

RECLAMATION

Managing Water in the West

Proposed Boundary Adjustment Westland Irrigation District, Umatilla Project, Oregon

**Final Environmental Assessment and
Finding of No Significant Impact**



**U.S. Department of the Interior
Bureau of Reclamation
Pacific Northwest Region
Lower Columbia Area Office
Portland, Oregon**

June 2004

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MISSION STATEMENTS

The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian tribes and our commitments to island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

FINDING OF NO SIGNIFICANT IMPACT
Westland Irrigation District Boundary Adjustment
PN-FONSI-04-07

Introduction

The Bureau of Reclamation (Reclamation) has prepared an Environmental Assessment (EA) for adjusting the federally recognized boundaries of the Westland Irrigation District (Westland). This adjustment would include lands that Westland has irrigated in past years under a series of Temporary Water Service Contracts (TWSC) with Reclamation. The lands included in Westland's petition for boundary adjustment are all currently farmed and irrigated.

The requested boundary adjustment would not increase the amount of irrigated land nor the quantity of water available for diversion by Westland. Diversions quantities used in the analysis included Westland's historic live flow and McKay Reservoir storage diversions which included all diversions made under Westland's existing Federal contract.

The lands to be included within the Federal boundaries are lands identified as Category I, II, and III lands. By definition, Category I lands are lands with primary (decreed or permitted) and secondary (McKay Reservoir permit 7400) water rights which are being assessed but which the districts report were inadvertently omitted from the district boundaries. Category II lands are lands outside the district boundaries to which water rights were transferred, pursuant to Oregon law, from lands which were included within the district boundaries. Category III lands are lands which have water delivery contracts with the irrigation district and which lie outside the district boundaries.

Alternatives Considered

Three alternatives were developed and evaluated in the Draft and Final EAs: No Action (as required by the National Environmental Policy Act), Full Boundary Adjustment, and Partial Boundary Adjustment. The Full Boundary Adjustment Alternative provided for the full 10,337.8 acre adjustment requested by Westland while the Partial Adjustment Alternative considered only 1,482.3 acres to be included into the district boundaries.

The Recommended Alternative

Reclamation has selected the Full Boundary Adjustment as the recommended alternative for implementation.

Proposal

Reclamation proposes to adjust the federally recognized boundaries of Westland to include the Category I, II, and III lands. This proposal would adjust Westland boundaries to allow for McKay water service by Westland to an additional 10,337.8 acres; of which only 5,759 acres of Category III lands would be eligible to receive McKay water in any given irrigation season. This action will bring the total amount of land eligible to receive McKay water in Westland to about 17,774 acres; of which only 14,680 acres would actually receive McKay water in any given year. The proposal would adjust the federally recognized boundaries to make them consistent with the State boundaries.

Consultation, Coordination, and Public Involvement

Reclamation found that the proposed action may affect, but was not likely to adversely affect species listed under the Endangered Species Act (ESA). Informal consultations under Section 7 of the ESA have been completed with the U.S. Fish and Wildlife Service (FWS) and the National Oceanic and Atmospheric Administration (NOAA)-Fisheries for the proposed action, and each agency has concurred with Reclamation's determination.

Public scoping meetings, held in November of 1993 and January of 1994, addressed proposed boundary adjustments by all the irrigation districts in the Umatilla Project. Approximately 57 comments were received from the public scoping meetings. The comments received were broken down into various categories: Water Resource Issues, General Issues and Concerns, Fisheries Issues, Land Use Issues, Suggestions for Alternative Analysis and Mitigating Measures, and Other Related Comments. These issues were considered in the analysis sections of the Draft and Final EAs.

Reclamation staff also met with Westland, Oregon Water Resources, Bureau of Indian Affairs, and Confederated Tribes of the Umatilla Indian Reservation (CTUIR) staffs in various individual meetings to discuss the proposed project.

Summary of Significant Review Comments and Reclamations Responses

The significant review comments are summarized below along with Reclamation's responses.

Comment:

What effect does the irrigation of these additional lands have on the West Extension Irrigation District?

Response:

The RiverWare model identified an effect on the West Extension Irrigation District (West Extension) because West Extension's irrigation water is, in part, based on return flows from upstream irrigators. Based on the hydrologic modeling done for the EA, the preferred alternative would reduce flows at Threemile Falls Dam during the irrigation season. This would reduce the amount of water available for diversion at Threemile Falls Dam by West Extension in July, August, and the first half of September by 450 acre-feet. It should be noted that the impacts estimated by the model are smaller than the errors in the actual streamflow measurements used as input of the model. Because Westland will address this concern by obligating 500 acre-feet of McKay water as part of the proposed action for use by West Extension any potential impact to West Extension is alleviated. The 500 acre-feet accounts for conveyance losses from McKay to Threemile Falls Dam. Allocation and distribution of this water will comply with Oregon State Water laws.

Comment:

The proposed mitigation/enhancement allows for water to stay in McKay Reservoir and be available for fisheries. Why isn't this water available to West Extension Irrigation District?

Response:

Based on RiverWare model results, 895 acre-feet of water is being provided as mitigation to instream flow impacts. Westland has also committed to the CTUIR that they will provide an additional 605 acre-feet of water from their McKay allocation as a fishery enhancement measure. Both quantities of water would be released from McKay Reservoir at the request of the fishery managers (CTUIR and Oregon Department of Fish and Wildlife) and would be protected from diversion to the mouth of the Umatilla River.

Comment:

With projected lower flows in September above Westland's diversion dam, the amount of suitable habitat area would be reduced from both a temperature and wetted-area perspective.

Response:

Irrigation releases under the Full Boundary Adjustment alternative would cease in the last week of September, potentially reducing flows above Westland's diversion dam compared to the No Action alternative, under which releases for irrigation continue until early October. Storage releases from McKay for instream flow purposes, however, are already underway by the last week of September. Consequently, releases for irrigation and releases for instream flows overlap by several days which ensures that the cessation of irrigation releases doesn't result in changes to suitable habitat. In 2003, when this overlap occurred, releases from McKay Reservoir rose in the period of overlap from about 80- 130 cfs to around 200 cfs and then fell to around 150 cfs when irrigation releases ceased. The instream flow releases are made in September to augment flows all the way to the mouth of the river.

Comment:

Since fish augmentation water must be released during this period to maintain rearing habitat, this water is unavailable to fish when they need it during passage periods, which causes lower flows during spring and/or fall fish migration.

Response:

The fish augmentation water, to maintain rearing habitat, would not need to be released until after McKay Reservoir releases for Westland end. In the past Westland has foregone use of up to about 6,300 acre-feet of McKay storage water as mitigation under the Temporary Water Service Contracts (TWSC). Because of that mitigation commitment, Westland has not had enough water to irrigate past the middle of September. The fish augmentation water has been used by fisheries managers after Westland had stopped irrigating but before McKay releases were needed to augment flows for fish migration. With Westland providing 1,500 acre-feet of water for instream flow augmentation, 895 acre-feet as mitigation for the boundary adjustment and, as an additional commitment to the CTUIR, 605 acre-feet as a fishery enhancement measure, instead of 6,300 acre-feet, they can continue to divert water into the latter part of September. Consequently, storage releases to augment flows for fish migration will already be underway before Westland stops irrigating, so releases to maintain habitat conditions above Westland's diversion dam wouldn't be needed.

Comment:

Page 8 – Provides that “[c]ategory III are lands that lie outside Westland’s boundaries and consist of 8,855.5 acres of which 5,759 would be irrigated in any given year.” The Draft EA, however, does not provide any discussion of how the BOR intends to monitor this and similar limitations on water use provided in the document, how will the agency assure that these limitations are carried out?

Response:

Since 2001, Reclamation has implemented an effort to identify unauthorized use by implementing a district review process. In implementing this review process, Reclamation has committed to periodic on-site reviews to determine whether the annual use of water is in accordance with existing contract terms. During these reviews, Reclamation staff will travel to the irrigation district office to make an onsite review of a number of items related to the use of project water, including the acres of lands served, water delivery records and water-master records. If it is found that the district is not complying with the contract terms, then Reclamation will advise the district of the actions required to bring them into compliance.

Findings

Based on the environmental analysis presented in the Final EA and the comments received from the Draft EA, Reclamation concludes that implementation of the preferred action and associated environmental commitments would have no significant impact on the quality of the human environment or the natural resources in the affected area. With respect to the most significant issue, impacts to Umatilla River stream flows, the average impacts, as determined by the RiverWare model on an annual basis are about 895 acre-feet. To address that impact Westland will provide 895 acre-feet from McKay Reservoir to augment instream flows for fish. Westland has also committed to the CTUIR that they will provide an additional 605 acre-feet of water from their McKay allocation as a fishery enhancement measure. This water will be managed by both the CTUIR and Oregon Department of Fish and Wildlife for anadromous species.

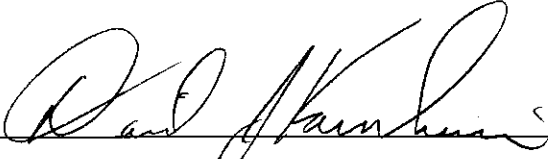
Impacts demonstrated by the Riverware model runs to return flow indicate that during the months of July, August to mid-September, irrigation supplies are reduced by about 450 acre feet. Westland will address this concern by obligating 500 acre-feet of McKay Reservoir water for release during the July through mid-September period to eliminate the impact to return flows. The 500 acre-feet accounts for conveyance losses from McKay to Threemile Falls Dam. Allocation and distribution of this water will comply with Oregon State Water laws.

Proposed Boundary Adjustment, Westland ID EA

This Finding of No Significant Impact has therefore been prepared and submitted to document the environmental review and evaluation accomplished by the Final EA in compliance with the National Environmental Policy Act of 1969, as amended.

The EA is available at (<http://www.usbr.gov/pn/>).

