Corps and Reclamation
2012 IPR Supplemental Information

- FCRPS Cultural Resources
- CORPS Fish and Wildlife O&M
- Reclamation Leavenworth Hatchery Facilities
- CORPS Columbia River Fish Mitigation (CRFM)

FCRPS Cultural Resources and Fish and Wildlife O&M

- Program drivers for mitigation responsibilities associated with Section 106 Compliance and the Biological Opinions, as well as addressing aging infrastructure (both NREX and Capital).

- Risks:

  - Aquatic Nuisance Species (zebra and quagga mussels). Funding for prevention or maintenance is not included in these budgets.

  - Aging infrastructure

FCRPS Cultural Resource Program

- Program purpose:
  - Federal Agencies are required to address impacts to cultural resources that result from operation and maintenance of FCRPS hydroelectric projects:
    - This is required by the National Historic Preservation Act, the Archaeological Resources Protection Act, and the Native American Graves Protection and Repatriation Act.
  - Agencies committed to address compliance with cultural resource laws in the System Operations Review Records of Decision and Programmatic Agreements.
  - Cultural resource compliance is accomplished through cooperative working groups composed of regional Tribes, State Historic Preservation Officers, and other affected land managing agencies.

FCRPS Cultural Resource Program (continued)

- Current Funding Levels and Accomplishments:
  - FY1997 – FY 2011 Annual Funding:
    - $4.5 million Annually System-wide
  - Program Accomplishments at the 14 Hydroelectric Projects FY 1997 – FY 2011:
    - Acreage Surveyed
      - ✓Total area surveyed: 115,162 acres
      - ✓36,000 acres in 1996
      - ✓79,162 acres surveyed between 1997 and 2011
  - Cultural Resource Sites Identified - 3,700 sites total:
    - 2,223 sites in 1996
    - 1,477 identified between 1997 and 2011

FCRPS Cultural Resource Program (continued)

- Current Funding Levels and Accomplishments (continued):
  - Traditional Cultural Properties Studies Completed - 83 studies total:
    - 3 studies in 1996
    - 80 studies between 1997 and 2010
  - Mitigation Projects Completed - 72 mitigation projects total:
    - 5 sites stabilized in 1996
    - 39 data recovery projects completed and 28 sites stabilized between 1997 & 2009.
    - During 2012, site stabilization and erosion control projects are on-going at several Projects throughout the system.
    - Numerous public education efforts such as public presentations, DVDs, and information brochures developed.

FCRPS Cultural Resource Program (continued)

- Key Factors Supporting the Need for Proposed Funding Levels:
  - No Inflation increase from 1997 - 2011
  - Changes in Program Scope:
    - 1997 funding plan underestimated level of effort required for TCP work, monitoring, and support services (GIS, NEPA, Engineering Design, etc.)
    - Allow for large-scale mitigation/treatment projects while still accomplishing eligibility determinations and other activities
  - Increased Program Staffing Needs:
    - Agencies require full-time FCRPS Program and support staff to improve Program execution
  - Some Reclamation costs previously in other O&M categories moved to Cultural Resources Budget

Cultural Resources Program
FY 2014-FY 2015 Funding Proposal

	FY 2014			FY 2015		
	Power Share	Appropriated Share	Total	Power Share	Appropriated Share	Total
Corps	$4,742,246	$726,694	$5,468,940	$4,880,947	$752,061	$5,633,008
Reclamation	$3,306,529	$377,398	$3,683,927	$3,412,839	$388,033	$3,800,872
TOTAL	**$8,048,775**	**$1,104,092**	**$9,152,867**	**$8,293,786**	**$1,140,094**	**$9,433,880**

Memaloose Island Stabilization

Overview of Memaloose Island

Recent treatment project

45FE1 Stabilization Project

Rock storage on the opposite side of the Columbia River

Installation of Reno mats using barge and track hoe

Hidden Beach Stabilization Project

Before (current conditions)

After (artist's rendition – not yet started)

US Army Corps of Engineers

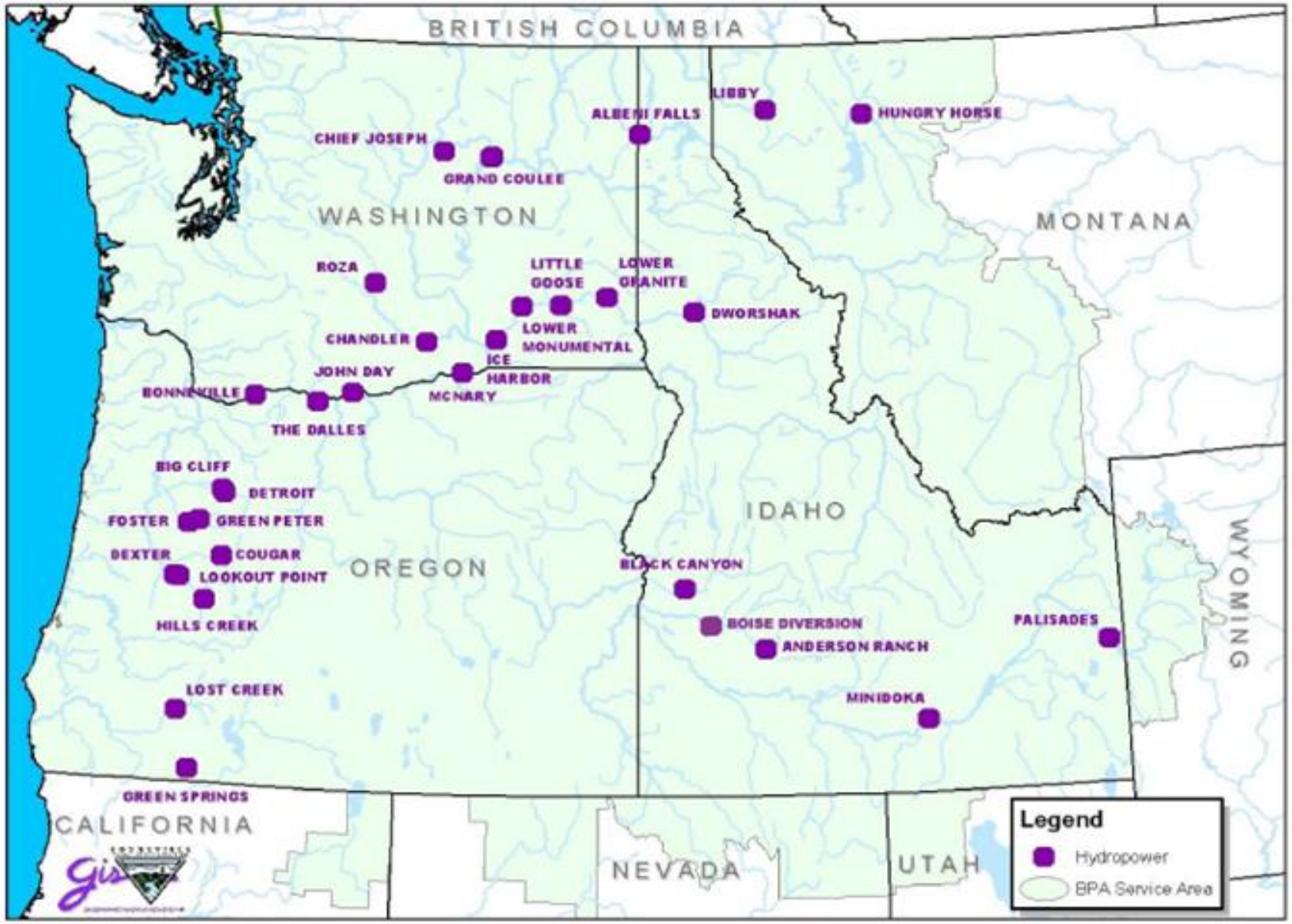
Joint Funded Operations and Maintenance Budget for the Fish and Wildlife Program

