

**Willamette River Basin Water Optimization Study
Oregon**

**Willamette River Basin
DAM SITE REVIEW**

**Oregon Water Resources Department
and
Bureau of Reclamation
February 1991**

Introduction

The various public involvement activities being conducted by the Oregon Water Resources Department in the Willamette River basin resulted in input from the public on numerous water and related land problems and needs. Potential solutions to solve (1) minimum streamflows for fish and water quality, (2) reduce stream pollution from point and non-point sources, and (3) more efficiently use existing water supplies will involve reallocation of water supplies, expansion of existing supplies, and development of potential surface and ground-water supplies. Improved conservation practices and nonstructural solutions are being emphasized as a means to solve the problems and meet the needs. However, it has become apparent that structural solutions will also have to be considered, especially for problem areas located west of the Willamette River.

This dam site review provides information on existing facilities and potential dam and reservoir sites within the Willamette River basin. Due to the large number of existing and potential storage sites identified through the inventory, it was decided to limit the report to those sites with an active storage capacity of 10,000 acre-feet or greater (one exception was included because it is part of a two dam system). The reporting effort culminated in development of a map that shows the location of existing dams and reservoirs and previously identified potential dam sites (see map).

Literature Search

Available reference materials were searched for information that could provide either the required data or sources referring to dam and reservoir information. Reference sources included files of the U.S. Army Corps of Engineers, North Pacific Division and Portland District Offices; Oregon Water Resources Department; City of Eugene; City of Portland; irrigation and other water project operation offices within the Willamette River basin; Bureau of Reclamation offices, Public Library (Denver, Colorado); and other sources. The search included correspondence files, brochures, reports, and other publications. Telephone calls were made to the various entities to obtain information not available from other sources.

Existing Storage Facilities

The Corps of Engineers has constructed an extensive storage system in the basin consisting of 13 major and 3 reregulating dams and reservoirs. The Bureau of Reclamation has constructed a storage reservoir on a tributary of the Tualatin River. The city of Eugene and Portland Gas and Electric Company have each constructed a storage facility in the basin.

Data on a total of 16 existing storage facilities are summarized in Table A; this includes a reregulating dam with a storage capacity of less than 10,000 acre-feet. Reregulating dams are usually located just downstream from a larger storage reservoir and help regulate and control discharges.

Storage allocations are summarized in Table B. The major allocation is for irrigation and most of this remains uncontracted.

**Table A.--Willamette River Basin Existing Storage Facilities
(Larger than 10,000 acre-feet)**

Map Site	Name	Owner ¹	Stream	Location ² Sec Tn Rn RM	Storage Capacity ³ (acre-feet)	Active Capacity ⁴ (acre-feet)	Uses ⁵ prim/sec	Basin drainage area (square miles)	Hist Daily Runoff min max avg (cubic feet per second)	Hydropower (nameplate rating in megawatts)	Authorizing Legislation Date	Completion of Construction
101	Detroit	USCE	North Fork Santiam River	7 10S 5E 60.9	455,000	340,000	FPNI/WQR	438	1146 3387 2185	100	PL-75-761	1953
102	Big Cliff	USCE	North Fork Santiam River	35 9S 4E 58.1	6,000	3,000	P/R	(*)	(*)	18	PL-80-858	1953
103	Green Peter	USCE	Middle Fork Santiam River	10 13S 2E 5.5	428,000	333,000	FPNI/WQR	227	92 2622 1621	80	PL-81-516	1967
104	Foster	USCE	South Fork Santiam River	27 13S 1E 37.7	61,000	34,000	FPNI/WQR	(*)	1261 4131 2605	20	PL-86-645	1968
105	Lookout Point	USCE	Middle Fork Willamette River	13 19S 1W 21.3	456,000	349,000	FPNI/WQR	991	1308 4685 2966	120	PL-75-761	1952
106	Dexter	USCE	Middle Fork Willamette River	15 19S 1W 18.0	28,000	5,000	FPNI/R	5*	(*)	15	PL-81-516	1954
107	Fall Creek	USCE	Fall Creek	1 19S 1W 7.2	125,000	115,000	FPNI/WQR	184	292 926 562	10	PL-81-516	1965
108	Scoggins	USBR	Scoggins Creek	20 1S 4W 4.8	59,000	53,000	FIRQM	39	56 1500 110	None	PL-89-596	1975
109	Hills Creek	USCE	Middle Fork Willamette River	35 21S 3E 47.8	356,000	249,000	FPNI/WQR	390	467 1863 1115	30	PL-81-516	1962
110	Dorena	USCE	Row River	32 20S 2W 7.5	78,000	71,000	FIN/WQR	265	292 1239 722	None	PL-75-761	1949
111	Cottage Grove	USCE	Coast Fork Willamette River	2 21S 3W 29.7	33,000	30,000	F/WR	104	80 478 265	None	PL-75-761	1942