Recommended:

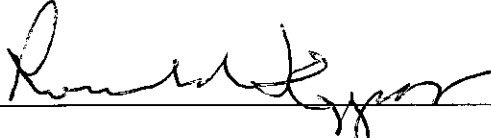


Upper Columbia Area Environmental Manager

JUN 07 2004

Date

Concurred:

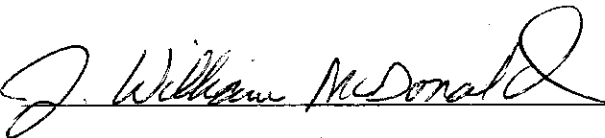


Lower Columbia Office Area Manager

JUN 07 2004

Date

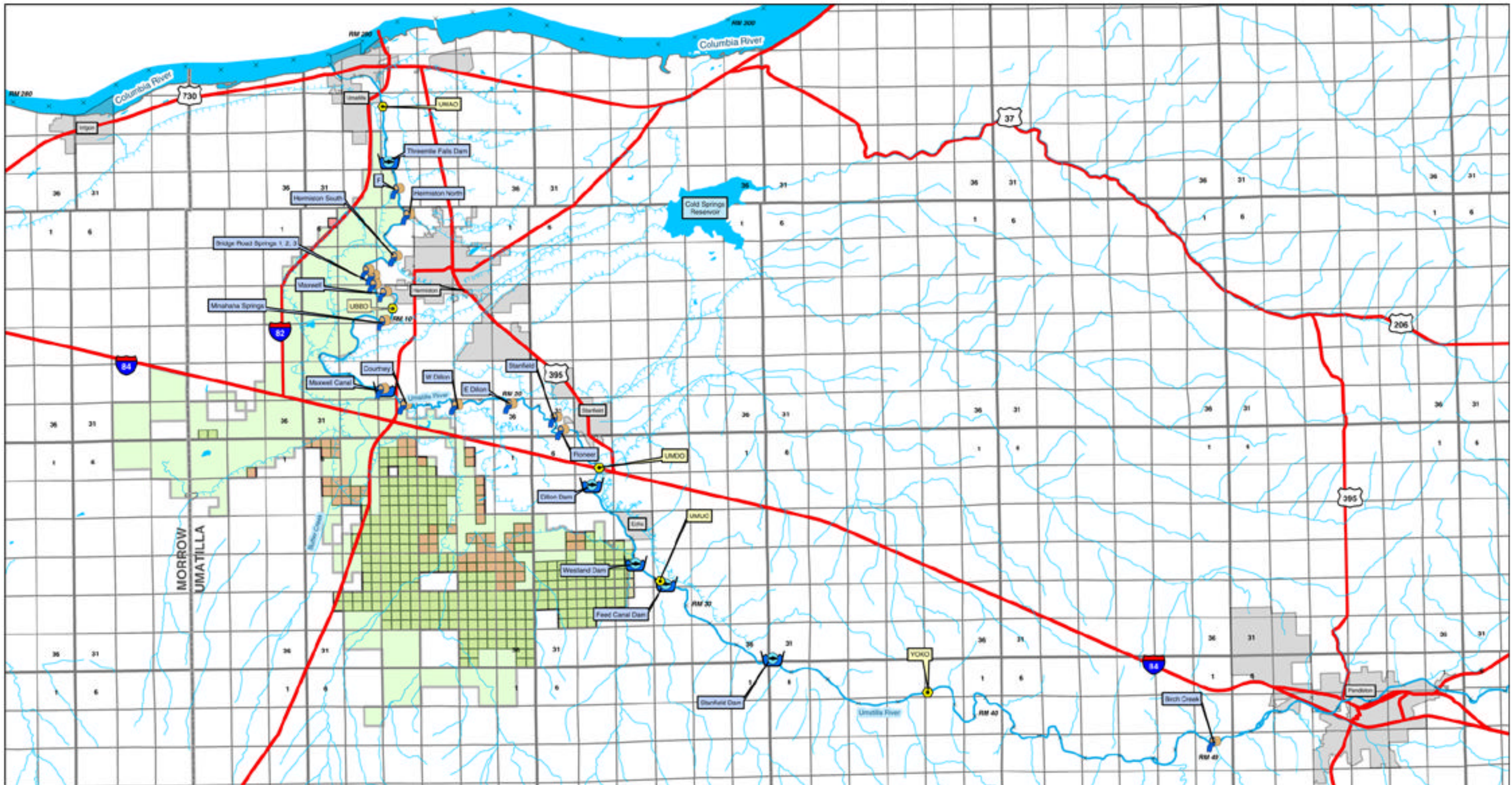
Approved:



Regional Director, Pacific Northwest Region

JUN 07 2004

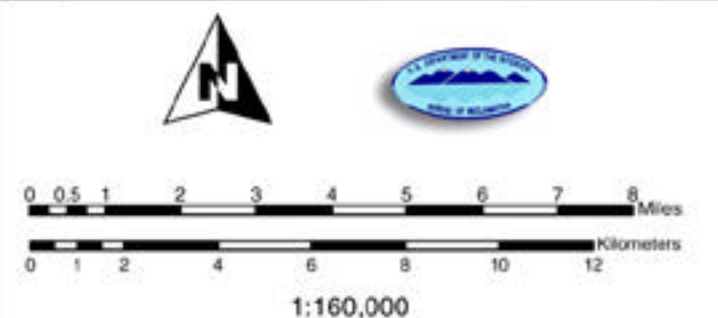
Date



Reference Map



Proposed Boundary Adjustments, Westland Irrigation District, Umatilla Project, OR



- Legend**
- HydroMet Stations
 - ⊗ River Mile Markers
 - ⊗ Water Bodies
 - ⊗ Drains and Inflows
 - ⊗ County Boundaries
 - ⊗ Township and Range
 - ⊗ Fish Ladders
 - Interstates and Highways
 - ⊗ Category I & II Lands
 - ⊗ Divisions
 - Rivers, Streams, Creeks
 - ⊗ Category III Lands
 - ⊗ McKay Dam
 - Canals, Ditches
 - ⊗ Westland Irrigation District
 - Umatilla River



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Acronyms and Abbreviations

APE	Area of potential effect
CADSWES	Center for Advanced Decision Support for Water and Environmental Systems
CEQ	Council on Environmental Quality
cfs	Cubic feet per second
CTUIR	Confederated Tribes of the Umatilla Indian Reservation
EA	Environmental assessment
EIS	Environmental impact statement
EO	Executive order
EPA	Environmental Protection Agency
ESA	Endangered Species Act
ESU	Evolutionary Significant Unit
FCRPS	Federal Columbia River Power System
ID	Irrigation district
ITA	Indian trust assets
Kaf	Thousand acre-feet
MCR	Middle Columbia River
MOA	Memorandum of agreement
MYKO	McKay Creek above McKay Reservoir
NEPA	National Environmental Policy Act of 1967
NHPA	National Historic Preservation Act of 1966
NMFS	National Marine Fisheries Service (now NOAA Fisheries)
NMI	No measurable impact
NOAA	National Oceanic and Atmospheric Administration
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
OB	Out of boundary
ODFW	Oregon Department of Fish and Wildlife
OWQI	Oregon Water Quality Index
PDTO	Umatilla River at Pendleton
Project	Umatilla Basin Project

Proposed Boundary Adjustment, Westland ID EA

Reclamation	Bureau of Reclamation
RM	River mile
SCORP	Statewide Comprehensive Outdoor Recreation Plan
SCS	Soil Conservation Service (now NRCS)
SHPO	State Historic Preservation Officer
TMDL	Total maximum daily load
TWSC	Temporary water service contracts
UMAO	Umatilla River at Umatilla
UMUO	Umatilla River below Feed Diversion
UMDO	Umatilla River below Dillon Diversion
USDA	U.S. Department of Agriculture
FWS	U.S. Fish and Wildlife Service
Westland	Westland Irrigation District
YOKO	Umatilla River at Yoakum

Summary

The Westland Irrigation District (Westland) has requested that the Bureau of Reclamation (Reclamation) adjust its federally recognized irrigation district boundaries. This adjustment would include lands that Westland has irrigated in past years under a series of temporary water service contracts (TWSC) with Reclamation. The lands proposed for inclusion are all currently farmed and irrigated. The requested boundary adjustment would not increase the amount of irrigated land in the basin, nor the water quantity diverted by Westland. Westland is located in north-central Oregon, predominantly in Umatilla County.

Purpose of and Need for Action

Reclamation proposes to respond to Westland's request to adjust its federally recognized boundaries to include up to 10,338 acres of currently irrigated land. This action would eliminate the need for future TWSCs.

Authorization

A standard paragraph of Westland's 1949 Repayment Contract (Contract No. Ilr-1550, dated November 18, 1949) with Reclamation provided that the boundaries of the irrigation district may be modified upon approval of the Secretary of the Interior.

Alternatives

No Action Alternative

The irrigation district boundaries would remain as they are, and Reclamation would not provide federally allocated Umatilla Project (Project) water to lands outside the currently recognized irrigation district boundaries. Temporary water service contracts for Project water deliveries to out-of-boundary lands would no longer be issued.

Partial Adjustment Alternative

Under this alternative, Westland's boundaries would be adjusted to include category I and category II lands, which would increase Westland's size by 1,482.3 acres. Category I lands are lands with primary (decreed or permitted) and secondary (McKay Reservoir certificate 79439) water rights which are being assessed, but which were inadvertently omitted from the district boundaries. Category II lands are lands outside the district boundaries to which water rights were transferred, pursuant to Oregon law, from lands which were included within the district boundaries. The full water supply would be used on the current and adjusted boundaries. To adjust Westland's boundaries under this alternative would require a supplement to their 1949 Amendatory Contract with the United States. Water use would need to comply with the terms of the amended contract and State water law.

Full Adjustment Alternative

Under this alternative, Reclamation would fully implement a district boundary adjustment for category I, II, and III irrigated lands. Category III lands are lands that lie outside Westland's boundaries, and consist of 8,855.5 acres of which 5,759 would be irrigated in any given year. The total adjustment under this alternative would be up to 10,338 acres. To adjust Westland's boundaries under this alternative would require a supplement to their 1949 Amendatory Contract with the United States. Water use would need to comply with the terms of the amended contract and State water law. The alternatives are summarized in table S-1 on the next page.

Summary Comparison of the Environmental Impacts of the Alternatives

For this evaluation, a hydrologic model was developed for the lower Umatilla River. The model was used to estimate the hydrologic impacts of using a portion of Westland's McKay Reservoir storage on lands currently outside of its federally recognized boundary. The estimated flows for the lower Umatilla River, generated by the model, formed the basis for the analysis.

Adjustment of the existing federally recognized boundaries for Westland Irrigation District has been shown by this modeling effort to potentially reduce flows, during certain periods of the year, in the Umatilla River. These impacts are in several locations along the Umatilla River and in McKay Creek below McKay Reservoir:

Upstream of the Westland diversion: Impacts to the Umatilla River are due to differences in the timing and magnitude of storage water releases from McKay Reservoir. These differences reflect the different management scenarios of the modeled alternatives.