Portland, Seattle and Walla Walla Districts

Tim Dykstra
Environmental Stewardship Program Manager
US Army Corps of Engineers
Northwestern Division

Corps F&W Expense Budget

- Funding for Fish and Wildlife related O&M tasks in areas affected by the operation of Corps hydropower producing dams:
  - Willamette & Rogue Basins (9)
  - Lower Columbia River (4)
  - Snake River Basin (5)
  - Upper Columbia Basin (3)


BRITISH COLUMBIA
WASHINGTON
MONTANA
IDAHO
OREGON
WYOMING
CALIFORNIA
NEVADA
UTAH
LIBBY
HUNGRY HORSE
ALBENI FALLS
CHIEF JOSEPH
GRAND COULEE
ROZA
LITTLE GOOSE
LOWER GRANITE
DWORSHAK
LOWER MONUMENTAL
CHANDLER
ICE HARBOR
JOHN DAY
MCNARY
BONNEVILLE
THE DALLES
BIG CLIFF
DETROIT
FOSTER
GREEN PETER
DEXTER
COUGAR
LOOKOUT POINT
HILLS CREEK
BLACK CANYON
BOISE DIVERSION
ANDERSON RANCH
PALISADES
MINIDOKA
LOST CREEK
GREEN SPRINGS
Legend
Hydropower
BPA Service Area

Funding For Corps Program

- Appropriated Budget from Congress (approximately 40%):
  - Environmental Stewardship
  - Budgeted 2 Years Out
  - Sometimes differences in the President's Budget and actual Appropriations
  - Uncertainty in funding levels from year to year
- Direct Funded BPA Program (approximately 60%):
  - Matched on a project-by project basis
  - Have a 5 year plan

Corps F&W Expense Budget (% based on 2011 expenditures)

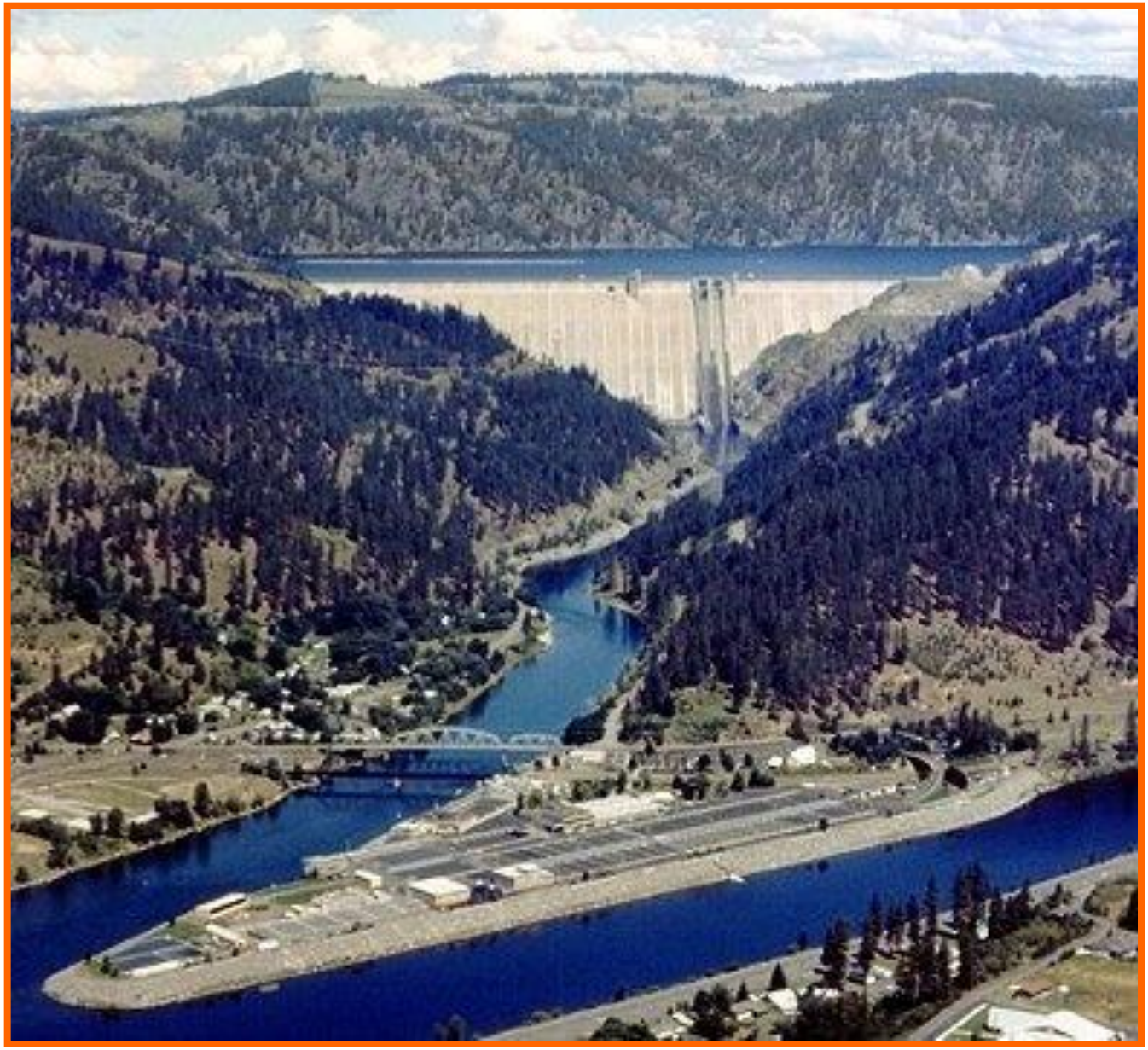
- Anadromous Fish (87%):
  - operation/maintenance of fish passage facilities at dams, mitigation hatcheries, smolt transportation, multi-year fish passage research outlined by BiOps, program management.
  - spare parts for fish passage facilities, painting fish barges, coordinating and conducting fish operations, and conducting irregular fish passage or disease research, project management.
- Wildlife and Resident Fish (10%):
  - baseline wildlife management, habitat mitigation, mitigation hatchery maintenance, and invasive species coordination, project management.
- Water Quality (3%):
  - Total Dissolved Gas and Temperature monitoring/modeling, and TMDL coordination, project management.