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112	Cougar	USCE	South Fork McKenzie River	31 16S 5E 4.4	219,000	165,000	FPNI/WQR	208	387 1300 798	25	PL-81-516	1950
113	Blue River	USCE	Blue River	16 16S 4E 1.8	90,000	85,000	FNI/WQR	88	186 750 448	None	PL-81-516	1950
114	Fern Ridge	USCE	Long Tom River	4 17S 5W 25.6	117,000	110,000	FIN/WQR	252	67 1009 516	None	PL-75-761	1938
115	Smith-Carmen	EUG	Smith River	36 14S 6E 2.1	16,000	10,000	FP/WQR	30	5 5160 90	80	FPC L#246	1960
116	Timothy Lake	PGE	Clackamas River	26 5S 8E 13.0	62,000	62,000	P/WQR	54	31 325 103	25	FPC L#135	1952

¹EUG=City of Eugene, PGE=Portland Gas and Electric Co., USBR=Bureau of Reclamation, USCE=Corps of Engineers

²Sec, Tn, Rn=Section, Township, and Range of Willamette Meridian; RM=River mile upstream starting at mouth

³Total storage at normal maximum operating pool; does not include surcharge

⁴Amount of storage available between normal maximum pool elevation and normal minimum pool elevation

⁵prim=Primary operating purposes based on authorization, sec=secondary operating purposes that are accommodated to the extent possible; F=Flood Control, I=Irrigation, M=Municipal and Industrial, N=Navigation, Q=Water quality, P=Power, R=Recreation, W=Fish and Wildlife

⁶Reregulating dam immediately downstream from storage facility

Table B.--Willamette River Basin Storage Allocations by Subbasin (Existing facilities larger than 10,000 acre-feet)									
Owner ¹	Facility	Irrigation Allocated Contracted (acre-feet)		Municipal and Industrial (acre-feet)	Water Quality (acre- feet)	Uncontracted Storage (acre-feet)	Capacity Active Maximum (acre-feet)		
USCE	North Santiam River: Big Cliff and Detroit	282,000	4,682			277,318	343,000	461,000	
USCE	South Santiam River: Foster and Green Peter	275,000	201			274,799	367,000	489,000	
USCE	Long Tom River: Fern Ridge	94,000	23,546			70,454	110,000	117,000	
USCE	McKenzie River: Blue River and Cougar	222,000	100			221,900	250,000	309,000	
USCE	Middle Fork Willamette River: Fall Creek, Dexter, Lookout Point, and Hills Creek	627,000	148			626,852	718,000	965,000	
USCE	Coast Fork Willamette River: Dorena and Cottage Grove	94,000	144			93,856	101,000	112,000	
USBR	Scoggins Creek: Henry Hagg ² (Contracted)	29,200 (37,000)	(37,000)	10,300 (13,000)	13,400 (17,000)	400 (500)	53,000 (67,500)	59,000	
EUGENE	Smith River: Smith Carmen						10,000	16,000	
PGE	Clackamas River: Timothy Lake						62,000	62,000	
	SUBTOTAL	1,623,200	65,821	10,300	13,400	1,565,579	2,010,000	2,590,000	
US	All other contracts in Santiam River basin		2,082						
US	Miscellaneous contracts downstream of all reservoirs		5,348						
	TOTAL	1,623,200	73,251	10,300	13,400	1,565,579	2,010,000	2,590,000	

¹EUGENE=City of Eugene, PGE=Portland Gas and Electric Co., US=Federal, USBR=Bureau of Reclamation, USCE=Corps of Engineers
²The water service contractors' annual water supply comes from natural river flows and Henry Hagg Lake storage. Each entity receives natural flows first and these are supplemented with storage from Henry Hagg Lake to make up the total delivery.

Potential Storage Facilities

A total of 37 potential dam and reservoir sites were identified in the Willamette River basin. This includes modification of existing Dorena Dam to increase the storage capacity. Many of these sites have been previously studied by the Corps of Engineers, Bureau of Reclamation, and Soil Conservation Service. Table C summarizes the data for sites with a potential storage capacity greater than 10,000 acre-feet.

