

Lower Yellowstone Intake Diversion Dam Fish Passage Project, Montana

Draft Environmental Impact Statement

Public Meetings

June 28th, 29th, & 30th



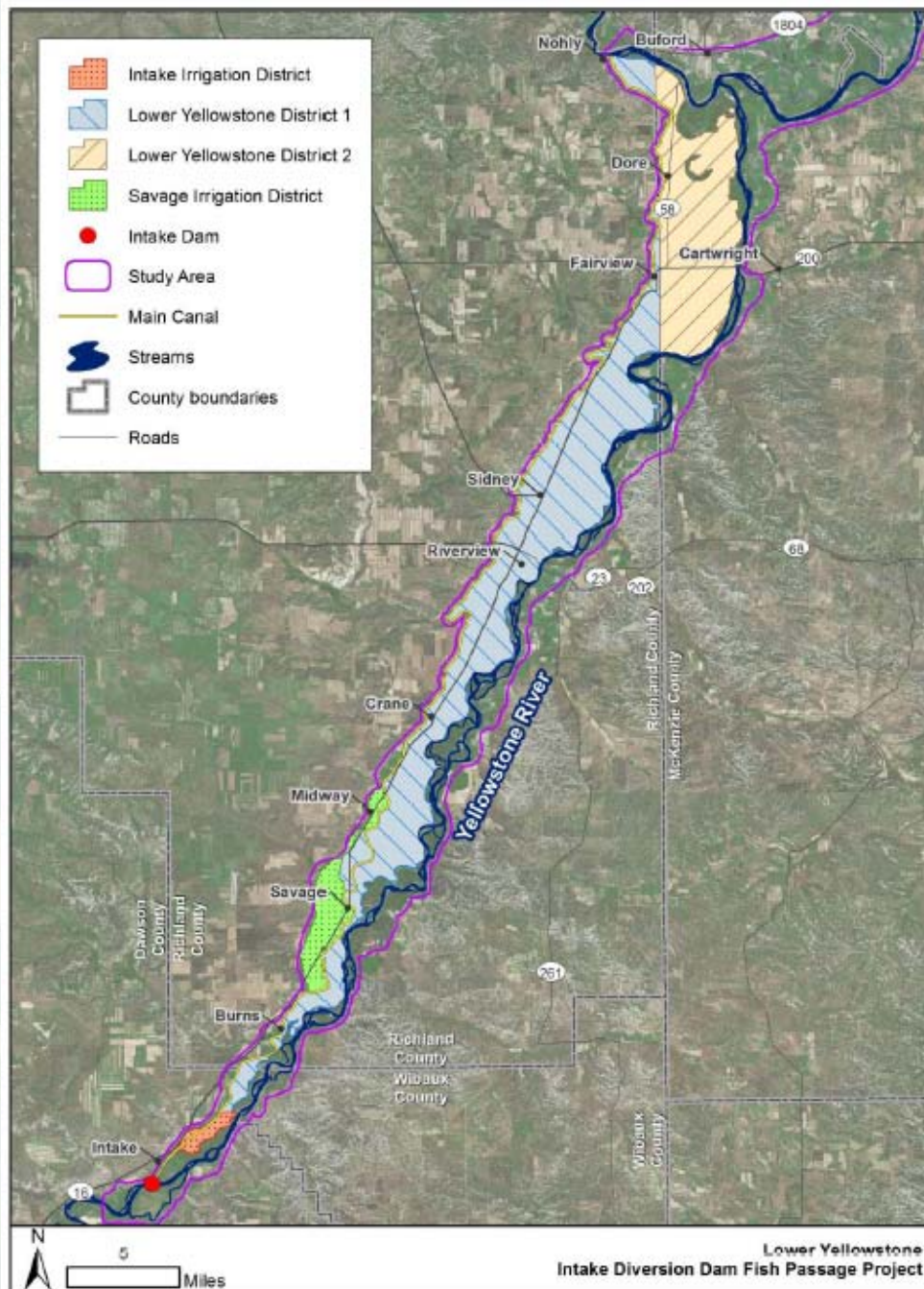
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US Army Corps of Engineers
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History of the LY Project



Authorization:

- Reclamation Act of 1902
- Single Purpose Irrigation Project

Construction:

- 1905-08 by Reclamation
- First water delivered 1909

Facilities:

- Intake Diversion Dam
- 72-mile main canal
- 225-miles of laterals
- 3 Pumping Stations
- ~58,000 acres

Operations:

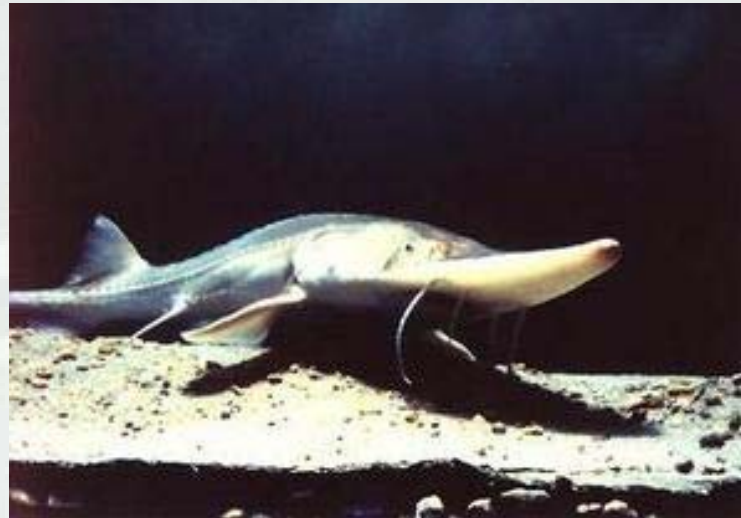
- O&M performed by LYIP BOC
- Diversion rate 1,374cfs