Table S-1.—Features of the alternatives

Description (irrigated acreage)	Alternatives			
	No Action	Partial Adjustment	Full Adjustment Irrigated	Total
Current Westland boundary (acres)	7,437	7,437	7,437	7,437.0
Category I		398.4		398.4
Category II		<u>1,083.9</u>		<u>1,083.9</u>
		1,482.3	1,482.3	1,482.3
Category III (total acres) (irrigated acres from storage)			5,759 ^{1/}	8,855.5
Total additional acres		1,482.3	7,241.3	10,337.8
Total irrigated acres from storage	7,437	8,919.3	14,680	
Total Westland acres	7,437	8,919.3		17,774.8
Water use	Not outside current Federal boundary; no temporary water contracts	Full water use on current and adjusted lands	Full water use on current and adjusted lands	
Description of change	Cease issuance of temporary contracts for Project water delivery to out-of-district lands	Would correct past administrative oversights of lands not included that district claimed were transferred and inadvertently omitted	Includes all lands that currently have a temporary water service contract to receive Project water	

^{1/} Of 8,855.5 acres of category III lands, 5,759 acres are to be provided storage water and included in the adjustment in any given year.

The impacts are monthly variations that occur during the irrigation season. Diversions are higher in July and August and lower in June, September, and October for the boundary adjustment alternatives. It is important to note there is no difference in annual diversion volumes; the annual amount of water being diverted is equivalent for all of the modeled alternatives.

Downstream of Dillon diversion: Impacts to the Umatilla River are a result of differences in the timing and magnitude of return flows from Westland. The impacts, estimated by the model, to flows below the Dillon diversion are smaller than the errors in the actual streamflow measurements used as input for the model. Average annual modeled return flow impacts were 895 acre-feet for the Full Adjustment Alternative. However, full mitigation is provided for the impact to reduced return flows.

The model identified an effect on West Extension Irrigation District (West Extension) because West Extension's irrigation water is, in part, based on return flows from upstream irrigators. Based on the hydrologic modeling done for the EA, the preferred alternative would reduce flows at Threemile Falls Dam during the irrigation season. This would reduce the amount of water available for diversion at Threemile Falls Dam by West Extension in July, August, and the first half of September by 450 acre-feet. It should

be noted that the impacts estimated by the model are smaller than the errors in the actual streamflow measurements used as input of the model. Because Westland will address this concern by obligating 500 acre-feet of McKay water as part of the proposed action for use by West Extension, any potential impact to West Extension is alleviated. The 500 acre-feet accounts for conveyance losses from McKay to Threemile Falls Dam. Allocation and distribution of this water will comply with Oregon State Water laws.

Therefore, the analysis of the hydrology has determined that no major impacts would occur from implementation of either the Partial Adjustment or Full Adjustment Alternatives. Because the hydrology impacts are minor, any other resource that depends upon hydrology also would be minor.

Chapter 1

Purpose and Need

The Westland Irrigation District (Westland) has requested that the Bureau of Reclamation (Reclamation) adjust its federally recognized irrigation district boundaries. This adjustment would include lands that Westland has irrigated in past years under a series of temporary water service contracts (TWSC) with Reclamation. This chapter outlines the purpose and need for action, the description of the general area, history and background, the authorization, relationship to other projects in the area, and scoping process and issues. The lands included in Westland's petition for boundary adjustment are all currently farmed and irrigated. The requested boundary adjustment would not increase the amount of irrigated land in the basin, nor the water quantity diverted by Westland.

Purpose of and Need for Action

Reclamation proposes to respond to Westland's 1993 request to adjust its federally recognized boundaries to include up to 10,338 acres of currently irrigated land. The Secretary of the Interior will decide whether to adjust the boundaries to include any or all of these previously irrigated lands. An affirmative decision would allow lands to be added to the Westland boundaries and allow Westland to continue irrigating those lands. This action would eliminate the need for future TWSCs.

General Description of the Area

Westland is located in north-central Oregon, predominantly in Umatilla County. Umatilla County has a semi-arid climate with dry, warm summers and moderately cold winters. This climate supports shrub-steppe plant communities in the undisturbed areas. The topography is gently rolling hills and plateaus. The soil is sandy loam, is generally free from alkali, and has little hardpan. It is well suited to growing alfalfa, asparagus, beans, corn, grass hay, melons, mint, onions, peas, potatoes, winter wheat, and produces excellent pasture. All the lands included in Westland's petition for boundary adjustment, which would be eligible to receive McKay Reservoir storage under the proposed boundary adjustment, are currently irrigated and farmed and have a State water right.

History and Background

Treaty of 1855

In 1855, the United States entered into a treaty with the Cayuse, Umatilla, and Walla Walla Tribes (now the Confederated Tribes of the Umatilla Indian Reservation—CTUIR). In this treaty, the CTUIR ceded title to the United States of 6.4 million acres of land in what is now the States of Oregon and Washington. It is the CTUIR's position that they explicitly reserved certain rights or privileges on the open and unclaimed ceded lands, specifically their fishing, hunting, and gathering rights and privileges, and implicitly reserved sufficient water instream to maintain the treaty-protected fishery. Their position is that these rights have a priority date of time immemorial for the instream flow water right to maintain the fishery.

Umatilla Project—1905 Authorization

The Umatilla Project, authorized in 1905 by the Secretary of the Interior, provides multipurpose benefits to the people of northeastern Oregon by providing for the storage and diversion of water from the Umatilla River for irrigation. The project has provided for agricultural development on 31,000 acres of land; important fish and wildlife habitat, including two national wildlife refuges; recreational opportunities; and provides flood control benefits. Four irrigation districts—Stanfield, Westland, Hermiston, and West Extension—are served by this project.

The four districts entered into separate water service and repayment contracts with the United States to repay a portion of the construction costs for the Federal facilities on the Umatilla Project. The most recent amendatory contracts for the Westland Irrigation District were approved in 1949 and the West Extension Irrigation District in 1954. Westland is a private irrigation district and has fully repaid its obligation to the U.S. for its share of costs associated with the Umatilla Project. The Stanfield and Hermiston Irrigation Districts had their contracts amended in 2003, adjusting their irrigation district boundaries. These contracts specify that only lands within the district boundaries can be irrigated with Federal water through Federal facilities. Incorporated into those contracts is language stating that any proposals to include additional lands or exclude lands already identified in the respective contracts must be approved by the Secretary of the Interior or his/her designee.

Umatilla Basin Project Act—1988 Authorization

In the 1980s, the State of Oregon, the U.S., the CTUIR, Umatilla Project irrigation districts, including Westland, and local officials initiated a collaborative effort to reintroduce extirpated salmon into the Umatilla River. This successful effort culminated with the passage of the historic 1988 Umatilla Basin Project Act (P.L. 100-557).

The Act authorized construction of the Umatilla Basin Project (Project) to restore anadromous fishery resources in the Umatilla basin and continue water service to the districts. The Act authorized construction of new fish ladders and protective screens at major irrigation diversion sites, and provided for construction of water exchange facilities (Phases I and II) to deliver irrigation replacement water from the Columbia River to three of the four irrigation districts that make up the Umatilla Basin Project in exchange for foregone diversions of Umatilla River waters that could be diverted. The only Project irrigation district not involved in the exchange is Westland.

Under the exchanges, Columbia River waters are pumped and delivered for use by three irrigation districts in exchange for allowing natural Umatilla River flows and McKay Reservoir releases (which they are entitled to divert) to remain instream to benefit anadromous fisheries. Up to an estimated annual average of 61,300 acre-feet of irrigation exchange water could be pumped from the Columbia River. An equivalent amount of exchange water could be used to supplement live flows or McKay reservoir releases to benefit the Umatilla River's fishery. The Project is helping to satisfy objectives of the CTUIR to restore salmon and steelhead runs in the Umatilla River to desirable levels.

Operation and Location of Facilities

The Umatilla Project consists of McKay Dam and Reservoir near Pendleton, Oregon (which provides storage capacity to the privately constructed Westland and Stanfield Irrigation Districts), and Cold Springs Reservoir, an offstream storage facility near Hermiston, Oregon. McKay Dam is on McKay Creek, about 6 miles south of Pendleton, Oregon, and about 6 miles above the confluence of McKay Creek with the Umatilla River. Additional Project facilities include the diversion and delivery facilities for the Hermiston and West Extension Irrigation Districts. Other Project facilities include canals, pipelines, and pumping plants built as part of the Umatilla Basin Project to facilitate the water exchanges.

Westland diverts water from the Umatilla River into the Westland Main Canal at the Westland Diversion Dam, located 1 mile south of Echo and 1 mile downstream from Hermiston Irrigation District's Feed Canal Diversion Dam. The Westland Main Canal and Diversion Dam are privately owned and are not Project facilities. Westland also diverts water released from McKay Reservoir at its diversion dam. This federally supplied water is delivered to lands within the current district boundaries, as well as to lands covered by TWSCs discussed below. Currently, Westland diverts about 55,000 acre-feet for delivery to district patrons. Westland also delivers an additional water supply to private ditch companies and individual water right holders.

Lands Authorized for Water Delivery from the Umatilla Project and the Temporary Water Service Contracts

During development of the Umatilla Basin Project Act, it became apparent that some of the Project districts were delivering water outside of their federally recognized district boundaries without proper authorization. In late 1991, Reclamation notified Westland that they could not provide any Federal Project water, through federally constructed facilities, to any lands outside the official federally established district boundaries after the 1992 irrigation season. In 1993, Westland and the CTUIR entered into a memorandum of agreement (MOA) which allowed for the continued irrigation of these lands in exchange for an interim, but higher, instream flow release as mitigation for potential return flow impacts. (On April 29, 2003, a memorandum of agreement was signed between Westland and the CTUIR, which replaced the 1993 MOA.)

Starting in 1995, Reclamation has required Westland to provide data on the amount of project water delivered to out-of-boundary lands and authorized that delivery through TWSCs. In the development of the TWSCs, Westland, the Natural Resources Department of the CTUIR, and Reclamation cooperated to provide temporary water for irrigation of the specified out-of-boundary land while facilitating water delivery for fish flows. All of the lands irrigated by Westland, including the out-of-boundary lands, are classified as irrigable by Reclamation and have a certified water right under Oregon law.

Except for rights temporarily provided by the State of Oregon, the proposed action will not address the issue of past State water rights or create any new rights or obligations.

Authorization

A standard paragraph of Westland's 1949 Repayment Contract (Contract No. Ilr-1550, dated November 18, 1949) with Reclamation provided that the boundaries of the irrigation district may be modified upon approval of the Secretary of the Interior.

Relationship to Other Projects and Activities

A Planning Report-Final Environmental Statement for the Umatilla Basin Project Act was prepared in 1988. It includes the analysis for a large pumping complex on the Columbia River that would supply irrigators within the existing Umatilla Project with exchange water so that flows now diverted from the Umatilla River for irrigation could remain in the river to enhance flows for salmon and steelhead migration, spawning, and rearing.

Various Categorical Exclusion Checklists were prepared for TWSCs between 1995 and 2003. These TWSCs allowed Westland to irrigate those lands outside of the Federal boundaries until National Environmental Policy Act (NEPA) compliance was complete on the boundary adjustment.