**Table C.--Willamette River Basin Potential Storage Facilities
(Larger than 10,000 acre-feet)**

Map Site	Name	Owner ¹	Stream	Location ² Sec Town Rng	Active Capacity (acre-feet)	Uses ³ Primary/second	Hydropower Potential
772 1	Noon	USCE	Marys River	34 11S 6W	115,000	FMI/NWQR	No
830 2	Pedee	USCE	Luckiamute River	33 9S 6W	130,000	FMI/NWQR	No
677 3	Jordan	USCE	Thomas Creek	5 10S 1E	93,000	FM/NWQR	No
704 4	Lyons	USCE	Little North Fork Santiam River	8 9S 3E	110,000	PfMI/NWQR	Yes
507 5	Cascadia	USCE	South Fork Santiam River	30 13S 2E	145,000	Deauthorized in 1986	No
629 6	Gate Creek	USCE	Gate Creek	28 16S 2E	50,000	Deauthorized in 1986	No
658 7	Holley	USCE	Calapooia River	15 14S 1W	90,000	Deauthorized in 1986	No
573 8	Dorena (modification)	USCE	Row River	32 20S 2W	82,000 (11,000 increase)	PFIN/WQR	Yes
9	Gorge	USBR	Mill Creek	8 7S 6W	53,000	FI/WQR	No
10	Pike	USBR	North Yamhill River	25 2S 5W	75,000	FMI/WQR	No
11	Moore's Valley	USBR	Haskins Creek	4 3S 5W	30,000	FMI/WQR	No
12	Dickey Bridge	USBR	Molalla River	14 5S 2E	273,000	PFI/WQRA	Yes
13	Grange	USBR	Silver Creek	19 7S 1E	80,000	PFI/WQRA	Yes
14	Selah	USBR	Pudding River	5 7S 1W	22,000	PFI/WQRA	Yes
15	Gaston	USBR	Tualatin River	34 1S 4W	119,000	PfMI/WQR	Yes
16	Mt. Richmond	USBR	Tualatin River	4 2S 4W	110,000	PfMI/WQR	Yes
17	Buck Hollow	USBR	Willamina Creek	12 5S 7W	84,000	FI/WR	?
18	Agency	USBR	South Yamhill River	12 6S 8W	78,000	FI/WR	?
19	Gopher Valley	USBR	Deer Creek	11 5S 6W	33,000	FI/WR	?
20	Upper Scoggins Creek	USBR	Scoggins Creek	35 1N 5W	16,000	MI	?
21	Devils Lake	USBR	Wilson River	6 1N 5W	20,000	MI	?
22	Lee Creek	USBR	Lee Creek	5 1S 5W	10,000	MI	?
23	Camas Swale-2	SCS	Camas Swale Creek	8 19S 3W	16,000	FRW/QIM	No
24	Cloverdale	SCS	North Fork Bear Creek	32 18S 2W	10,000	FRIW/QM	No
25	Coyote-1	SCS	Coyote Creek	24 19S 5W	10,000	FRIW/QM	No
26	Coyote-2	SCS	Doak Creek	13 19S 5W	10,000	FRIW/QM	No
27	Deer Creek-1	SCS	Deer Creek	11 5S 6W	18,000	FRIW/QM	No

**Table C.--Willamette River Basin Potential Storage Facilities
(Larger than 10,000 acre-feet)**

Map Site	Name	Owner ¹	Stream	Location ² Sec Town Rng	Active Capacity (acre-feet)	Uses ³ Primary/second	Hydropower Potential
28	Deer Creek-2	SCS	Muddy Creek	16 5S 5W	18,000	FRIW/QM	No
29	Palmer Creek	SCS	Palmer Creek	16 4S 3W	12,000	IRW	No
30	Salt Creek	SCS	Salt Creek	11 7S 6W	10,000	FRIW/QM	No
31	Little Luckiamute	SCS	Little Luckiamute River	13 8S 7W	25,000	FRIW/QM	No
32	West Muddy Creek-1	SCS	Beaver Creek	11 13S 6W	13,000	FRIW	No
33	West Muddy Creek-2	SCS	Reese Creek	3 14S 6W	10,000	FRIW	No
34	West Muddy Creek-3	SCS	Oliver Creek	14 14S 6W	10,000	FRIW	No
35	Butte Creek-2	SCS	Butte Creek	4 7S 2E	16,000	IRW/QM	No
36	Mill Creek-2	SCS	Beaver Creek	30 8S 1W	21,000	FRIW/QM	No
37	East Fork Dairy Creek	SCS	East Fork Dairy Creek	28 3N 3W	10,000	FRIW/QM	No