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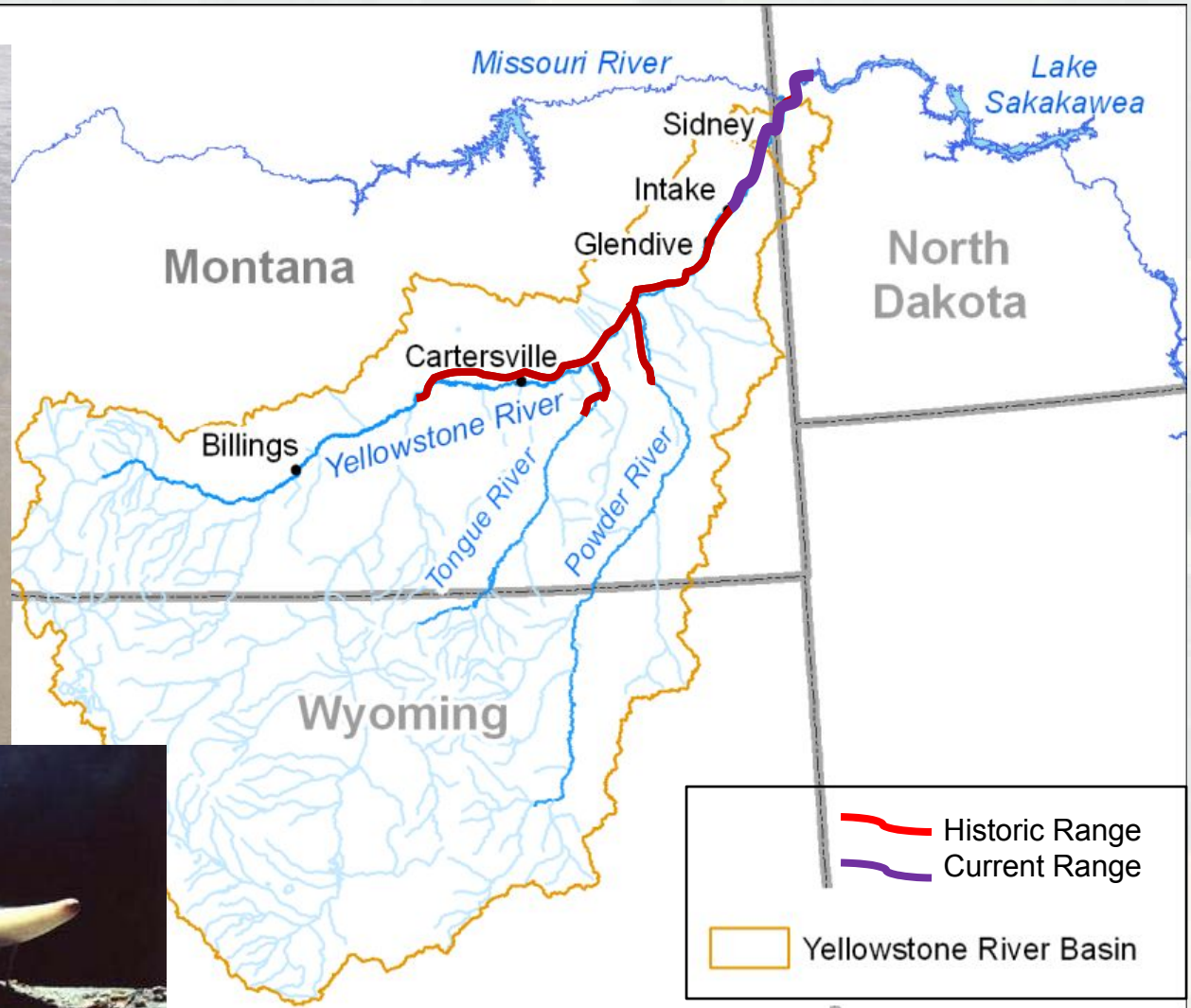
Pallid Sturgeon (*Scaphirhynchus albus*)

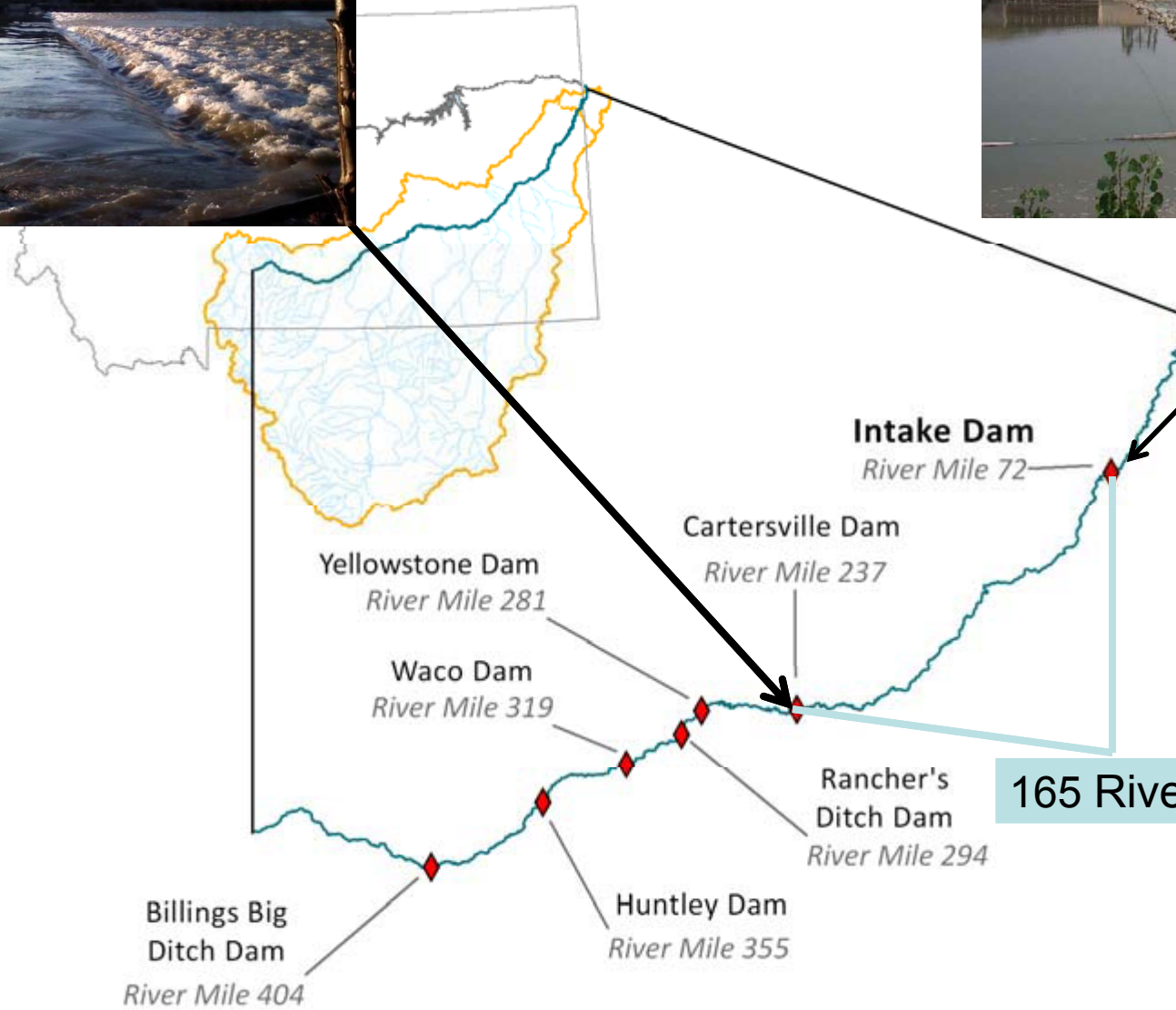
- Listed by U.S. Fish and Wildlife Service under the Endangered Species Act in 1990
- Considered Endangered throughout its entire range
- Native to both the Yellowstone and Missouri Rivers
- Primary Threats:
 - ▶ Construction of Dams
 - ▶ Bank Stabilization
 - ▶ Entrainment
 - ▶ Disease and Predation
 - ▶ Commercial Fishing



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Yellowstone River Watershed Pallid Sturgeon Historic/Current Range