Reclamation completed environmental assessments and Findings of No Significant Impacts for the Hermiston and Stanfield Irrigation Districts in April and May 2002, respectively, to allow their district boundaries to be adjusted.

On April 29, 2003, a memorandum of agreement was signed between Westland and the CTUIR which replaced the 1993 MOA. Under the MOA, the CTUIR agreed to support completion of Federal review of Westland's boundary adjustment request.

Scoping Process and Issues

Public scoping meetings on adjusting district boundaries were held in November 1993 and January 1994, which addressed all the districts within the Project. About 57 comments were received at that time. Reclamation staff also recently met with the staffs of the CTUIR and Westland in various individual meetings to discuss the proposal.

These comments addressed the Umatilla Project boundary adjustment in general, not specifically the proposed adjustment for Westland. The comments received were divided into various categories—water resource issues, general issues and concerns, fisheries issues, land use issues, suggestions for alternative analysis and mitigating measures, and other related comments. In the decade since the public scoping process was initiated, many of the concerns have been resolved by other actions of the Umatilla Basin Project. Remaining relevant issues were considered in the analysis sections of this environmental assessment (EA).

Chapter 4 addresses other public involvement information and coordination and consultation among Reclamation, CTUIR, and Westland.

Chapter 2

Alternatives

This chapter discusses the alternatives considered and the alternative considered but eliminated from detailed study, and provides a comparison of the environmental impacts of the alternatives.

Alternatives Considered in Detail

This section describes the alternatives considered in detail, including the No Action Alternative, which the National Environmental Policy Act (NEPA) requires be evaluated, and which is used as a base to compare impacts of the alternatives.

Reclamation proposes under the two action alternatives to adjust the federally recognized boundaries to make them consistent with the State boundaries. Only a portion of the lands potentially to be included in the federally recognized district boundaries would be eligible to receive McKay Reservoir storage water from Westland's allocation.

No Action Alternative

The irrigation district boundaries would remain as they are, and Reclamation would not provide federally allocated Project water to lands outside the currently recognized irrigation district boundaries. Temporary water service contracts for Project water deliveries to out-of-boundary lands would no longer be issued.

Westland's repayment contract would not be modified under this alternative, and all water supplied under the existing contract would have to be applied within the existing federally recognized irrigation district boundaries. Use of federally supplied water from McKay Reservoir would have to comply with the terms of the existing contracts and State water right certificate. Figure 1 shows the No Action Alternative boundaries.

Partial Adjustment Alternative

Under this alternative, Westland's boundaries would be adjusted to include category I and category II lands, which would increase Westland's size by 1,482.3 acres. Category I lands are lands with primary (decreed or permitted) and

secondary (McKay Reservoir certificate 79439) water rights which are being assessed, but which were inadvertently omitted from the district boundaries. Category II lands are lands outside the district boundaries to which water rights were transferred, pursuant to Oregon law, from lands which were included within the district boundaries. The full water supply would be used on the current and adjusted boundaries. To adjust Westland's boundaries under this alternative would require a supplement to their 1949 Amendatory Contract with the United States. Water use would need to comply with the terms of the amended contract and State Water law. Figure 2 shows the Partial Adjustment Alternative boundaries.

Full Adjustment Alternative

Under this alternative, Reclamation would fully implement a district boundary adjustment for category I, II, and III irrigated lands. Category III lands are lands that lie outside Westland's boundaries, and consist of 8,855.5 acres of which 5,759 would be irrigated in any given year. The total adjustment under this alternative would include up to 10,338 acres on which federally supplied water from McKay Reservoir could be used. To adjust Westland's boundaries under this alternative would require a supplement to their 1949 Amendatory Contract with the United States. Water use would need to comply with the terms of the amended contract and State water law. Figure 3 shows the Full Adjustment Alternative boundaries.

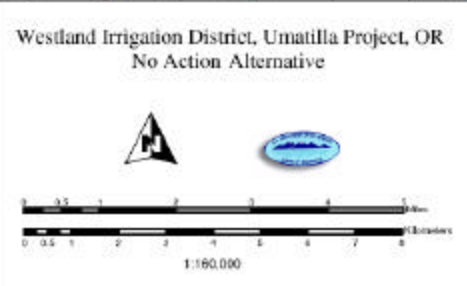
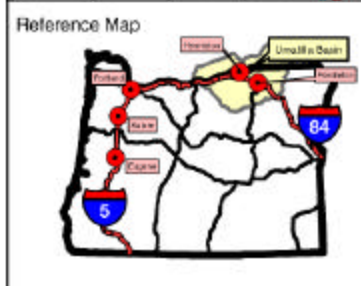
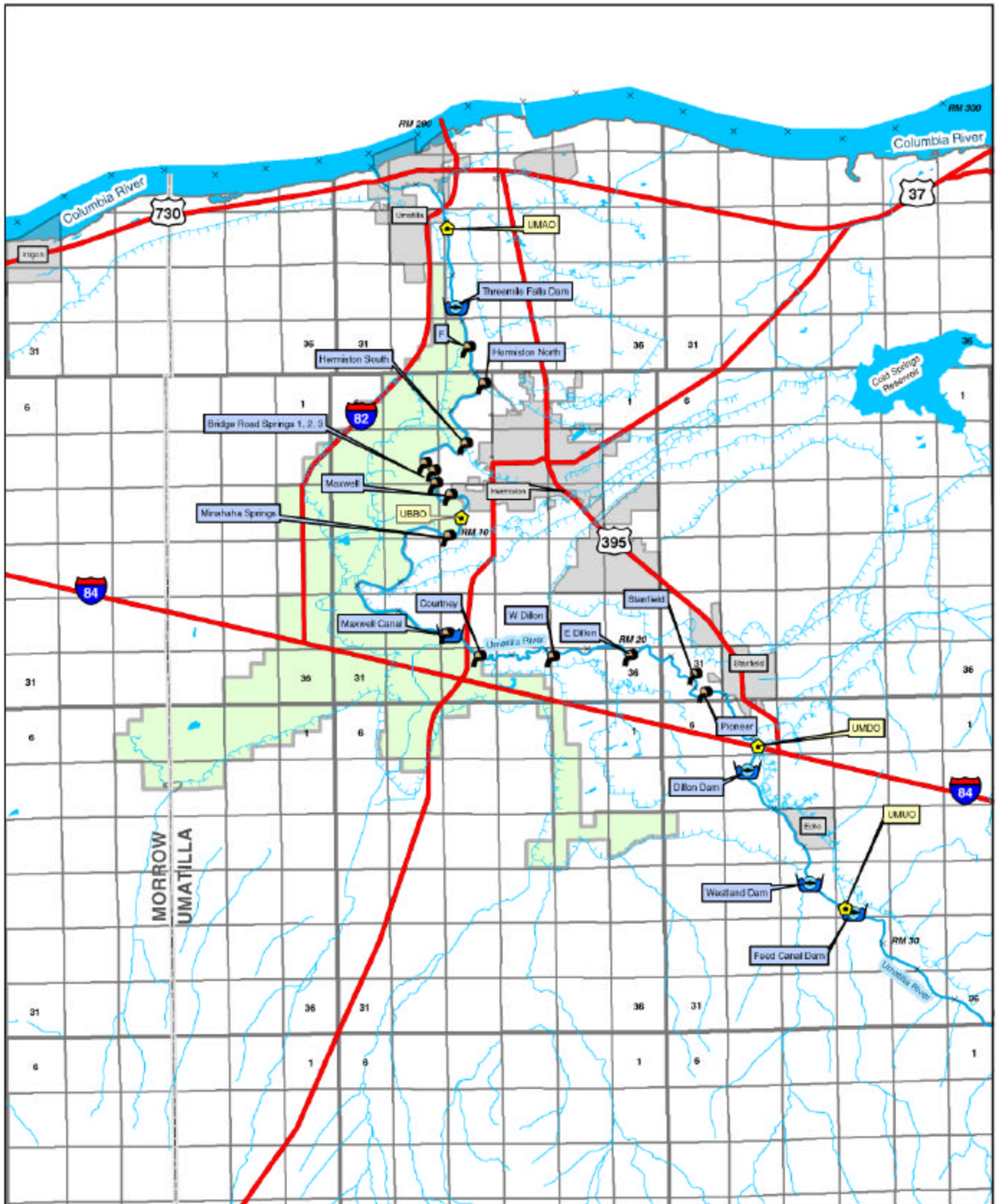
Summary of the Alternatives

The alternatives are summarized in table 1, shown on the next page.