Funding For Corps Program

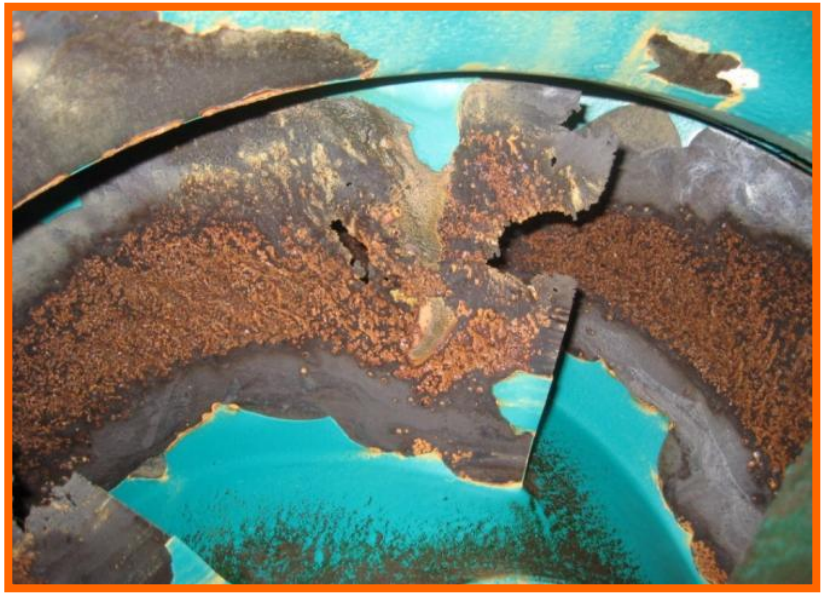
- The need for O&M funding in the Corps F&W Program continues to grow for two primary reasons:

  1) Aging of old infrastructure

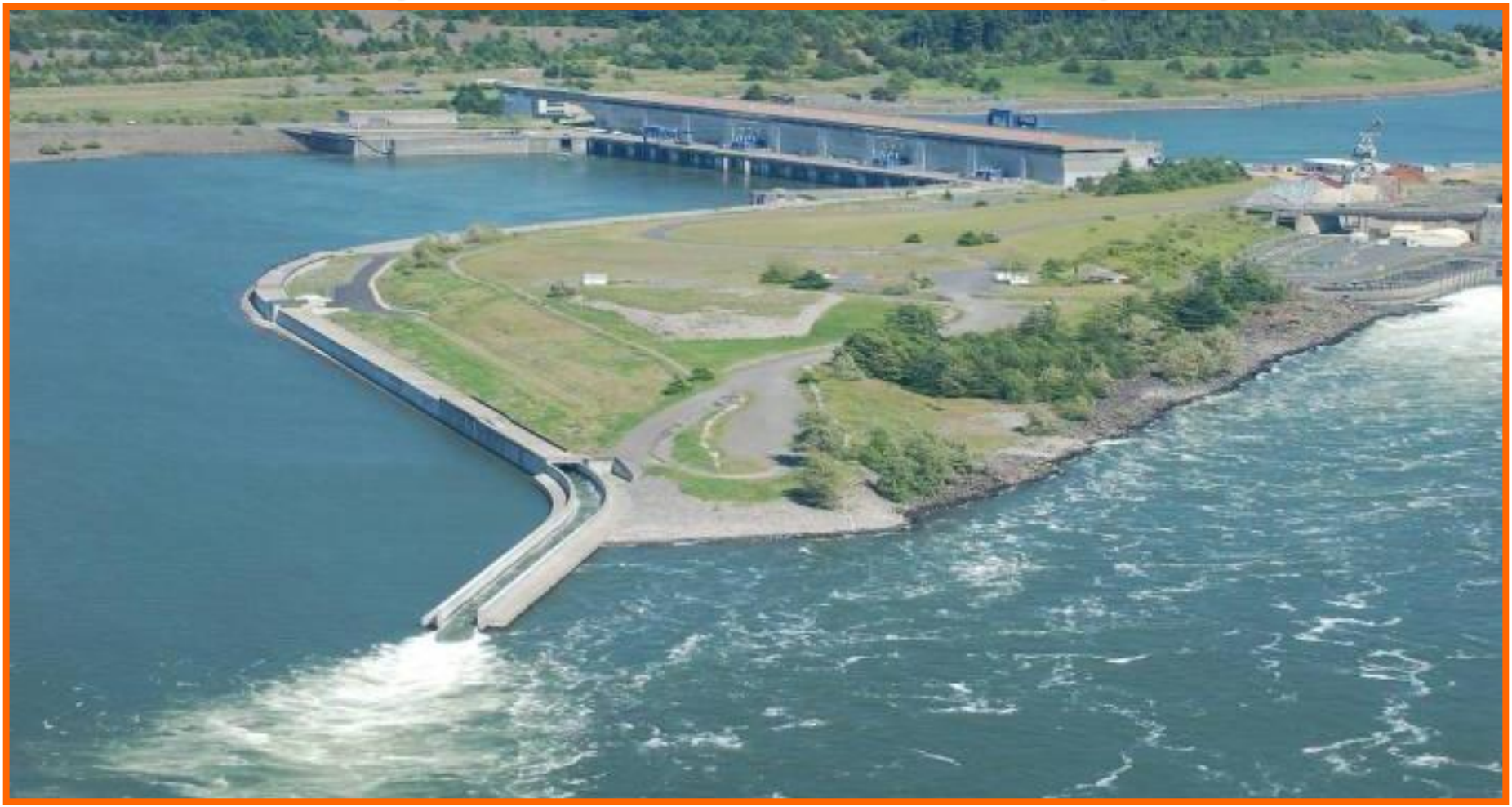
  2) Construction of new infrastructure



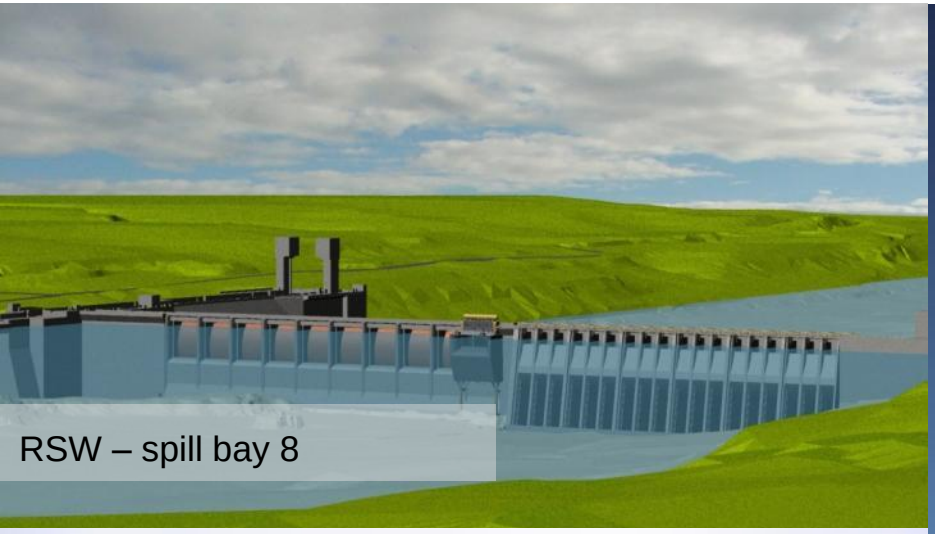
Hatchery Water Pumps



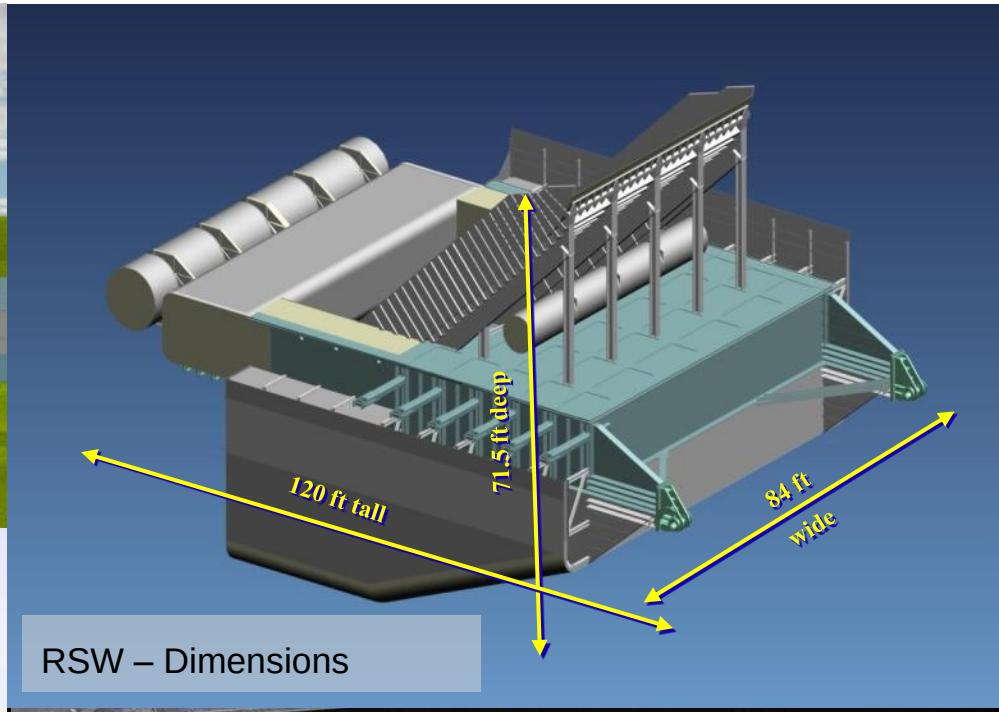
Bonneville B2 Surface Bypass (Corner Collector Outfall)



Lower Monumental Removable Spillway Weir



RSW – spill bay 8



RSW – Dimensions

RSW during fabrication

RSW – Operating

CORPS F&W EXPENSE BUDGET

Distribution of F&W Budget by Activities

	Rate Period FY8-9	FY10	FY11
Project/Program Mgt.	3%	5%	2%
Research	9%	8%	5%
Fish Passage	43%	37%	44%
Hatcheries	22%	16%	20%
Transportation	11%	20%	16%
Wildlife and Resident Fish	10%	11%	10%
Water Quality	3%	3%	3%

CORPS F&W EXPENSE BUDGET

Year	Actual Expense	CAP*
2006	$32,503,000	$35,307,000
2007	$33,037,000	$36,399,000
2008	$37,450,000	$37,491,000
2009	$37,694,000	$38,616,000
2010	$36,515,000	$39,774,000
2011	$40,843,000	$40,967,000
2012		$42,196,000
2013		$43,702,000
2014		$45,013,000
2015		$46,364,000

***Includes 3% escalation factor**

Big Issues on the Horizon

- More Fish and Wildlife Program requirements are putting a direct strain on the budget:
  - Willamette BiOp
  - FCRPS BiOp
  - Clean Water Act Requirements
  - Hatchery Management Requirements
  - Invasive Species
  - Nationwide appropriated funds
- More ES requirements at non-hydro projects are putting an indirect strain on the budget:
  - More requirements at non-hydro projects reduce the available appropriated funds at a faster rate
    - Mill Creek
    - Howard Hanson

Corps Hatchery Budget Projection (rough estimate of total $)

District	Project(s)	Hatchery	FY12 capital	FY12 expense	FY13 capital	FY13 expense	FY14 capital	FY14 expense	FY15 capital	FY15 expense	FY16 capital	FY16 expense	Total capital	Total expense
Portland	Cougar	McKenzie	400	667	85	633	50	620	50	636	60	653	645	3208
Portland	Detroit/Big Cliff	Marion Forks/Minto	100	767	500	813	500	835	50	856	50	878	1200	4149
Portland	Dexter/Hills Creek/Lookout Point/Cougar/others	Leaburg	500	1617	3000	1661	50	1806	50	1850	70	1894	3670	8828
Portland	Lookout Point	Willamette/Dexter	500	1542	1000	1584	1000	1626	100	1668	200	1710	2800	8130
Portland	Green Peter/Foster	South Santiam	0	567	500	582	500	597	100	612	200	627	1300	2986
Portland	John Day	USFWS Spring Creek NFH	150	1904	500	1958	500	2012	70	2066	70	2120	1290	10060
Portland	John Day	ODFW Bonneville	350	2004	100	2058	2000	2062	100	2116	100	2170	2650	10410
Portland	John Day	WDFW Priest Rapids	50	720	5000	889	0	909	50	928	70	948	5170	4393
Portland	John Day	WFDW Ringold Springs	0	168	500	222	4000	325	2000	329	2000	332	8500	1377
Portland	Lost Creek	ODFW Cole Rivers		2181		2241		2402		2462		2523	0	11809
Seattle	Libby	MFWP Murray Springs	52	369	52	379	52	369	52	378	60	378	268	1873
Walla Walla	Dworshak	USFWS Dworshak	10825	4246	6550	4285	7300	4414	5300	4546	5300	4682	35275	22173
		TOTALS	**12927**	**16751**	**17787**	**17306**	**15952**	**17975**	**7922**	**18448**	**8180**	**18915**	**62768**	**89394**

BONNEVILLE POWER ADMINISTRATION

Operations, Maintenance, and Replacement Budget
Leavenworth Fisheries Complex

Leavenworth Fisheries Complex

- Reclamation has a continuing responsibility to mitigate, to acceptable levels of abundance, the salmon resources adversely impacted by the construction and operation of Grand Coulee Dam (1991 IG audit).