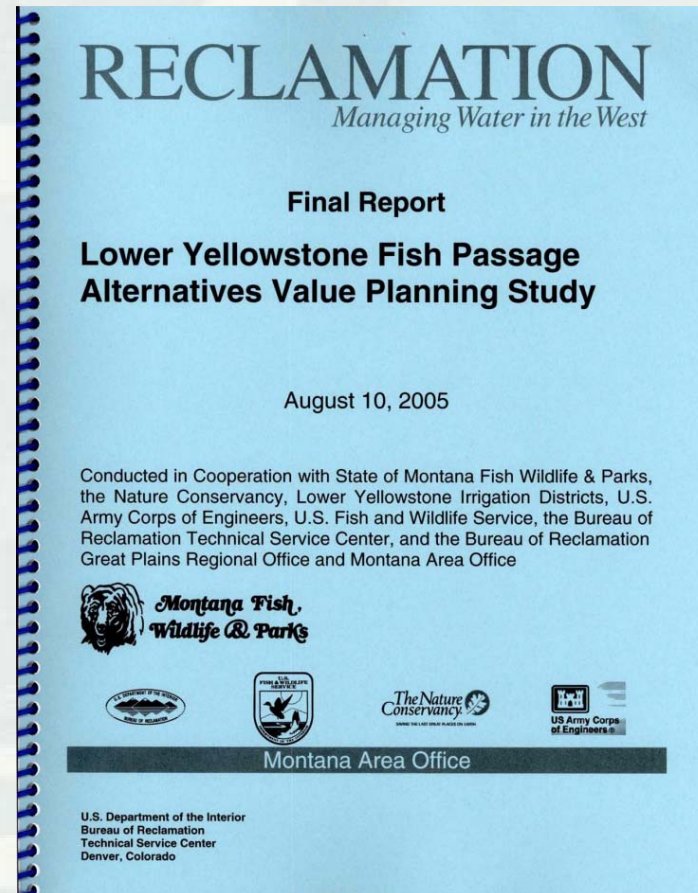




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Background/History

- 1990's – Reclamation initiates studies to reduce entrainment and improve fish passage for pallid sturgeon at Intake Diversion Dam
- 2005 - Value Planning Study (110 Alternatives)
- 2007 – WRDA



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Background/History

- 2010 - Environmental Assessment
- 2012 – New Screened Headworks
- 2015 - Supplemental Environmental Assessment
- 2016 - Environmental Impact Statement



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2016 Draft Environmental Impact Statement

- Notice of Availability – June 3rd
- Addendum – June 14th
- Public Comments Due – July 28th
- 6 Alternatives
 - ▶ Including No Action

Lower Yellowstone Intake
Diversion Dam Fish Passage
Project, Montana

Draft Environmental Impact Statement



Prepared by Joint Lead Agencies:



U.S. Department of the Interior
Bureau of Reclamation
Billings, Montana



U.S. Army Corps of Engineers
Omaha District
Omaha, Nebraska

May 2016

- <http://www.usbr.gov/gp/mtao/loweryellowstone/>



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2016 Draft Environmental Impact Statement Purpose and Need

- Improve passage for pallid sturgeon and other natives fish species
- Continue the viable and effective operation of the Lower Yellowstone Project
- Contribute to Ecosystem Restoration

Lower Yellowstone Intake Diversion Dam Fish Passage Project, Montana

Draft Environmental Impact Statement



Prepared by Joint Lead Agencies:



U.S. Department of the Interior
Bureau of Reclamation
Billings, Montana



U.S. Army Corps of Engineers
Omaha District
Omaha, Nebraska

May 2016



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Public Scoping - Summary

- Scoping Period
 - ▶ January 4th – February 18th
- Public Scoping Meeting
 - ▶ January 21st, 2016
Glendive, MT
- Alternatives Proposed During Scoping Period
 - ▶ Dam removal w/ Pumping
 - ▶ Bypass channel
 - ▶ Conservation measures
 - ▶ Wind power
 - ▶ Trust fund
 - ▶ Low-head hydropower
 - ▶ Sturgeon relocation and study

Summary of Comments by Category

Category	Number
Alternatives	130
Aquatic Communities	5
Climate	2
Cumulative Effects	2
Economics	38
Energy	3
Threatened and Endangered Species	41
General	6
Geomorphology	8
Hazardous Materials	1
Lands and Vegetation	2
Mitigation	11
Project Cost	12
Project Process	16
Purpose and Need	7
Recreation	4
Transportation	1
Utilities	2
Visual Resources	2
Water Quality	7
Water Rights	11
Wildlife	8



Alternatives

- No Action (Continued O&M)
- Rock Ramp
- Bypass Channel
- Modified Side Channel
- Multiple Pump Stations
- Multiple Pumps with Conservation Measures



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No Action

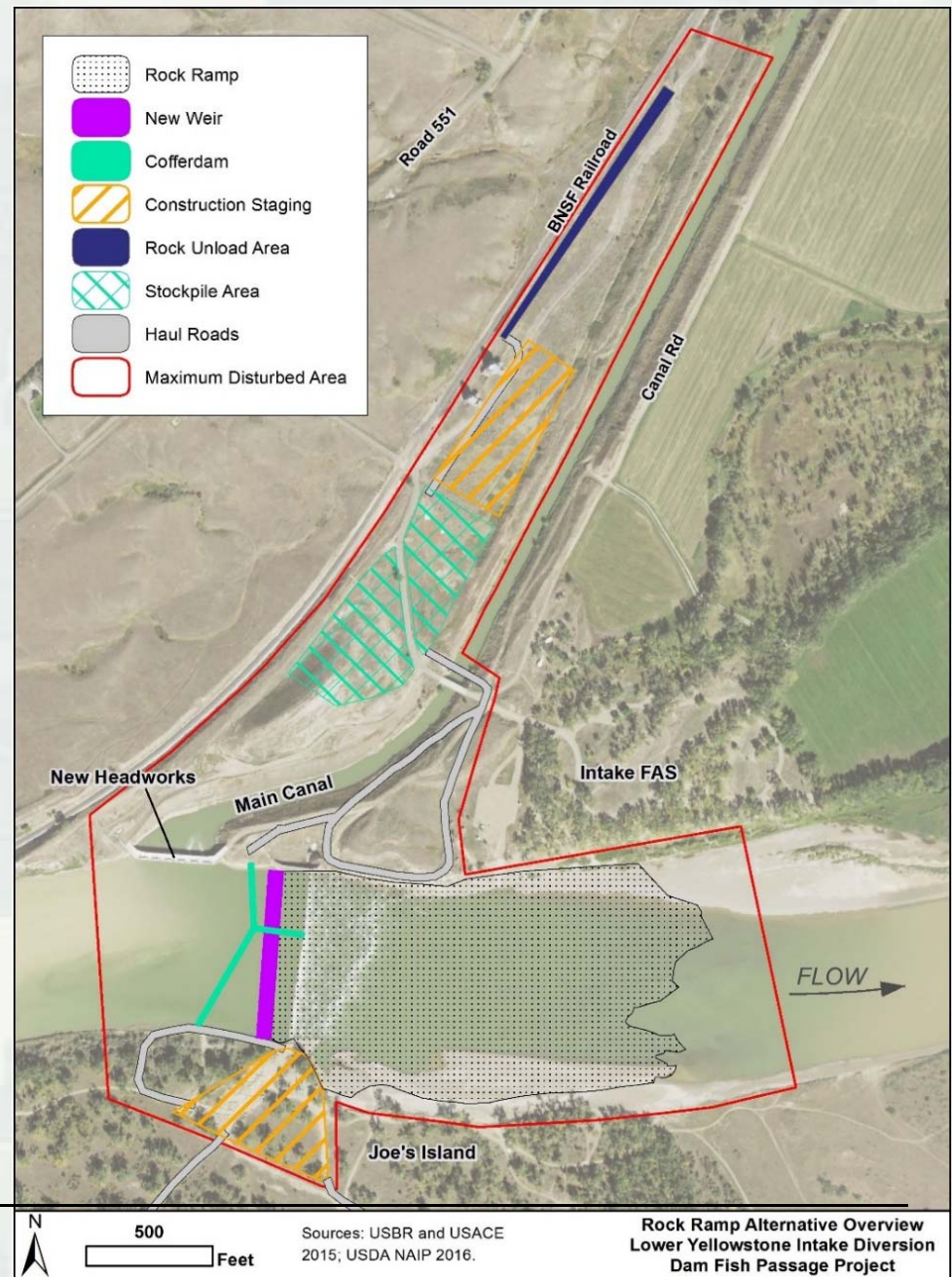
- Continued Operation and Maintenance of the LYP
 - Annual placement of rock on dam crest
 - ESA Consultation
 - Baseline from which to measure benefits and impacts
-
- **Construction - \$0.00**
 - **Annual OM&R - \$2,643,000**
 - **Annual OM&R Per Acre – \$46.53**