Summary Comparison of the Environmental Impacts of the Alternatives

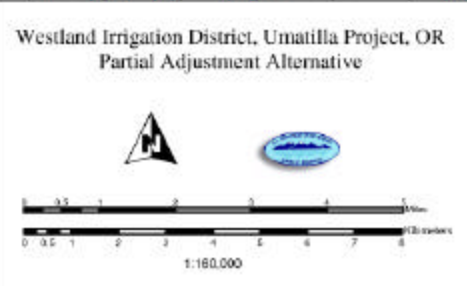
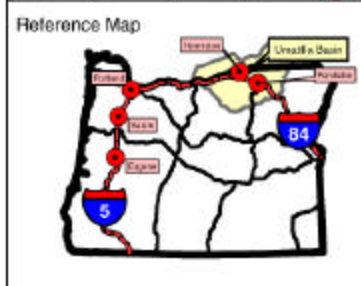
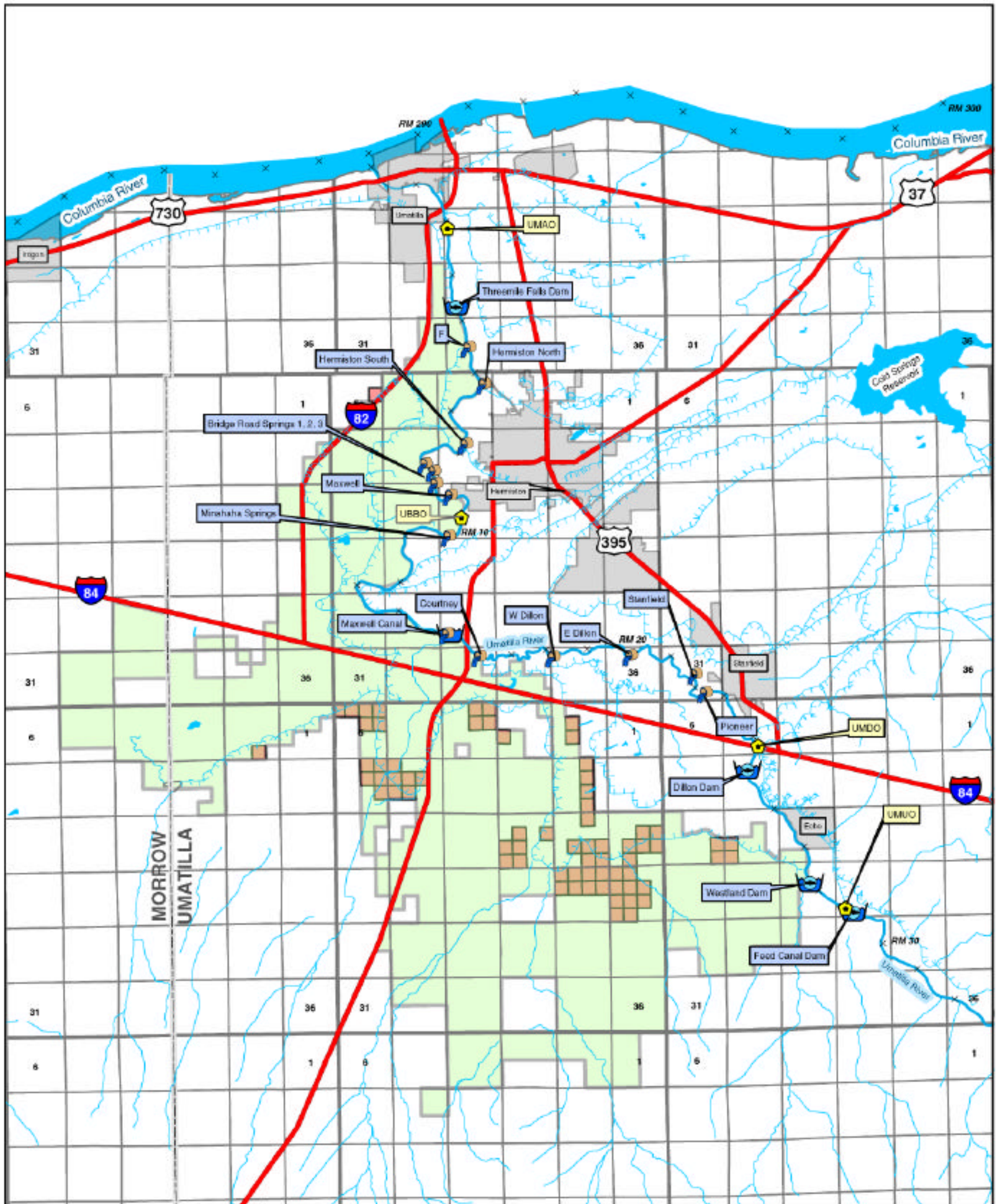
For this evaluation, a hydrologic model was developed for the lower Umatilla River. The model was used to estimate the hydrologic impacts of using a portion of Westland's McKay Reservoir storage on lands currently outside of its federally recognized boundary. The estimated flows for the lower Umatilla River, generated by the model, formed the basis for the analysis.

To assess the differences among the alternatives, the environmental impacts of each alternative are compared against the environmental impacts that would result under the No Action Alternative. The environmental consequences of all the alternatives are described by resource or environmental factor in chapter 3. The terms "environmental consequences" and "environmental impacts" are synonymous in this document.



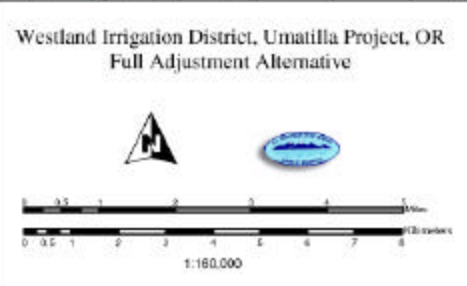
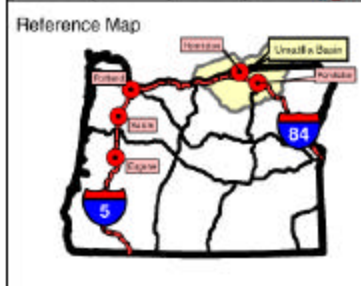
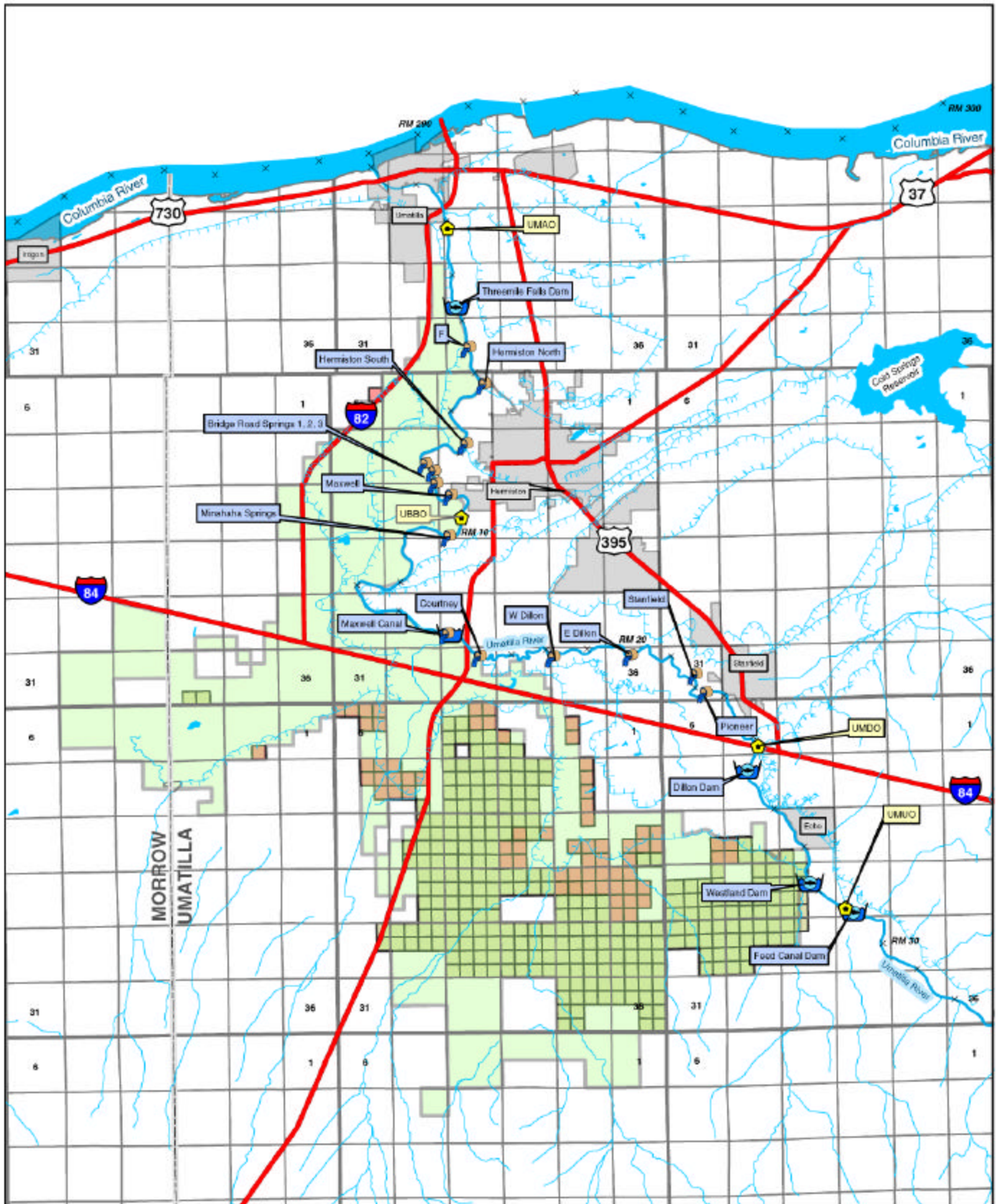
Legend

Hydroelectric Stations	River Mile Markers	Township and Range
Drains and Inflows	Interstates and Highways	Westland Irrigation District
Fish Ladders	County Boundaries	Rivers, Streams, Creeks
Diversions	Canals, Ditches	Umatilla River
McKay Dam	Umatilla River	Water Bodies



Legend

Hydro-Met Stations	River Mile Markers	Township and Range
Drains and Inflows	Interstates and Highways	Westland Irrigation District
Fish Ladders	County Boundaries	Category I & II Lands
Divisions	Rivers, Streams, Creeks	
McKay Dam	Canals, Ditches	
	Umatilla River	
	Water Bodies	



Legend

HydroMet Stations	River Mile Markers	Township and Range
Drains and Inflows	Interstates and Highways	Westland Irrigation District
Fish Ladders	County Boundaries	Category I & II Lands
Divisions	Rivers, Streams, Creeks	Category III Lands
McKay Dam	Canals, Ditches	Umatilla River
	Water Bodies	

Table 1.—Features of the alternatives

Description (irrigated acreage)	Alternatives			
	No Action	Partial Adjustment	Full Adjustment Irrigated	Total
Current Westland boundary (acres)	7,437	7,437	7,437	7,437.0
Category I		398.4		398.4
Category II		1,083.9		1,083.9
		1,482.3	1,482.3	1,482.3
Category III (total acres) (irrigated acres from storage)			5,759 ^{1/}	8,855.5
Total additional acres		1,482.3	7,241.3	10,337.8
Total irrigated acres from storage	7,437	8,919.3	14,680	
Total Westland acres	7,437	8,919.3		17,774.8
Water use	Not outside current Federal boundary; no temporary water contracts	Full water use on current and adjusted lands	Full water use on current and adjusted lands	
Description of change	Cease issuance of temporary contracts for Project water delivery to out-of-district lands	Correct past administrative oversights of lands not included that district claimed were transferred and inadvertently omitted	Includes all lands that currently have a temporary water service contract to receive Project water	

^{1/} Of 8,855.5 acres of category III lands, 5,759 acres are to be provided storage water and included in the adjustment in any given year.

Adjustment of the existing federally recognized boundaries for Westland Irrigation District has been shown by this modeling effort to potentially reduce flows, during certain periods of the year, in the Umatilla River. These impacts are in several locations along the Umatilla River and in McKay Creek below McKay Reservoir:

Upstream of the Westland diversion: Impacts to the Umatilla River are due to differences in the timing and magnitude of storage water releases from McKay Reservoir. These differences reflect the different management scenarios of the modeled alternatives. The impacts are monthly variations that occur during the irrigation season. Diversions are higher in July and August and lower in June, September, and October for the boundary adjustment alternatives. It is important to note there is no difference in annual diversion volumes; the annual amount of water being diverted is equivalent for all of the modeled alternatives.

Downstream of Dillon diversion: Impacts to the Umatilla River are a result of differences in the timing and magnitude of return flows from Westland. The impacts, estimated by the model, to flows below the Dillon diversion are smaller than the errors in the actual streamflow measurements

used as input for the model. Average annual modeled return flow impacts were 895 acre-feet for the Full Adjustment Alternative. However, full mitigation is provided for the impact to reduced return flows.