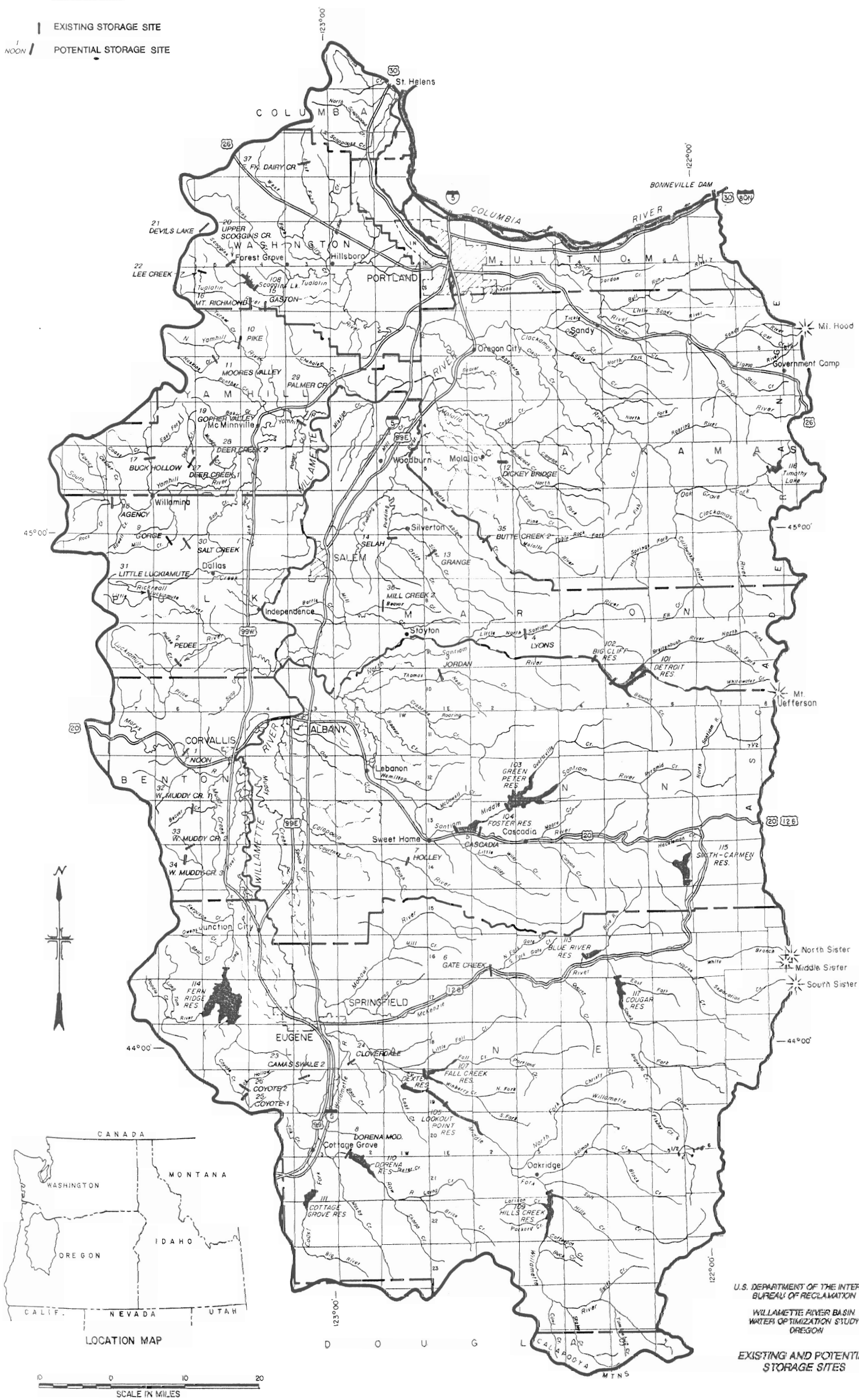
¹SCS=Soil Conservation Service, USBR=Bureau of Reclamation, USCE=Corps of Engineers

²Sec, Town, Rng=Section, Township, and Range of Willamette Meridian

³Primary operating and secondary operating purposes as identified in existing planning documents; F=Flood Control, I=Irrigation, M=Municipal, N= Navigation, Q=Water quality, P=Power, R=Recreation, W=Fish and Wildlife

EXPLANATION

- EXISTING STORAGE SITE
- POTENTIAL STORAGE SITE



U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
WILLAMETTE RIVER BASIN
WATER OPTIMIZATION STUDY
OREGON
EXISTING AND POTENTIAL
STORAGE SITES