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Rock Ramp

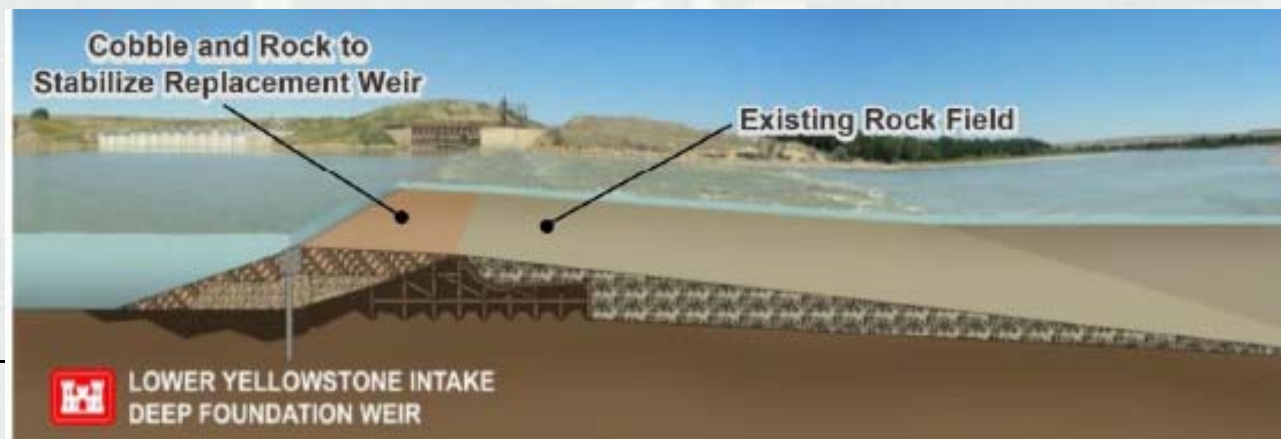
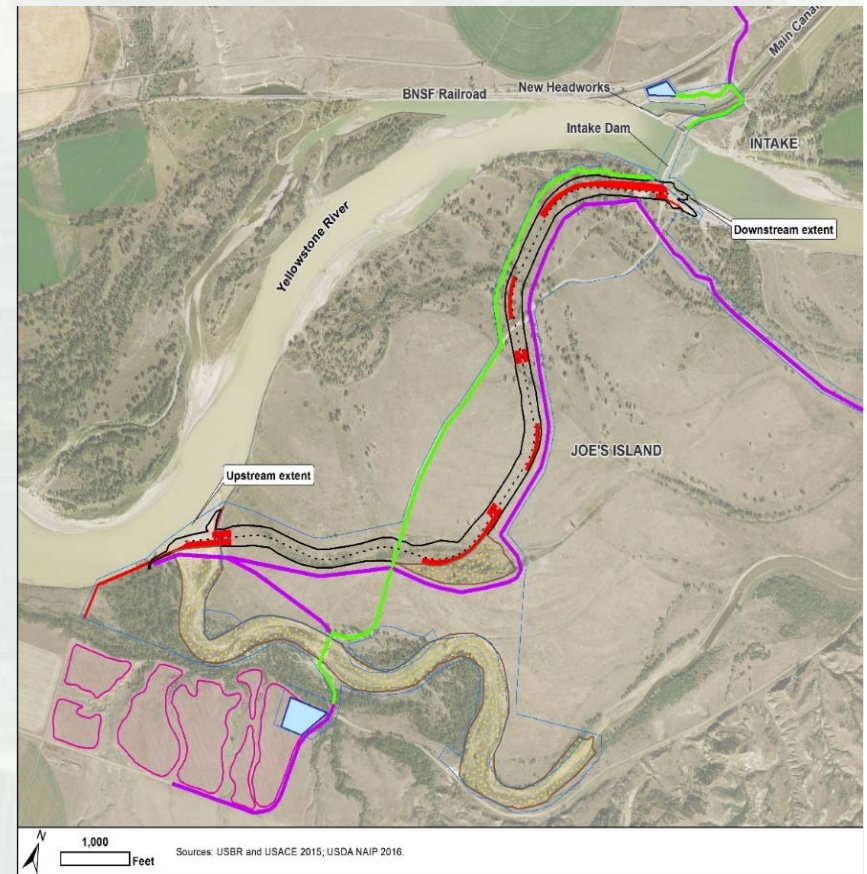
- Construction of a new concrete weir 40 ft upstream of existing Intake Diversion Dam
- 1,500 ft - Shallow-sloped, ungrouted boulder and cobble rock ramp
- Divert the full water right of 1,374 cfs into the Main Canal.
- Relocation of Intake FAS
- **Construction - \$90,454,000**
- **Annual OM&R - \$2,840,000**
- **Annual OM&R Per Acre - \$50.00 (+7.5%)**



Rock Ramp Alternative Overview
Lower Yellowstone Intake Diversion
Dam Fish Passage Project

