promote transition in employment of resource workers as to accomplish resource management goals. Funds expended would have been spent somewhere within the agencies involved. Therefore, it is difficult to view these funds as subsidies of the grazing program given that workers and funds that supported them were intended for allocation to such resource programs.

Under the status quo, marginal rangelands may be put to their highest use and the associated opportunity costs of alternative uses foregone are low. If fees were increased (alternative 2), long-standing leaseholders might refuse to pay and the state would be forced to fence these lands. Nonetheless, the forgone revenues indicate some moderate level of cost (Table 50).

Likewise, a moderate level of cost would be incurred under alternative 3 (100% AUM reduction) some increase in improved ecological services might be expected, as under alternative 2 (increased fees).

Under alternative 1 (50% of DNR grazing lands sold) some of these lands could represent significant opportunity costs to the extent that these lands would be put to “higher and better” use. Such uses could include residential or commercial development. However, the long-term ecological and social impacts of development would be mixed, especially in terms of its contributing to the continued urbanization of the West and loss of the ranching lifestyle and customs and culture.

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B.4.2 Damages to land, water, ecosystems

Several studies have documented that livestock cause long-term damage to natural resources, including reduced diversity of vegetation, damage to conifer seedlings and reduced growth in forests, degraded riparian areas, and soil compaction that leads to poor percolation and increased puddling (for a review, see Belsky and Blumenthal 1995).

In reviewing the situation on the DNR's rangelands, the extent and significance of these impacts are mixed, and the situation has been improving in recent decades. In many respects, we find that the DNR has been progressive in its efforts to pursue its long-term objectives of land stewardship and improved rangeland health.

Many of the types of impacts included in Tables 43 and 47 through 50 are difficult to obtain data for, much less to conduct thorough analyses on within the scope and duration of this project. However, to the extent that data is available, we find that ongoing improvements have significantly reduced the negative impacts of grazing uses, and there is little indication that alternatives to the status quo would improve the current situation.

B.4.2.1 Costs of competition

Many studies have been conducted on the interactions in competition for forage between livestock and wildlife. Particular focus here is on multiple use management focusing on big game species, ungulates such as elk and deer, which graze on the same grasses as cattle and sheep.

As Bastian et al. (1991) note,

“... the estimates of benefits suggest optimal economic use of the range resource should occur when managed for multiple use. Loss of social welfare and under-utilization of this renewable resource could occur if the interests of any particular group (e.g., naturalists or livestock producers) were allowed to dictate management of public lands for only single purpose use in this case. In this example, a loss of \$1,902 would occur if only antelope were allowed to graze, and a loss of \$531 would occur if only cattle were allowed to graze... In many instances, the number of big game that are to be maintained in a management area has already been specified. In such cases, this type of modeling approach could be used to determine the number of cattle allowed to graze given the specified number of big game. The model could also be used to evaluate the opportunity costs of this management strategy compared to the optimal strategy suggested by the model.”

A similar comparison of wildlife values and forage values in the Challis, Idaho area found that deer and elk are economically competitive with cattle (Loomis et al. 1999). Inferences drawn from these results relates to the variation in values of livestock forage relative to wildlife. A few combinations of ranch size and allotments have very low values for livestock forage. In these areas, elk and deer values tend to dominate livestock. From an economic efficiency standpoint, wildlife habitat issues should have a major role in determining seasons of use, timing of livestock entry and exit from the range, and optimal stocking levels. For other combinations of ranch size and allotments, livestock grazing values are quite competitive with elk and deer forage values. In these areas, both rancher/livestock needs and wildlife habitat concerns should influence seasons of use, timing of livestock entry and optimal stocking levels.

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B.4.2.2 Riparian impacts

Riparian impacts are suggested to be especially significant in situations where livestock grazing, with the potential of causing riparian vegetation loss, increased streambank damage and erosion, and declines in water quality and fish habitat (see literature reviewed in Hall and Bryant 1995).

A DNR assessment of permit holder lands in its Northeastern Region found that cattle were affecting an average of approximately 8% of streambanks in a period of eight years following improvement work, as indicated by an assessment of streambank condition and degradation due to cattle. The good news is that the amount of unstable streambank was 30% prior to DNR bank stabilization projects.

B.4.2.3 Impacts of overgrazing

One study from the early 1990s reports that, on average, about 29% of newly planted seedlings were lost due to trampling or being browsed down, while 13% survived (Hall et al. 1992). However, these impacts varied by season, with winter survival rates (46% at the high end and summer (9%) at the low. Significantly, control plots had 15% survival rates, due to browsing by wildlife as well as other factors causing mortality.

Recent studies and reviews (e.g., Walker 2002) have confirmed that in situations where livestock are rotated and rest-rotation practices ensure light grazing conditions that perennial grasses can exhibit compensatory growth. However, under conditions of persistent grazing, particularly under extreme conditions, grass growth decreases to the point of mortality, and the spread of thickets of woody plants and their encroachment in semi arid steppe habitats is an extensive and serious problem.

B.4.3 Nuisance impacts of livestock

Instances of livestock wandering onto adjacent private land holdings and causing damage, and livestock on roadways where they can cause traffic accidents, appear to be incidental and occasional. While not an insignificant problem, our assessment indicates that it does not appear to be a major one for the state, which has relatively low numbers of livestock.

For example, a 1997 analysis by The Portland Oregonian, found that over a 10-year period for five western states, an average number of collisions per year with stock from both public and private lands across the region totaled in the thousands, with several deaths associated with these collisions each year (Moskowitz and Romaniello 2002).

Nonetheless, long standing traditions of open range and the right to farm suggest that these occasional incidents are expected and sanctioned by policy and should not be included as a real or significant cost in this analysis.