The model identified an effect on West Extension Irrigation District (West Extension) because West Extension's irrigation water is, in part, based on return flows from upstream irrigators. Based on the hydrologic modeling done for the EA, the preferred alternative would reduce flows at Threemile Falls Dam during the irrigation season. This would reduce the amount of water available for diversion at Threemile Falls Dam by West Extension in July, August and the first half of September by 450 acre-feet. It should be noted that the impacts estimated by the model are smaller than the errors in the actual streamflow measurements used as input of the model. Because Westland will address this concern by obligating 500 acre-feet of McKay water as part of the proposed action for use by West Extension, any potential impact to West Extension is alleviated. The 500 acre-feet accounts for conveyance losses from McKay to Threemile Falls Dam. Allocation and distribution of this water will comply with Oregon State Water laws.

Therefore, the analysis of the hydrology has determined that no major impacts would occur from implementation of either the Partial Adjustment or Full Adjustment Alternatives. Because the hydrology impacts are minor, any other resource that depends upon hydrology also would be minor.

Alternatives Considered but Eliminated from Detailed Study

The alternative to implement the proposed boundary adjustment for only category I irrigated lands (398.4 acres) was considered but eliminated from further study. Westland has indicated they would not accept a boundary adjustment of only Category I lands, partly because it is less than 400 acres. It is not reasonable for Westland to go through a contract modification to include just that small area. They would accept only an adjustment of 1,482.3 acres that includes the entire area of oversight (the Partial Adjustment Alternative) or the Full Adjustment Alternative.

Chapter 3

Affected Environment and Environmental Consequences

This chapter explores the affected environment of resources or environmental factors that may be affected by the alternatives. It also presents the environmental consequences of the alternatives on these resources or environmental factors.

Hydrology

A hydrologic model was developed for the lower Umatilla River using the RiverWare™ modeling framework developed by the Center for Advanced Decision Support for Water and Environmental Systems (CADSWES), University of Colorado, Boulder, Colorado. The resulting model was used to estimate the hydrologic impacts of using a portion of Westland's McKay Reservoir storage (storage) on lands currently outside of its federally recognized boundaries. The model was used to estimate return flows from irrigated acreage and to estimate the magnitude and timing of storage water releases under various alternatives. The No Action Alternative represents the condition in which the federally recognized irrigation boundaries are not adjusted and only lands within the boundaries may receive McKay storage water.

All other alternatives involve the irrigation of a certain number of acres outside of the currently recognized Westland boundaries with McKay storage water. The impacts of these "Action" alternatives were compared to the impacts of the No Action Alternative to estimate a level of impact. The level of impact was measured at different points along the Umatilla River and represents differences in the magnitude and timing of return flows from irrigated acreage and differences in the magnitude and timing of storage water releases and diversions from the river. Surface water diversions from the Umatilla River include storage water from McKay Reservoir and live flow based on live flow water rights. Seasonal differences in diversions result from changes in storage water releases from McKay Reservoir and would affect flows in the Umatilla River upstream of the Westland Diversion and in McKay Creek downstream of the reservoir. Total annual diversions of both live flow and McKay Reservoir storage were equivalent for all of the alternatives and included all diversions made under Westland's existing Federal contract. The majority of return flows in the lower Umatilla

River basin enter the river downstream of the Dillon diversion (UMDO) and upstream of Threemile Falls Dam. Therefore, differences in return flows would cause subsequent effects to flows in the Umatilla River downstream of UMDO. Figure 4 shows the relative location of the major gauging points along the Umatilla River.

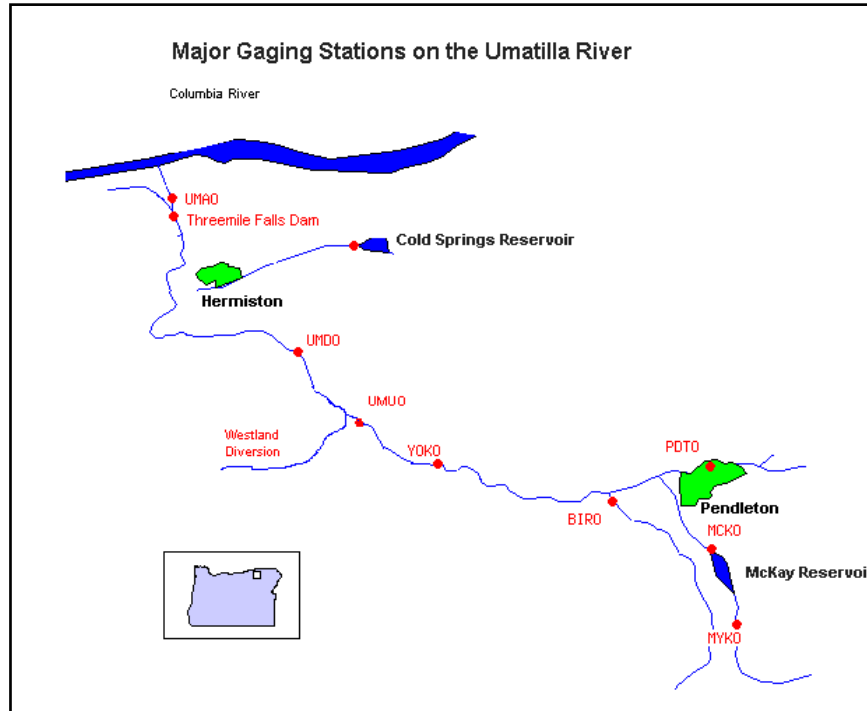


Figure 4.—Major gauging stations on the Umatilla River.

Model Methodology

RiverWare™, a general river basin modeling software tool developed by CADSWES, was used to estimate the hydrologic impacts of adjusting Westland’s boundaries. The model was based on a calibrated historic (1947-1992) model of the Umatilla River. The calibration model was the result of a collaborative effort of a model development team, which consisted of hydrologists from the Bureau of Reclamation’s Pacific Northwest Regional Office and Upper Columbia Area Office, the Confederated Tribes of the Umatilla Indian Reservation, the Principals Group (representing the Westland Irrigation District), and Natural Resources Consulting Engineers, Inc. (NRCE). NRCE functioned on the team in an oversight role for the Bureau of Indian Affairs, Northwest Regional Office. The calibration model used surface water hydrology and an interrelationship with groundwater, by using response functions to route groundwater return flows from irrigated acreage back to the Umatilla River.

The response functions used in the model were derived from an independently developed groundwater model that used the USGS program, *Modflow*. The

calibration model supplied parameters that were used in the alternatives model. These parameters include groundwater response functions, canal seepages, and onfarm efficiencies. The alternatives model includes the major irrigation districts in the lower Umatilla River basin (Stanfield, Hermiston, and Westland Irrigation Districts), the Umatilla River from the Yoakum gauge (YOKO) to the Umatilla gauge (UMAO), and all major diversions between these two gauges.

The model used a monthly time-step and a 55-year period (1947-2002) for the analysis. The period 1994-2002 was examined to determine impacts. This period was chosen because it most accurately represents current conditions and diversion patterns. The period 1994-2002 contains a range of water supply conditions that can be used to review a typical dry, average, or wet year scenario. Table 2 shows combined volume runoff for McKay Creek above McKay Reservoir (MYKO) and for the Umatilla River at the Pendleton gauge (PDTO) for the period January through July. Years with runoff volumes above 454 thousand acre-feet (kaf) were considered as wet years (1995, 1996, 1997), years with runoff volumes between 326 kaf and 454 kaf were considered as average years (1999, 2000, 2002), and years with runoff volumes below 326 kaf were considered as dry years (1994, 1998, 2001). When examining runoff volumes for the years 1947 through 2002, approximately one-third of the years fall into each of the above categories.

Table 2.—Runoff volumes at PDTO+MYKO

Year	January-July volume runoff at PDTO+MYKO (kaf)
1994	265
1995	493
1996	534
1997	558
1998	305
1999	371
2000	387
2001	258
2002	329

Modeled Alternatives

Three alternatives were modeled to analyze the impacts of the proposed Westland boundary adjustment. These alternatives include the No Action Alternative, the Partial Adjustment Alternative, and the Full Adjustment Alternative. The modeled alternatives reflect different management scenarios for Westland; therefore, conditions in all other irrigation districts in the model were held equivalent for all of the alternative runs. In this manner, impacts to the Umatilla River were isolated to varying practices in Westland only. In all three alternatives, the following assumptions apply for Westland:

- Surface water diversions are routed and groundwater pumping is calculated based on acreage amounts, as listed in tables 3, 7, and 8.
- Peak onfarm efficiencies are at 82 percent for surface water applications; peak efficiencies occur in mid-summer. Lower farm efficiencies occur during other months of the irrigation season.
- Onfarm efficiencies for groundwater and conjunctive use applications are at 85 percent year round.
- Westland is divided into three subareas within the model (Westland South, Westland North, and Westland Out-of-Boundary).
- There are six distinct combinations of source-water for the irrigated lands: (1) Flood-storage (flood primary, reservoir storage secondary); (2) Flood-shallow (flood primary, alluvial groundwater secondary); (3) Shallow (alluvial groundwater); (4) Flood-deep (flood primary, basalt groundwater secondary); (5) Deep (basalt groundwater); and (6) Flood (flood water).
- Groundwater pumping rates per acre are the same for all three alternative model runs.
- Parameters that were derived and/or confirmed in the calibration model (i.e., groundwater response functions, canal seepage, onfarm efficiencies, etc.) were used in all three alternative model runs.

No Action Alternative

This is the base condition in which the Federal irrigation district boundaries are not adjusted and only lands within the existing boundaries and with an existing primary water right are eligible to receive McKay Reservoir storage water. The amount of storage water used on out-of-boundary (OB) lands in the Full Adjustment Alternative (approximately 7,300 acre-feet in a full water supply year) would be used on existing eligible in-boundary lands for the No Action Alternative.

Throughout the rest of this document, storage water that was used by OB lands under the Full Adjustment Alternative will be referred to as OB storage water. In this alternative, OB storage water would be used on in-boundary lands to supplement the currently available water supply. Lands eligible to receive OB storage water are listed in table 3. This table lists total acreage amounts in Westland classified by RiverWare subarea and water supply source for the No Action Alternative. These acreage amounts were compiled and derived from water rights data received from the Oregon Water Resources Department (OWRD) and represents the latest data available. Subarea designations represent areas in the model within Westland and water supply source indicates what type

of water source is used to supply irrigation water to the tabulated acreage amounts (i.e. Flood-shallow GW uses flood water as a primary source and shallow groundwater as a secondary source of irrigation water). Lands listed in the flood-storage category are eligible to receive storage water.