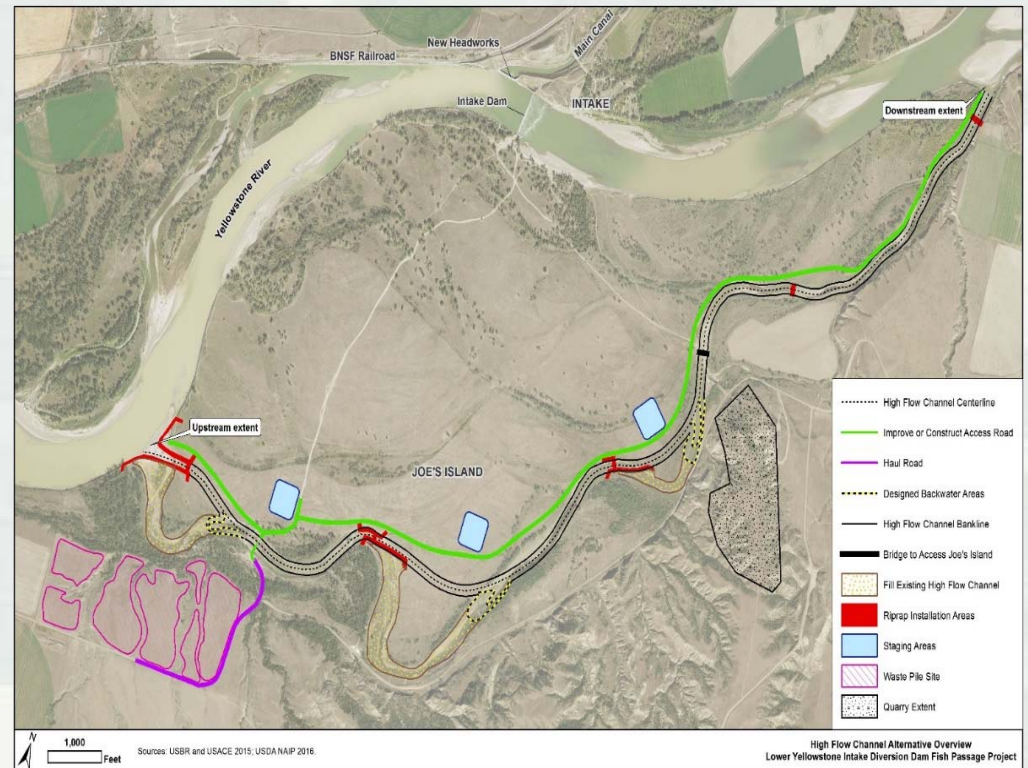
Bypass Channel

- 11,150 ft – Bypass Channel
 - Entrance located just downstream of existing Intake Diversion Dam
 - Construction of a new concrete weir.
 - Placement of fill in existing side channel
-
- Construction - \$57,044,000
 - Annual OM&R - \$2,799,000
 - Annual OM&R Per Acre – \$49.27 (+5.9%)



Modified Side Channel

- Modification of the existing side channel around Joe's Island
- Approximately 24,000 ft in length
- Entrance 1.5 miles downstream of Intake Diversion Dam
- Continued rocking of existing weir
- Construction of a new rocking structure
- Bridge across side channel for rocking activities
- **Construction - \$54,441,000**
- **Annual OM&R - \$2,907,000**
- **Annual OM&R Per Acre - \$51.18 (+10.0%)**