- The Leavenworth Fisheries Complex (LFC) was authorized by the Grand Coulee Fish Maintenance Project on April 3, 1937, and reauthorized by the Mitchell Act (52 Stat. 345) May 11, 1938.

- Construction of the Leavenworth, Entiat, and Winthrop National Fish Hatcheries occurred from 1938-1940.

- The Complex is composed of the three fish hatcheries and the Mid-Columbia Fisheries Resource Office (MCFRO) .

Leavenworth Fisheries Complex

- In 1949, responsibility for operations and maintenance was transferred to the U.S. Fish and Wild Service (FWS).
- FWS is funded through a reimbursable agreement with Reclamation to operate the facilities to mitigate for depleted Pacific salmon stocks.
- About 92% of the operations, maintenance, and replacement expenses are repaid to the government by power users.
- The budget covers operations of the three hatcheries as well as a portion of the MCFRO and the Olympia Fish Health Center (OFHC). The MCFRO provides monitoring and evaluation of hatchery stocks, marking programs, and permitting compliance for all LFC programs and activities. The OFHC provides fish diagnostic services in support of healthy salmon stocks.

Leavenworth Fisheries Complex

- Current complex hatchery operations are authorized by the following treaties, judicial decisions, and legislation:

  - Treaty with the Yakama Nation, June 9, 1855.
  - Treaty with the Walla Walla, Cayuse, Umatilla Tribes,
  - June 9, 1855.
  - Treaty with the Nez Perce and Tribes of Middle Oregon,
  - June 25, 1855.
  - U.S. v. Oregon ("Belloni Decision" Case 899), July 8, 1969.
  - Treaty with the Bands of Colvilles, April 8, 1872.
  - Endangered Species Act (ESA) of 1973.
  - Salmon and Steelhead Conservation and Enhancement Act, 1980.
  - Pacific Salmon Treaty Act of 1985.

Leavenworth Fisheries Complex

- LFC fish production programs support mitigation efforts in the Columbia River Basin. Production goals are set in the Columbia River Fisheries Management Plan under the U.S. v. Oregon decision of 1969.

- The Leavenworth National Fish Hatchery (NFH) currently rears 1.2 million spring Chinook salmon smolts annually and provides a tribal and sport fishery on Icicle Creek.

- The Entiat NFH rears 400,000 summer Chinook salmon smolts annually for release into the Entiat River.

- The Winthrop NFH rears 600,000 spring Chinook salmon and 100,000 summer steelhead for release into the Methow River.

Leavenworth Fisheries Complex

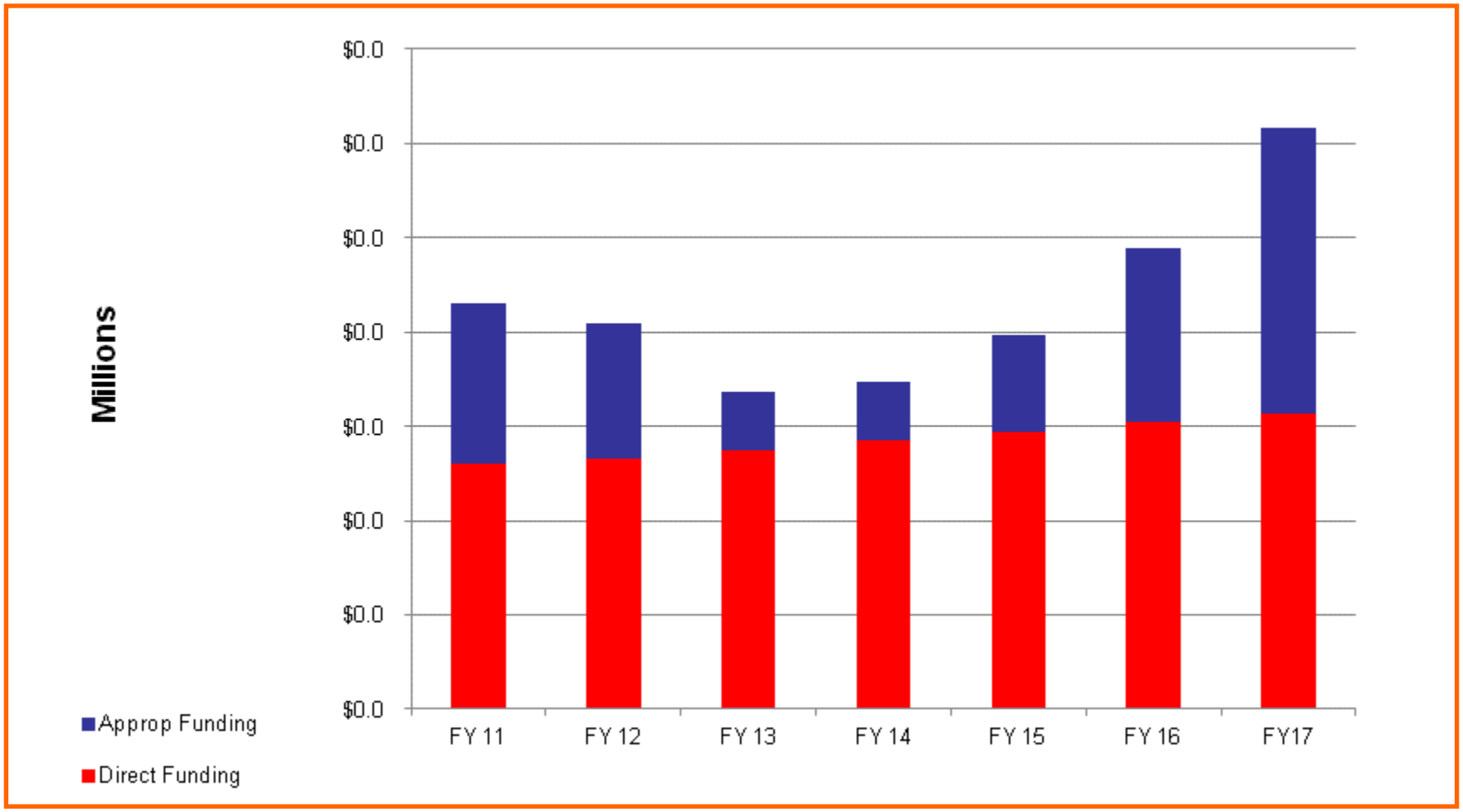
- LFC hatcheries were reviewed by the FWS's Hatchery Review Team (HRT) and the Hatchery Science Review Group (HSRG).