Table 3.—No Action Alternative source water categories

Subarea	Water supply source (primary-secondary)					
	Flood-storage (acres)	Flood-shallow GW (acres)	Shallow GW (acres)	Flood-deep GW (acres)	Deep GW (acres)	Flood (acres)
Westland South	4,907.5	126.2	2,158.5	15.7	157.2	0
Westland North	3,150.9	0.0	0.0	0.0	0.0	0
Westland OB	0.0	387.1	537.1	5,903.0	429.1	7,254.1

To determine how to distribute the OB storage water to in-boundary lands for the No Action Alternative, a method was developed to determine the magnitude and timing of water that could be used by in-boundary lands if it became available to them. This method included (1) developing a potential crop mixture to determine potential irrigation requirements, (2) deriving crop consumptive use data for the crop mixture, and (3) developing a method to deliver the OB storage water to attempt to fulfill the potential consumptive use requirements.

1. A crop mixture was assumed using statistics for Umatilla County developed by the USDA National Agriculture Statistical Service for water year 2001. The crop mixture was limited to three different crops common to the area. Table 4 shows the crop mixture that was used to determine potential consumptive use requirements for the No Action Alternative.

Table 4.—Potential crop mixture used in the No Action Alternative

Crop	Percent of total eligible in-boundary acreage (percent)
Alfalfa	68.0
Pasture	16.1
Potatoes	15.9

2. After determining a potential crop mixture, crop evapotranspiration (ET) requirements were calculated using data from Reclamation’s Agrimet program. Crop ET requirements for the three identified crops were calculated using the *1982 Kimberly-Penman method* and data from the Hermiston, Oregon, site. This calculated crop ET data represents the potential or maximum

amount of water a crop could use if it was available. Actual monthly data for years 1994-2002 was used in the model for examined years 1994-2002. Previous years in the model used 1994-2002 monthly averages. Table 5 shows annual crop irrigation requirements for years 1994-2002.

Table 5.—Annual crop irrigation requirements for various crops at Hermiston, Oregon

Year	Annual crop irrigation requirements (inches)			
	Alfalfa	Pasture	Potatoes	Mixed Crop
1994	42.56	33.33	25.84	38.41
1995	39.66	30.50	22.58	35.46
1996	41.13	32.07	24.60	37.04
1997	39.12	30.40	22.60	35.08
1998	37.69	29.24	23.86	34.13
1999	41.19	32.53	23.75	37.02
2000	40.51	32.02	22.39	36.26
2001	39.46	30.84	25.83	35.90
2002	40.84	32.17	28.89	37.54
Average	40.24	31.46	24.48	36.32

3. After potential crop irrigation requirements were calculated, a method was developed to deliver the OB storage water to eligible in-boundary lands to satisfy or attempt to satisfy the monthly calculated crop irrigation requirements. This water was applied to in-boundary lands during the months of June through October for the No Action Alternative. Figure 5 shows average monthly potential crop irrigation requirements and average monthly modeled depletions for in-boundary lands. These depletions represent average monthly depletions for the No Action Alternative for years 1994 through 2002 after the apportionment of the OB storage water.

Partial Adjustment Alternative

This alternative would adjust the Federal irrigation district boundaries to include some additional lands. These additional lands include 398.4 omitted acres (category I lands) and 1,083.9 transferred acres (category II lands). Under this alternative, storage water is used on existing in-boundary lands and the category I and II lands. The same method that was used to distribute OB storage water in the No Action Alternative was used to distribute storage water used by category III lands in the Full Adjustment Alternative onto eligible in-boundary and category I and II lands for the Partial Adjustment Alternative.

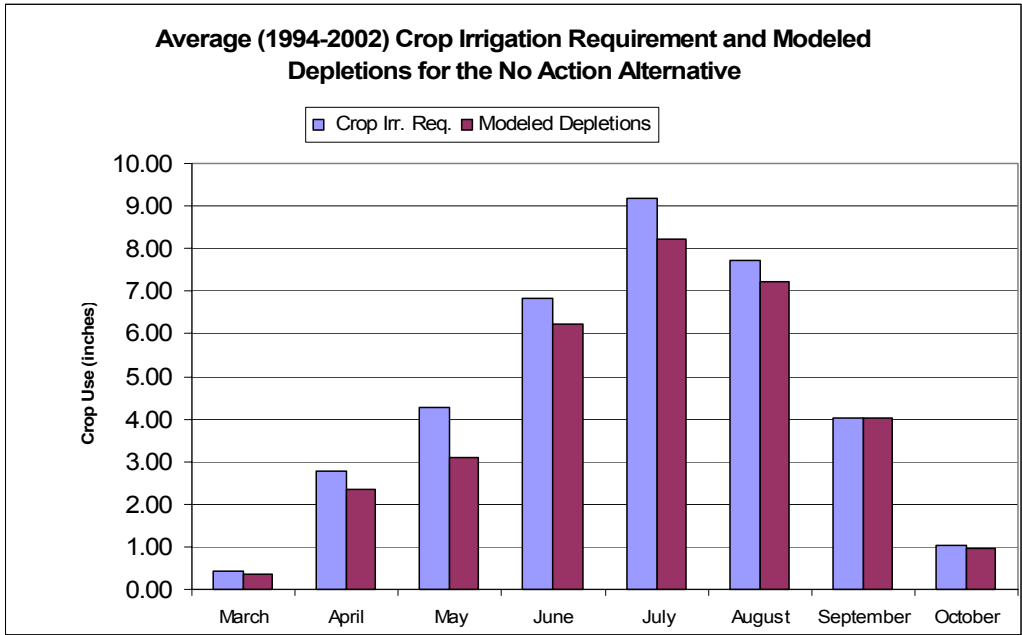


Figure 5.—Average (1994-2002) monthly potential crop irrigation requirements and average monthly modeled depletions for in-boundary lands for the No Action Alternative.

Table 6 lists acreage amounts, in the model, classified by subarea and water supply source for the Partial Adjustment Alternative. Acres in the flood-storage category are eligible to receive storage water.

Table 6.—Partial Adjustment Alternative source water categories

Subarea	Water supply source (primary-secondary)					
	Flood-storage (acres)	Flood-shallow GW (acres)	Shallow GW (acres)	Flood-deep GW (acres)	Deep GW (acres)	Flood (acres)
Westland South	4,813.3	126.2	2,158.5	15.7	157.2	94.2
Westland North	2,623.7	0.0	0.0	0.0	0.0	527.2
Westland OB	1,482.3	387.1	537.1	5,903.0	429.1	5,771.8

Full Adjustment Alternative

This alternative would adjust the Federal irrigation district boundaries to include additional lands that would be eligible to receive storage water. These additional lands include 398.4 omitted acres (category I lands), 1,083.9 transferred acres (category II lands), and 8,855.5 contracted acres (category III lands). Of the

8,855.5 category III lands, 5,759 acres would receive storage water in a given year.

Table 7 lists acreage amounts, in the model, classified by subarea and water supply source for the Full Adjustment Alternative. Acres in the flood-storage category are eligible to receive storage water.

Table 7.—Full Adjustment Alternative source water categories

Subarea	Water supply source (primary-secondary)					
	Flood-storage (acres)	Flood-shallow GW (acres)	Shallow GW (acres)	Flood-deep GW (acres)	Deep GW (acres)	Flood (acres)
Westland South	4,813.3	126.2	2,158.5	15.7	157.2	94.2
Westland North	2,623.7	0.0	0.0	0.0	0.0	527.2
Westland OB	7,241.3	387.1	537.1	3,643.5	429.1	2,272.3

Table 8 lists the acreage and estimated water delivery amounts to out-of-boundary lands in the Full Adjustment Alternative. These values also represent the current conditions or the affected environment.

Table 8.—Full Adjustment Alternative total acres and McKay storage water delivered

Land category	Total acres to receive McKay storage water in an irrigation season	Estimated net delivery of McKay storage water (acre-feet) ^{1/}
Category I	398.4	717 (at 1.8 acre-feet/acre)
Category II	1,083.9	1,951 (at 1.8 acre-feet/acre)
Category III	5,759.0 ^{2/}	4,607 (at 0.8 acre-feet/acre)
Total	7,241.3	7,275

^{1/} These amounts are based on a full water supply year and would be less during a dry year.

^{2/} These acres represent the amount of acreage irrigated in a given year. A total of 8,855.5 category III lands are to be included in the boundary adjustment.

Table 9 shows the differences in acreage amounts between the action alternatives and the No Action Alternative for each source water category and subarea. Differences are shown between the flood-storage and flood categories in Westland North and Westland South. The listed differences in these subareas reflect that 621.4 acres would be receiving supplemental McKay water in the No Action Alternative but only primary surface water in the action alternatives. In Westland OB for the Full Adjustment Alternative, there are 7,241.3 acres in the flood-storage category. In comparison, the No Action Alternative has an additional 2,259.5 acres in the flood-deep GW category—indicating an increase in deep groundwater pumping. These 2,259.5 acres have a deep groundwater pumping right, and it is assumed that these lands would use this right if they no

longer received storage water. There is an additional 4,981.8 acres in the flood category in the No Action Alternative than there is in the Full Adjustment Alternative. This indicates that since these lands have only a surface water right, they would receive only flood water if storage water was unavailable. It is important to note that the total amount of irrigated acreage remains the same for every alternative. In fact, the total amount of acreage that receives primary surface water does not change for any alternative or for any subarea. The only changes are in the supplemental water source.

Table 9.—Differences in acreage amounts in each subarea classified by source water category between the Full and Partial Adjustment Alternatives and the No Action Alternative

Source Water Category (acres)	Full Adjustment			Partial Adjustment		
	Westland South	Westland North	Westland OB	Westland South	Westland North	Westland OB
Flood-storage	-94.2	-527.2	7241.3	-94.2	-527.2	1482.3
Flood-shallow GW	0	0	0	0	0	0
Shallow GW	0	0	0	0	0	0
Flood-deep GW	0	0	-2259.5	0	0	0
Deep GW	0	0	0	0	0	0
Flood	94.2	527.2	-4981.8	94.2	527.2	-1482.3
Total	0	0	0	0	0	0

Affected Environment

In recent years, Westland has been delivering Federal project water to about 7,400 acres within their federally recognized boundaries and to about 7,240 acres of about 10,338 acres outside of their federally recognized boundaries in any given year. Federal project water to Westland comes exclusively from releases of stored water from McKay Reservoir. Since 1995, Reclamation has issued an annual temporary water service contract (TWSC) to Westland, authorizing delivery of Federal water to out-of-boundary lands. As an interim mitigation measure for the annual TWSCs, Westland has dedicated a portion of its McKay Reservoir water for Umatilla River instream flows.