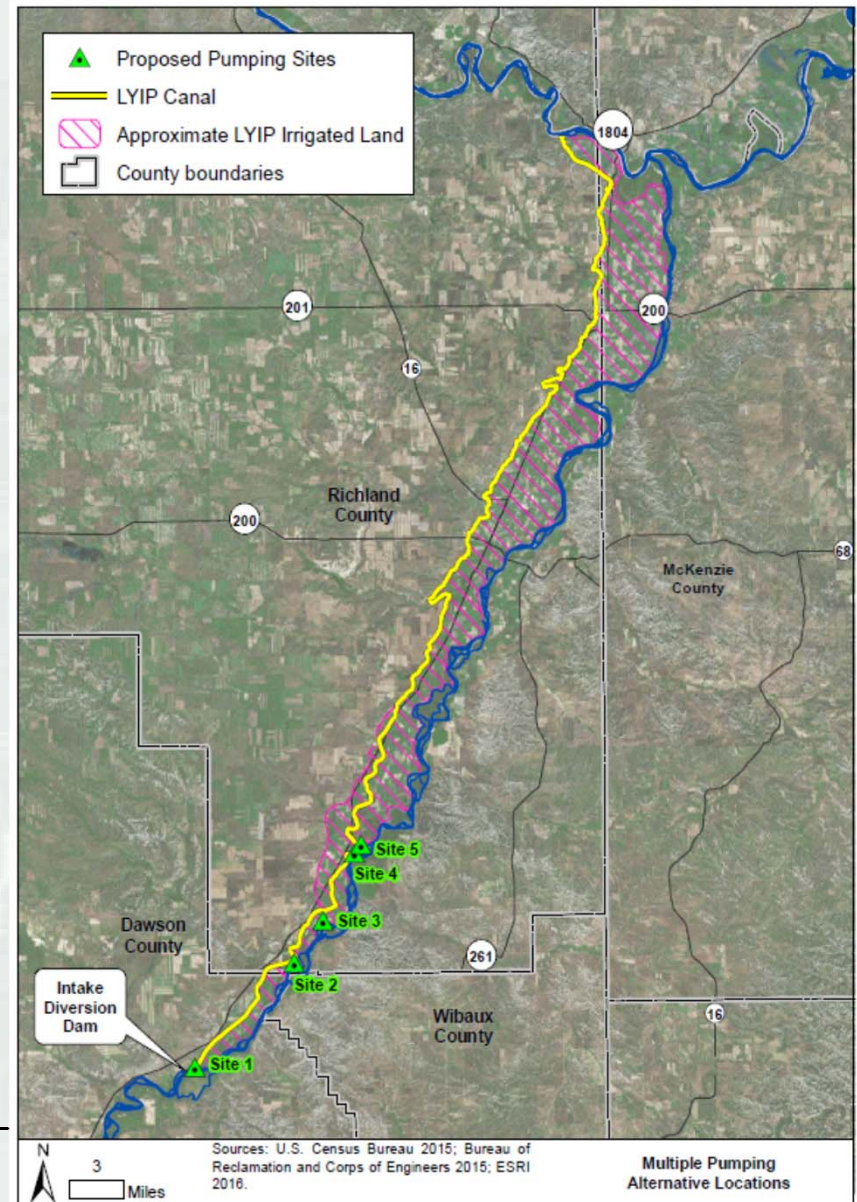


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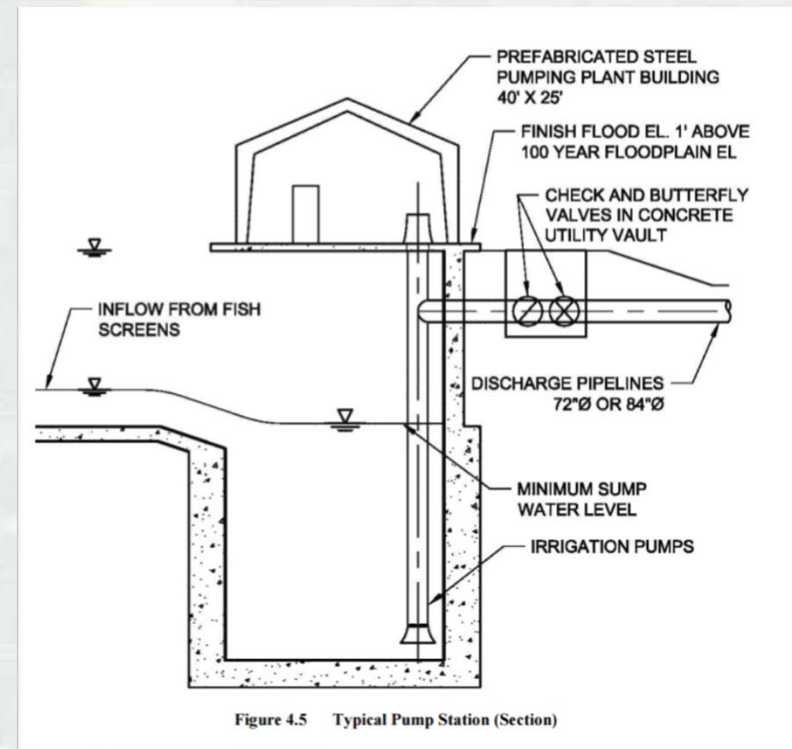
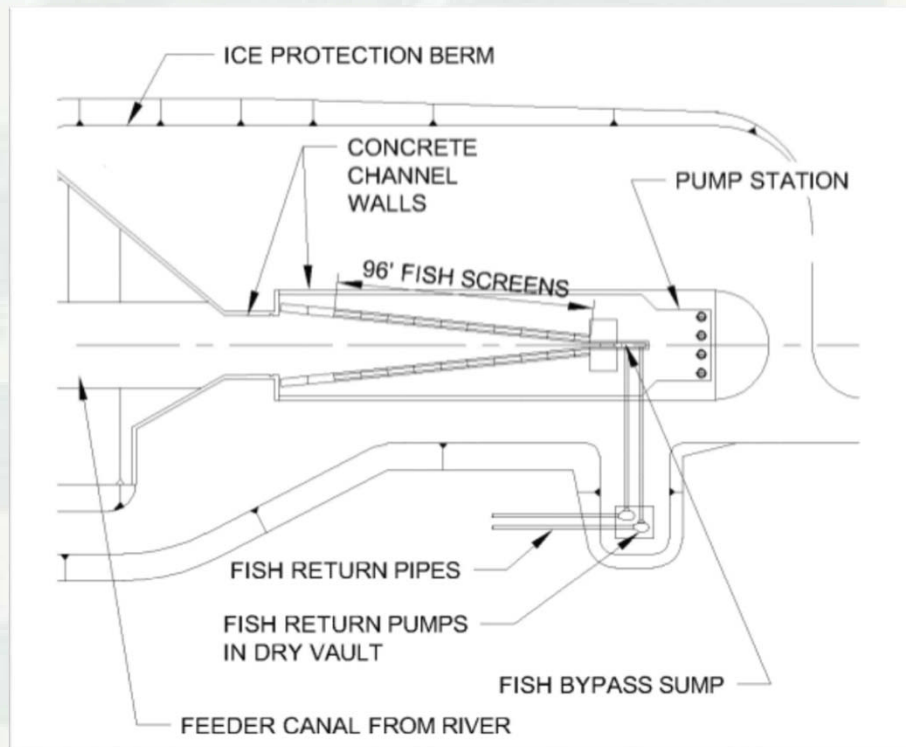
Multiple Pump Stations

- Removal of Intake Diversion Dam
- Construct five pumping stations
 - ▶ 4 Pumps at each station
- Total capacity of 1,374 cfs
- Upgrading existing power infrastructure
- Construction of fish screen structures at pumping stations
- Gravity Diversion >30,000 cfs (17%)
- Pumping – 83% of the year
- Relocation of Intake FAS

- **Construction - \$132,028,000**
- **Annual OM&R - \$5,034,000**
- **Annual OM&R Per Acre - \$88.63 (+90.5%)**



Multiple Pump Stations



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Pump - Comparison

- LYP Peak Demand –1,374 cfs
 - ▶ 888 million gallons per day
- Savage Pumping Plant – 60 cfs
 - ▶ 38 million gallons per day
 - ▶ 4% of LYP requirement
 - ▶ Would require 20 stations of this size
- Buffalo Rapids #1 – 365 cfs
 - ▶ 236 million gallons per day
 - ▶ 27% of LYP requirement
 - ▶ Would require 4 stations of this size

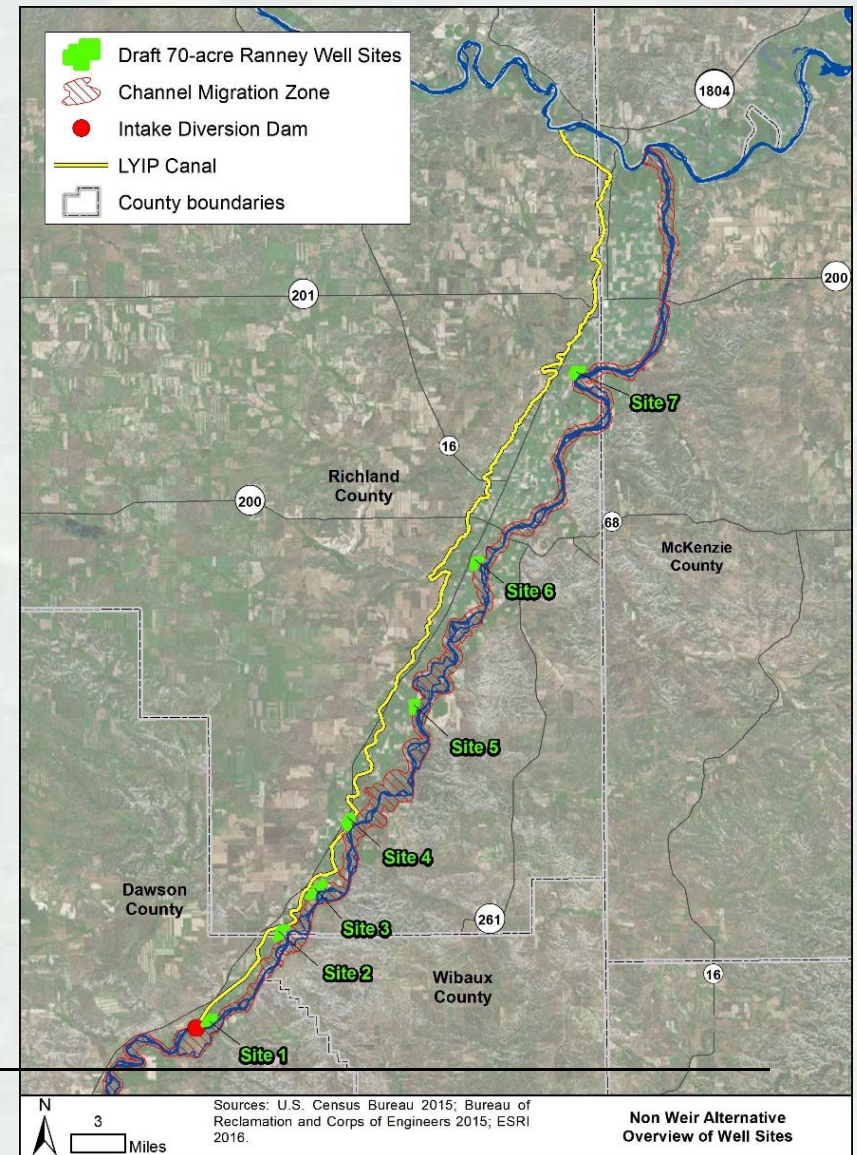


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Multiple Pumps with Conservation Measures

- Removal of Intake Diversion Dam
- Construction of 7 Pump Sites
 - 6 Ranney Wells at each site
- Total capacity of 608 cfs
- Upgrading existing power system
- Gravity diversion/Pumping – 60%
- Pumping only – 40%
- Implementation of water conservation measures
- Redesign of the Main Canal
- Relocation of Intake FAS

- **Construction - \$477,925,000**
- **Annual OM&R - \$4,386,000**
- **Annual OM&R Per Acre – \$77.21 (+65.9%)**



Multiple Pumps with Conservation Measures

Conservation Measures	
Component	Description
Check Structures	Installation of check structures in the canal for water control
Flow measuring devices	Measuring devices installed on the canals
Laterals to pipe	Convert laterals to pipe
Sprinklers	Install center pivot sprinklers
Lining Main Canal/laterals	Line Main Canal and laterals with concrete
Control over checking	Operational change to water levels in the canals
Groundwater pumping	Install groundwater pumps