- FWS's personnel are working through the implementation of the recommendations from the HRT and HSRG as well as incorporating new actions from the following:

  - Federal Columbia River Power System (FCRPS) BiOp—RPA No. 39
  - FCRPS Columbia River Accords
  - U.S. v. Oregon Fish Management Plan

- All recommendations and actions are expected to contribute to more sustainable fishery programs that reduce risks to listed species and increase recovery efforts in the Columbia Basin.

Leavenworth Program Levels



Fiscal Year 2011 – 2017 Program Drivers

- Regulatory Compliance:
  - New requirements to comply with terms and conditions of consultations and permits
- Aging Infrastructure:
  - Original construction in 1939.
  - Significant rehabilitation/modernization of hatcheries required.
- Appropriations:
  - Flat and/or declining budgets.

Leavenworth Fisheries Complex

- O&M Budget Allocation:
  - Facilities Operations for Leavenworth, Entiat, and Winthrop Hatcheries: ~ 58%
  - MCFRO Support: ~ 23%
    - Monitoring and evaluation program, tagging, marking programs, permit compliance, Biological Assessments, Hatchery and Genetic Management Plans, ESA compliance, supplies, and materials.
  - Olympia Fish Health Center Support: ~7%
    - Diagnostic fish health services at Leavenworth, Entiat, and Winthrop NFH's monthly fish health inspection throughout the entire rearing cycle of the salmon (egg to adult), diagnostic work, supplies, and materials.
  - Facilities Maintenance: ~ 12%

Leavenworth Fisheries Complex

- Summary - Leavenworth Fisheries Complex ongoing and growing needs:
  - Significant rehabilitation/modernization of hatcheries required
  - BiOps new requirements
  - Clean Water Act requirements
  - Hatchery Management recommendations
  - HSRG recommendations

Columbia River Fish Mitigation Project (CRFM)

2012 Integrated Program Review (IPR)

Columbia River Fish Mitigation Project

- Purpose: Mitigate impacts of the dams to anadromous fish passage in the Columbia, Lower Snake and Willamette Rivers to meet Biological Opinion (BiOp) requirements:
  - CRFM (Col/Lower Snake River) initiated in 1991
  - Willamette River Basin efforts initiated in 2008
  - Implement fish passage improvements on both systems that were not part of the original dam construction for juvenile and adult fish passage.
- Authority: Original Congressional Acts for project construction and operation
- Funding source: Congressional appropriations. BPA repays U.S. Treasury for "power share" of costs.
- Transfers to "Plant-in-Service":|
  - Costs transferred when new facility goes into operation or study completed

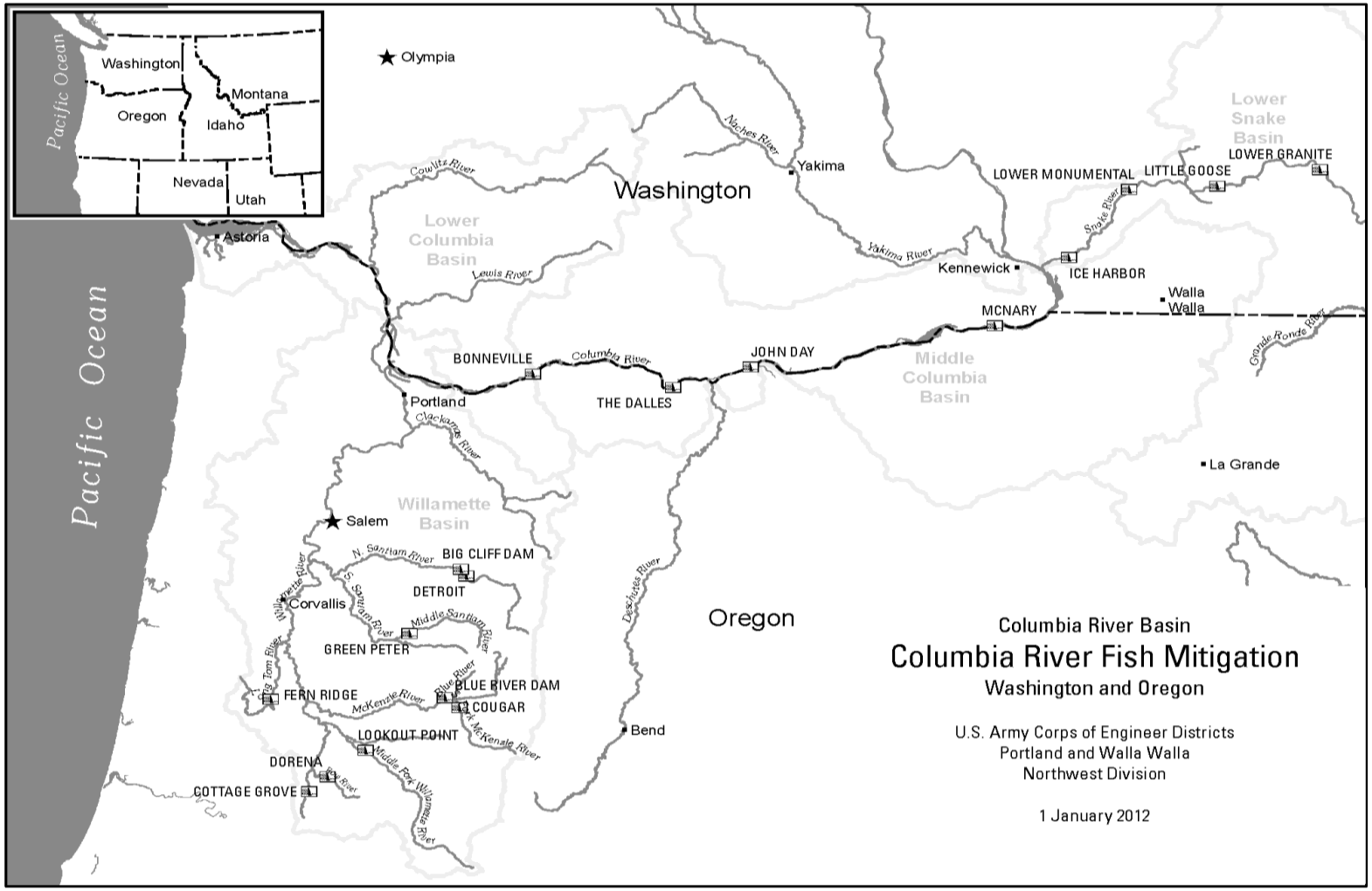
Columbia River Fish Mitigation Project

- Costs and schedule
  - Estimated project cost last reported to Congress: $2.1 B (FCRPS $1.8 B, Willamette $300 M)
  - Funds expended through 2011: $1.5 B
  - A revised estimate of the balance to complete is currently being formulated to accompany the FY2014 Budget Submission. The estimate addresses:
    - The 2010 FCRPS Supplemental Biological Opinion (BiOp) which included additional measures necessary to avoid a Jeopardy determination.
    - Significant progress made towards achieving Federal Columbia River Power System (FCRPS) BiOp performance objectives over the previous 4 years.
    - Additional clarity on Willamette River BiOp (Willamette BiOp) Reasonable and Prudent Alternatives (RPAs) following development of a Configuration and Operations plan.
    - Further development of a 10-year plan for addressing pacific lamprey passage at mainstem projects.
  - Current estimated completion: 2023 (Coincides with completion of the FCRPS BiOp and the Willamette River Basin BiOp)