The Westland Diversion Dam diverts live river flows and supplemental McKay Reservoir water releases from the Umatilla River at river mile (RM) 28 into Westland’s canal system. The dam structure and canals are owned and maintained by Westland as private facilities. In 1991, a new fish ladder, at the dam, and canal fish screens were constructed. Bonneville Power Administration owns the fish protection and passage facilities, and it contracts the operations and maintenance of the fish screens and fish ladder through Westland.

Westland has a mixture of both private and Federal water rights. They hold a supplementary water storage contract in McKay Reservoir (Federal water) for 30 percent of its annual storage. This amount is based on a full reservoir. Westland has also typically received 10 percent of the reserved and 30 percent of the residual storage space in McKay Reservoir. Over the years, Westland has been granted private live flow water rights in cubic feet per second (cfs) from the Umatilla River, including in 1903 (33.5 cfs), 1907 (53.2 cfs), 1961 (35.72 cfs), 1976 (2.4 cfs), and 1981 (2.25 cfs) rights.

McKay Dam and Reservoir are located on McKay Creek, about 6 miles south of Pendleton, Oregon. McKay Dam is an earthfill structure, 165 feet high, constructed by Reclamation from 1923 to 1927. There are no fish passage facilities at McKay Dam. In 1992, a sedimentation survey estimated the total active reservoir capacity at 71,534 acre-feet. The original design active capacity at construction was 73,800 acre-feet. The current water storage capacity of the reservoir is about 65,534 acre-feet, which factors in 6,000 acre-feet held exclusively for flood control space. The average annual discharge (acre-feet) of McKay Creek above McKay Dam is about 71,000 acre-feet (Reclamation, 2000).

Environmental Consequences

The modeled results of the Partial Adjustment and Full Adjustment Alternatives were compared to the modeled results of the No Action Alternative to estimate magnitude and timing of any impacts to the Umatilla River and to McKay Creek. Impacts to the Umatilla River were realized in several locations.

Upstream of the Westland diversion: Impacts are due to differences in the timing and magnitude of storage water releases from McKay Reservoir. These differences reflect the different management scenarios of the modeled alternatives.

Downstream of Dillon diversion: Impacts are a result of differences in the timing and magnitude of return flows from Westland.

It is important to note that the projected downstream and upstream impacts are generated by a single action, boundary adjustment, and are not independent effects of separate actions.

Impacts Upstream of Westland Diversion

Impacts to the Umatilla River upstream of the Westland Diversion, as a result of boundary adjustment, are due to the differences in the magnitude and timing of storage water releases from McKay Reservoir. Table 10 shows the modeled average monthly differences in diversions (1994-2002) at Westland Diversion for the two boundary adjustment alternatives, when compared to the No Action

Alternative. Differences in diversions are realized upstream of the Westland Diversion in the Umatilla River and in McKay Creek. Diversions are higher in July and August and lower in June, September, and October for the boundary adjustment alternatives. Note the zero annual difference in diversion volumes; the annual amount of water being diverted is equivalent for all of the modeled alternatives.

Table 10.—Modeled average monthly (1994-2002) flow and volume diversion differences between the two boundary adjustment alternatives, when compared to the No Action Alternative, at the Westland Diversion

Average of all years	Partial Adjustment Alternative		Full Adjustment Alternative	
	Flow difference (average daily) (cfs)	Volume difference (acre-feet)	Flow difference (average daily) (cfs)	Volume difference (acre-feet)
January	0.0	0	0.0	0
February	0.0	0	0.0	0
March	0.0	0	0.0	0
April	0.0	0	0.0	0
May	0.0	0	0.0	0
June	-5.8	-343	-14.0	-835
July	3.7	226	15.4	946
August	7.9	484	18.8	1,155
September	-3.4	-202	-12.9	-769
October	-2.7	-165	-8.1	-497
November	0.0	0	0.0	0
December	0.0	0	0.0	0
Annual		0		0

Impacts Downstream of the Dillon Diversion

Impacts to the Umatilla River, downstream of the Dillon Diversion, are due to differences in return flows from Westland. The differences in return flows are caused by differences in diversions, differences in groundwater response timing in the different model subareas, additional deep-groundwater pumping in the No Action Alternative model run, and differences in monthly onfarm efficiencies. Table 11 shows the modeled average monthly differences in return flows (1994-2002) from Westland, as measured in the Umatilla River upstream of the West Extension diversion for the two boundary adjustment alternatives, when compared to the No Action Alternative.

The model identified an effect on West Extension because much of West Extension’s irrigation water is, in part, based on return flows from upstream irrigators. Based on the hydrologic modeling done for the EA, the preferred alternative would reduce flows at Threemile Falls Dam during the irrigation season. This would reduce the amount of water available for diversion at

Threemile Falls Dam by West Extension in July, August, and the first half of September by 450 acre-feet. It should be noted that the impacts estimated by the model are smaller than the errors in the actual streamflow measurements used as input of the model. Because Westland will address this concern by obligating 500 acre-feet of McKay water as part of the proposed action for use by West Extension, any potential impact to West Extension is alleviated. The 500 acre-feet accounts for conveyance losses from McKay to Threemile Falls Dam. Allocation and distribution of this water will comply with Oregon State Water laws.

Table 11.—Modeled average monthly (1994-2002) flow and volume return flow differences between the two adjustment alternatives, when compared to the No Action Alternative, as measured in the Umatilla River upstream of the West Extension Diversion

Average of all years	Partial Adjustment Alternative		Full Adjustment Alternative	
	Flow difference (average daily) (cfs)	Volume difference (acre-feet)	Flow difference (average daily) (cfs)	Volume difference (acre-feet)
January	0.1	8	-0.4	-27
February	0.2	10	-0.3	-18
March	0.1	6	-0.5	-30
April	0.2	11	-0.5	-29
May	0.1	8	-0.5	-29
June	0.2	12	-0.4	-25
July	-0.9	-56	-3.1	-190
August	-0.8	-46	-3.1	-191
September	-0.8	-47	-2.3	-137
October	-0.8	-51	-1.7	-106
November	-0.4	-22	-1.3	-74
December	0.0	1	-0.6	-39
Annual		-165		-895

Modeled Flows at Various Locations along the Umatilla River

Modeled impacts to the Umatilla River and McKay Creek were examined for years 1994 through 2002. The actual historical flows (1994-2002) at Umatilla River at Yoakum (YOKO), Umatilla River below Feed Diversion (UMUO), Umatilla River below Dillon Diversion (UMDO), Umatilla River at Umatilla (UMAO), and McKay Creek below McKay Reservoir (MCKO) adjusted to include minimum flows below McKay Reservoir, reflect operations that include deliveries to OB lands under TWSCs. This “current” operation includes conditions that would be similar to those that would occur under full adjustment. Therefore, these historic flows will be used to estimate the flows that would occur under the Full Adjustment Alternative. The period 1994-2002 contains a range of water supply conditions that can be used to review a typical dry, average, or wet

year scenario. The years 1995, 1996, and 1997 were wet years; 1999, 2000, 2002 were average years; and 1994, 1998, and 2001 were dry years. Years of a similar category were averaged together to obtain mean monthly flows for wet, average, and dry years. To estimate the flows at these points along the river for the No Action Alternative, subtract the “modeled full impact” from the historic flows. To estimate the flows at these points along the river for Partial Adjustment Alternative, add the “modeled partial impact” to the No Action flows.

YOKO (Umatilla River at Yoakum)

Flows at YOKO, which is upstream of the Westland Diversion, are shown in table 12 for all three alternatives and for wet, average, and dry years. Table 13 shows mean volume differences between the alternatives. The differences in flows at YOKO are due to the differences in the magnitude and timing of McKay storage water releases for the three alternatives. This explanation of flows at YOKO is true for any point on the Umatilla River from McKay Creek to the Westland Diversion and for McKay Creek downstream of McKay Reservoir.

Table 12.—Mean flows at YOKO for wet, average, and dry years for the No Action, Partial Adjustment, and Full Adjustment Alternatives

Month	YOKO, Umatilla River at Yoakum (RM38), average daily flows (cfs)								
	Wet years			Average years			Dry years		
	NA	Partial	Full	NA	Partial	Full	NA	Partial	Full
January	1,361.7	1,361.7	1,361.7	744.2	744.2	744.2	619.6	619.6	619.6
February	2,513.4	2,513.4	2,513.4	834.4	834.4	834.4	433.5	433.5	433.5
March	1,977.0	1,977.0	1,977.0	1,415.7	1,415.7	1,415.7	1,095.3	1,095.3	1,095.3
April	1,843.3	1,843.3	1,843.3	1,625.4	1,625.4	1,625.4	1,044.6	1,044.6	1,044.6
May	1,558.0	1,558.0	1,558.0	801.1	801.1	801.1	870.0	870.0	870.0
June	458.1	449.4	435.2	476.4	467.8	453.5	434.1	432.2	433.1
July	280.8	284.1	295.8	253.5	259.9	276.3	256.3	258.9	269.9
August	245.3	256.6	272.7	201.5	210.1	225.7	208.7	215.0	219.7
September	210.3	208.5	202.6	185.0	180.4	167.5	179.8	174.8	161.9
October	237.1	232.6	224.2	226.2	224.0	218.4	201.5	199.3	195.2
November	445.4	445.4	445.4	240.1	240.1	240.1	347.6	347.6	347.6
December	902.6	902.6	902.6	345.7	345.7	345.7	765.9	765.9	765.9
Annual difference (acre-feet)		0	0		0	0		0	0

Table 13.—Mean volume differences at YOKO for wet, average, and dry years for the Partial Adjustment and Full Adjustment Alternatives when compared to the No Action Alternative

Month	YOKO, Umatilla River at Yoakum (RM38), volume differences (acre-feet)							
	Wet years		Average years			Dry years		
	Partial	Full	Partial	Full	Partial	Full	Partial	Full
January	0	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0	0
March	0	0	0	0	0	0	0	0
April	0	0	0	0	0	0	0	0
May	0	0	0	0	0	0	0	0
June	-521	-1,364	-521	-1,366	-109	-54		
July	205	921	205	1,401	156	833		
August	696	1,686	696	1,488	388	675		
September	-104	-453	-104	-1,042	-300	-1,070		
October	-276	-790	-276	-481	-135	-384		
November	0	0	0	0	0	0		
December	0	0	0	0	0	0		
Annual difference (acre-feet)	0	0	0	0	0	0	0	0

UMUO (Umatilla River downstream of Feed Diversion)

Estimated flows at UMUO, which is upstream of the Westland Diversion and downstream of the Feed Diversion, are shown in table 14 for all three alternatives and for wet, average, and dry years. Table 15 shows mean volume differences between the alternatives. The differences in flows at UMUO are due to differences in the magnitude and timing of McKay storage water releases between the three alternatives.