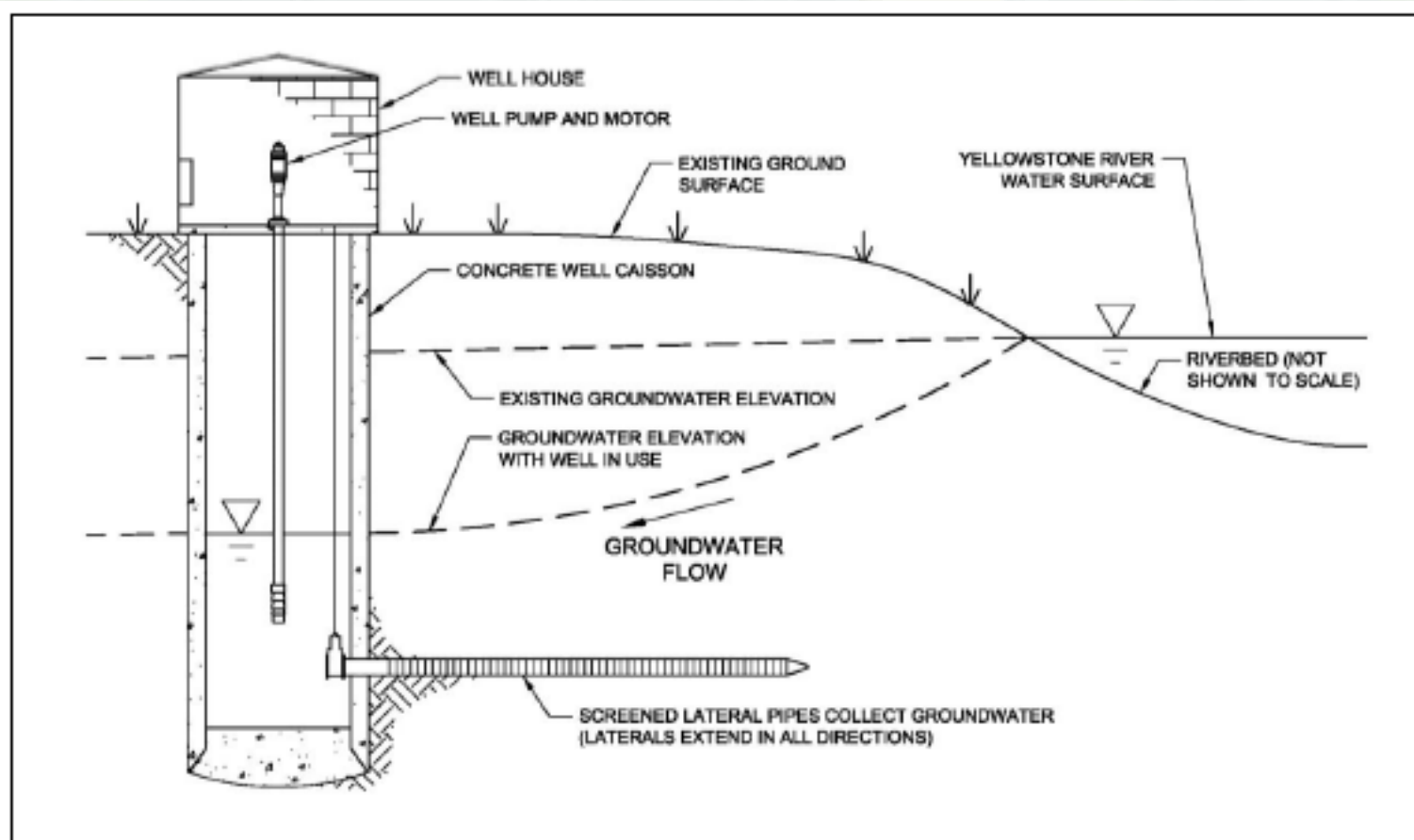


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Multiple Pumps with Conservation Measures



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Cost Estimates

Construction Cost	NA	\$79,592,000	\$53,784,000	\$47,557,000	\$115,314,000	\$414,415,000
Construction (Months)	NA	18	28	18	42	90
Design ^a	NA	\$6,480,000	\$0	\$3,944,000	\$9,697,000	\$36,006,000
Construction Management	NA	\$4,382,000	\$3,260,000	\$2,665,000	\$6,463,000	\$24,004,000
Real Estate		\$0	\$0	\$275,000	\$554,000	\$3,500,000
Total First Cost	NA	\$90,454,000	\$57,044,000	\$54,441,000	\$132,028,000	\$477,925,000
Annual OM&R^{b,c} (% change from No Action)	\$2,643,000 (0%)	\$2,840,000 (7.5%)	\$2,799,000 (5.9%)	\$2,907,000 (10.0%)	\$5,034,000 (90.5%)	\$4,386,000 (65.9%)

a—Design for the Bypass Channel has been completed and is therefore considered a sunk cost.

b- Reclamation is committed to monitoring the effectiveness of the project, consistent with the outcome of Endangered Species Act consultation. Funding sources for these monitoring activities will be determined based on Reclamation Law, Policy, and availability of funding.

c—OM&R costs are borne by Lower Yellowstone Project irrigators



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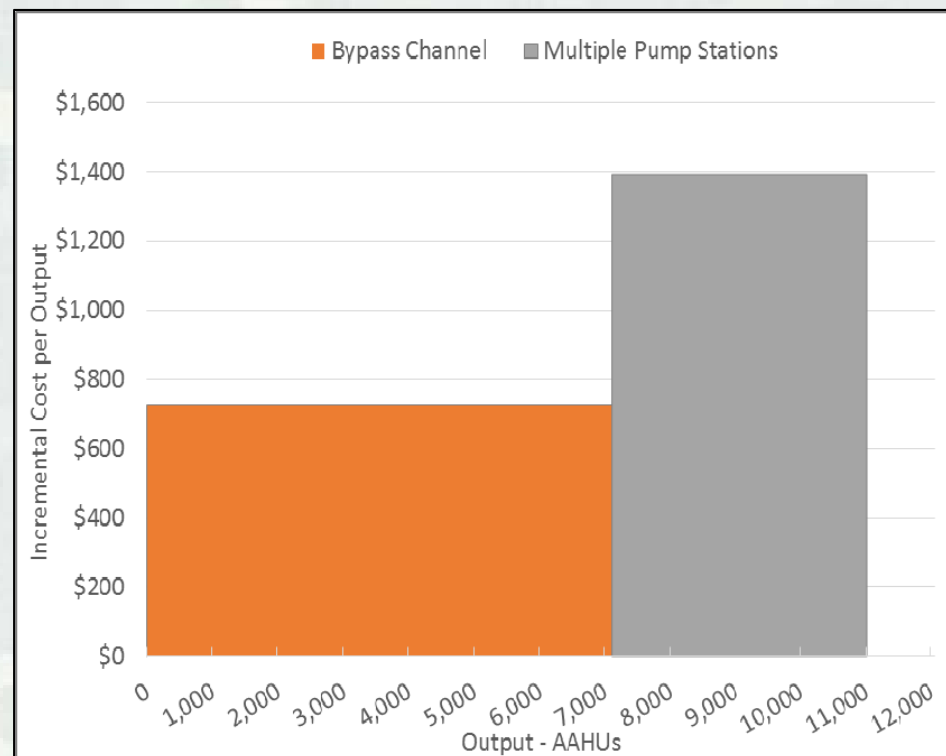
Cost Effectiveness