Columbia River Fish Mitigation Project

- Primary focus: Facility configuration and operations at the dams that improve fish survival:
  - Evaluate project and system fish passage & survival
  - Identify/develop/construct passage improvements (juvenile and adults)
  - Seek cost effective alternatives, configurations, and operations
  - Implement Biological Opinions and Fish Accord agreements
  - Regional coordination
    - Biological/technical review &input
    - Establish priorities
      - ✓Critical issues/uncertainties for research
      - ✓Biological outputs for alternative actions
      - ✓Costs
- Goals: Implement improvements at the projects to increase fish survival while allowing the continued benefits of the multi-purpose projects (hydropower, navigation, recreation, flood damage reduction).
  - Improve and address impacts to fish survival that were not considered when the dams were originally built.
  - Achieve BiOp juvenile survival performance requirements to achieve recovery of endangered species and stability of hydropower system (96% spring, 93% summer)

Columbia River Fish Mitigation Project



Columbia River Fish Mitigation Project

Annual Appropriations:		Transfers to Plant-in-Service (power share):	
91-99:	$516.6		
2000:	$58.1	2000:	$47.0
2001:	$80.5	2001:	$ 6.2
2002:	$71.2	2002:	$ 8.8
2003:	$82.1	2003:	$68.4
2004:	$66.1	2004:	$62.9
2005:	$75.4	2005:	$51.9
2006:	$84.1	2006:	$352.7
2007:	$95.0	2007:	$56.7
2008:	$82.2	2008:	$36.5
2009:	$105.2*	2009:	$103.2
2010:	$87.6*	2010:	$56.6
2011:	$134.9*	2011:	$47.4
2012:	$128.4		

* Includes ARRA Funds

(Dollars are in millions)

Columbia River Fish Mitigation Project

Estimated annual transfers to Plant-in Service 2012-2016 (Power share)

(Dollars are in millions)

Year	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
	$94	$145	$99	$49	$47

Columbia River Fish Mitigation Project

- Major Remaining Activities:

  - Bonneville Dam:
    - Complete 2nd PH Bypass improvements
    - Complete BIOP performance testing
    - Complete lamprey passage improvements

  - The Dalles Dam:
    - Evaluate and modify, as warranted, adult ladder(s) for reliability and passage efficiency
    - Design and construct adult PIT monitoring system
    - Complete BIOP performance testing

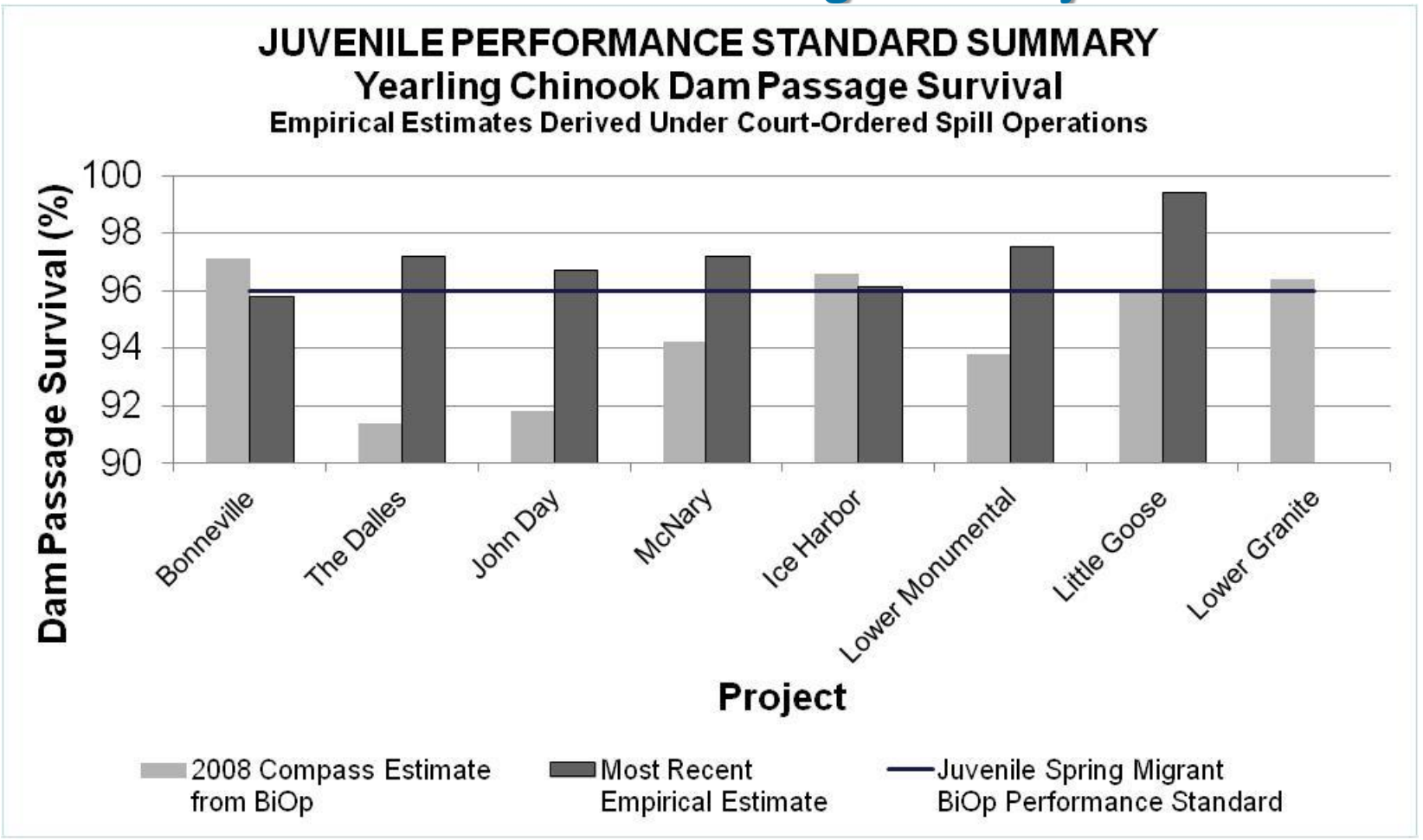
  - John Day Dam:
    - Complete north adult ladder improvements for salmonids and lamprey
    - Complete actions for spillway weir permanence
    - Complete BIOP performance testing