Cost Effectiveness by Alternative

Alternative	Annual Cost (\$1000)	Net AAHUs	Cost per AAHU (\$)	Cost-Effective?
No Action	\$0	0	\$0	Yes
Rock Ramp	\$6,546	4,220	\$1,551	No
Modified Side Channel	\$5,137	6,494	\$791	Yes
Bypass Channel	\$5,170	7,116	\$727	Yes
Multiple Pump	\$10,594	11,011	\$962	Yes
Multiple Pumping with Conservation Measures	\$25,709	11,011	\$2,335	No

AAHU- Average Annual Habitat Unit

Best Buy Alternative	Annual Cost (\$1000)	Net AAHUs	Incremental Output	Incremental Cost	Incremental Cost per Unit Output
No Action	\$0	0	0	n/a	n/a
Bypass Channel	\$5,170	7,116	7,116	\$5,170	\$727
Multiple Pump	\$10,594	11,011	3,895	\$5,424	\$1,393



An alternative is cost effective if another alternative doesn't provide the same or greater benefits for the same or less cost



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Impacts Summary

Resource Area	No Action	Rock Ramp	Bypass Channel	Modified Side Channel	Multiple Pump	Multiple Pumps with Conservation Meas.
Surface Water hydrology and hydraulics	NA - Baseline	Moderate	Minor to Major	Minor to Major	Minor to Major (Beneficial)	Minor to Major (Beneficial)
Groundwater hydrology	NA - Baseline	Minor	Minor	Minor	Minor	Minor to Major
Geomorphology	NA - Baseline	Moderate	Minor to Moderate	Minor to Moderate	Minor to Major (Beneficial)	Minor to Major (Beneficial)
Aquatic Communities	NA - Baseline	Moderate to Major (Beneficial)	Moderate to Major (Beneficial)	Minor to Major (Beneficial)	Minor to Major (Beneficial)	Minor to Major (Beneficial)
Federally Listed Species and State Species of Concern	NA - Baseline	Minor to Major (Beneficial)	Minor to Major (Beneficial)	Minor to Major (Beneficial)	Minor to Major (Beneficial)	Minor to Major (Beneficial)
Lands and Vegetation	NA - Baseline	Moderate	Moderate	Minor	Minor	Minor to Major
Recreation	NA - Baseline	Moderate	Moderate	Moderate	Moderate	Moderate
Noise	NA - Baseline	Major	Major	Major	Major	Major
Social and Economic Conditions	NA - Baseline	Minor	Minor	Minor	Minor to Major	Minor to Major
Historic Properties	NA - Baseline	Major	Major	Major	Major	Major



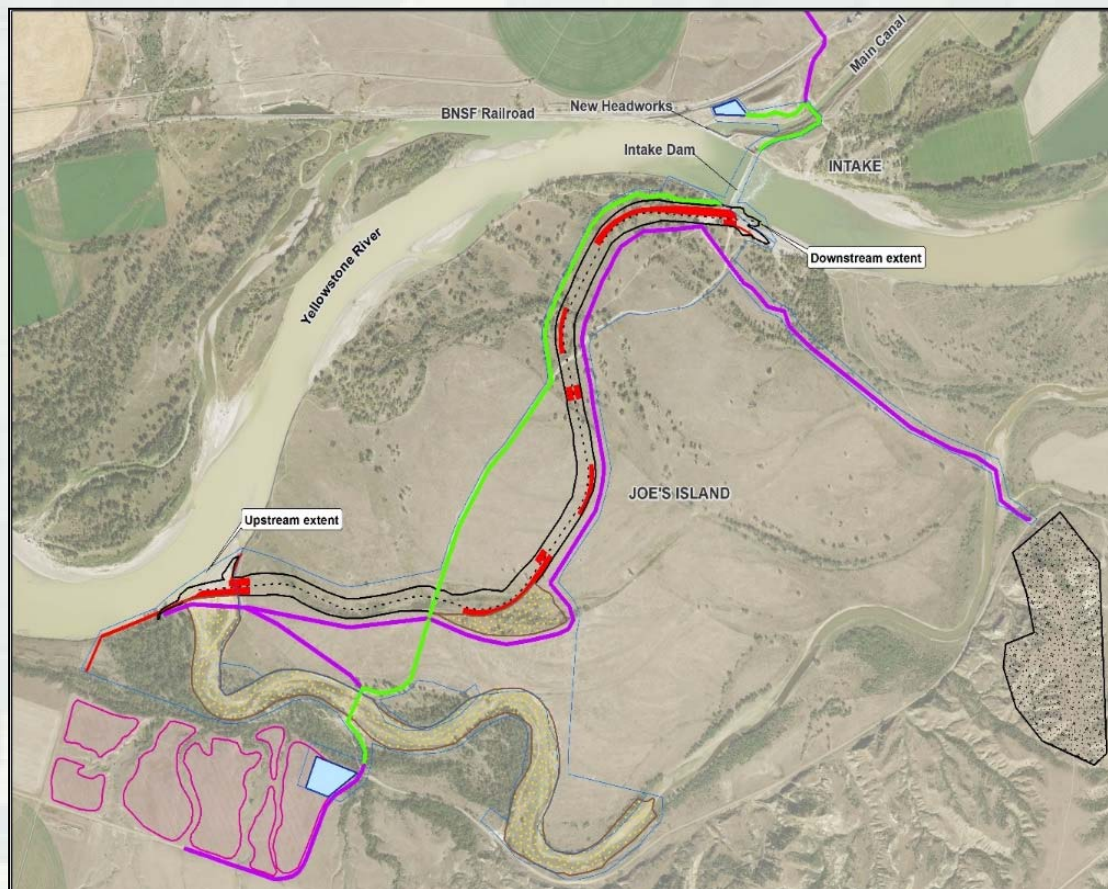
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Preferred Alternative -Bypass Channel

- Would meet the physical and biological criteria established by the BRT and FWS
- Is a cost effective means of providing fish passage
- Is expected to have the lowest annual O&M costs
- Would not result in significant long-term adverse environmental impacts



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How to Comment

- **Spoken or Written comments tonight**
- **Mail**
U.S. Army Corps of Engineers
Omaha District
ATTN: CENWO-PM-AA
1616 Capitol Avenue
Omaha, NE 68102
- **Email:** cenwo-planning@usace.army.mil
- **Due Date:** Comments must be post marked or received by July 28th, 2016

For additional information on this proposal or on the NEPA process please contact:

Tiffany Vanosdall
(402) 995-2695
tiffany.k.Vanosdall@usace.army.mil

David Trimpe
(406) 247-7717
dtrimpe@usbr.gov

The project website can be accessed at: <http://www.usbr.gov/gp/mtao/loweryellowstone>



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Spoken Comments

- All comments will be recorded by a certified court reporter
- Comments should be limited to 3 mins to give everyone an opportunity to speak
- You will be called on to speak in the order of the sign-in sheet
- The court reporter and agency staff will be available following the meeting for people that do not want to speak in front of the larger group
- Agency staff will not be responding to oral comments during tonight's meeting.
- All comments received during this comment period along with agency responses will be made part of an appendix in the Final EIS



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