  - McNary Dam:

CRFM FY 2010 – 2012 Summary

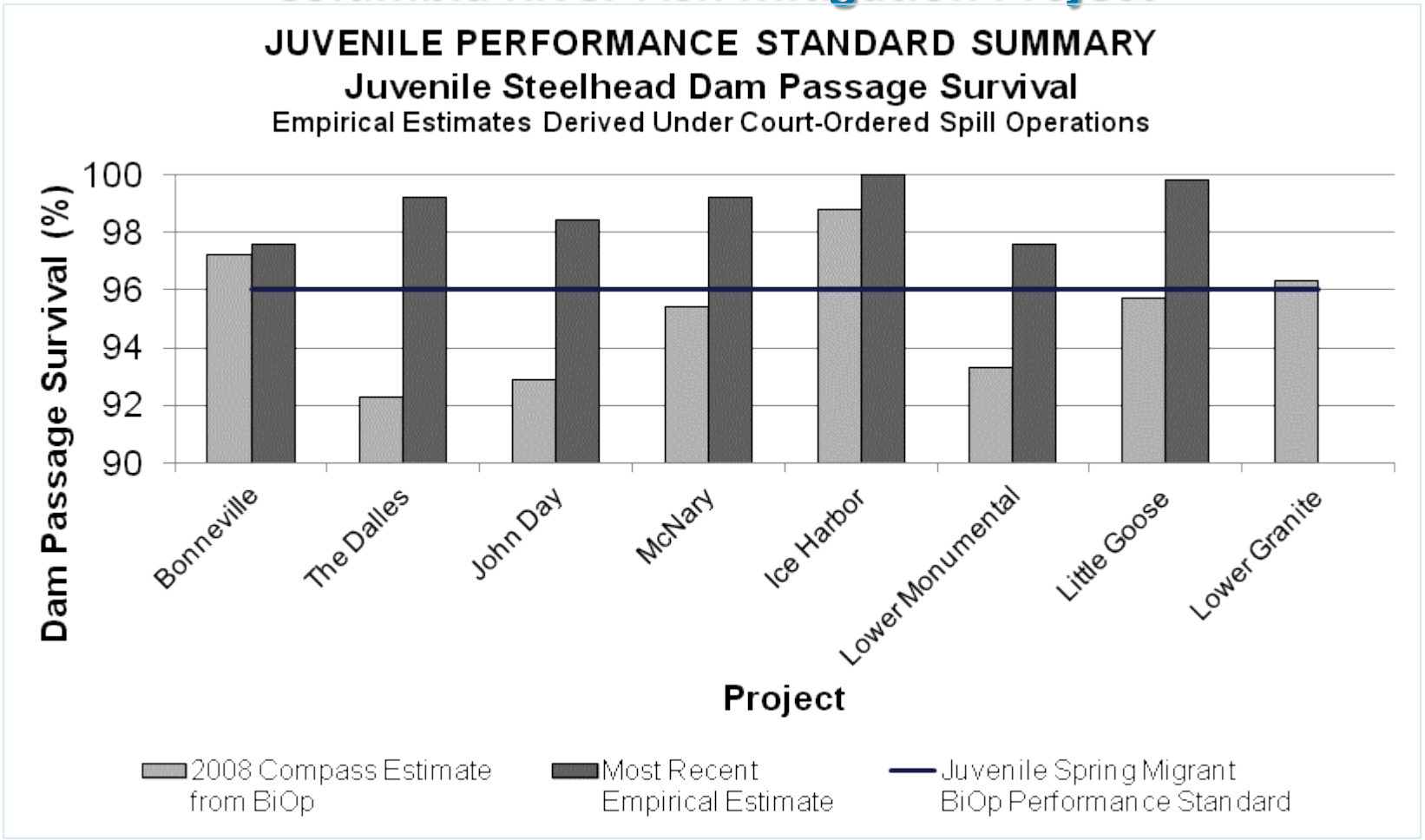
- Major Remaining Activities (Cont):
  - Ice Harbor:
    - Initiate BiOp performance testing
    - Biological input to design and post-installation evaluation of new turbine runners
  - Lower Monumental:
    - Complete construction of the juvenile bypass facility outfall relocation
    - Complete BIOP performance testing
  - Little Goose:
    - Complete actions for spillway weir permanence
    - Complete BIOP performance testing
  - Lower Granite Dam:
    - Complete design and initiate construction of juvenile bypass facility upgrades
    - Initiate BiOp performance testing
    - Install prototype spillway PIT monitoring system
  - System Actions:
    - Lamprey passage research and passage improvements at various dams
    - Estuary and inland avian predator management actions
    - Estuary post- passage and transport survival studies
    - Estuary habitat monitoring
    - Adult and kelt passage evaluations
    - Design and construct spillway weir boat barriers at various projects

Columbia River Fish Mitigation Project



Note: Yearling Chinook dam passage survival estimates from 2008 BiOp COMPASS modeling vs. most recent empirical survival estimates for each project; Bonneville (2011 preliminary), The Dalles (2011 preliminary), John Day (2011 preliminary), McNary (2009), Ice Harbor (2006), Lower Monumental (2009), Little Goose (2009). Empirical data are not available for Lower Granite under its current configuration and operation. Performance standard testing is on-going at Bonneville, The Dalles, John Day, McNary, Lower Monumental, and Little Goose in 2012.

Columbia River Fish Mitigation Project



Note: Juvenile steelhead dam passage survival estimates from 2008 BiOp COMPASS modeling vs. most recent empirical survival estimates for each project; Bonneville (2011 preliminary), The Dalles (2011 preliminary), John Day (2011 preliminary), McNary (2009), Ice Harbor (2006), Lower Monumental (2009), Little Goose (2009). Empirical data are not available for Lower Granite under its current configuration and operation. Performance standard testing is on-going at Bonneville, The Dalles, John Day, McNary, Lower Monumental, and Little Goose in 2012.

Columbia River Fish Mitigation Project

- Future – Way Forward :
  - FCRPS BiOp:
    - Complete passage improvements to meet the BiOp juvenile survival performance targets (93% spring and 96% summer). Complete juvenile performance standard evaluations for all Columbia and Lower Snake River projects.
  - Willamette BiOp:
    - Complete adult collection facility improvements. Complete basin-wide evaluation and implement additional actions (juvenile passage and temperature control) that are likely to provide significant biological benefit and improvements to survival within the basin.

Integrated Program Review

Financial Disclosure

This information has been made publicly available by BPA on July 16, 2012 and contains information not reported in agency financial statements.