

RECLAMATION

Managing Water in the West

Pilot Studies of Reservoir Sustainability: Yellowtail

April 14, 2016



U.S. Department of the Interior
Bureau of Reclamation

Current Reclamation Efforts



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Bureau of Reclamation
Research and Development Office
Science and Technology Program

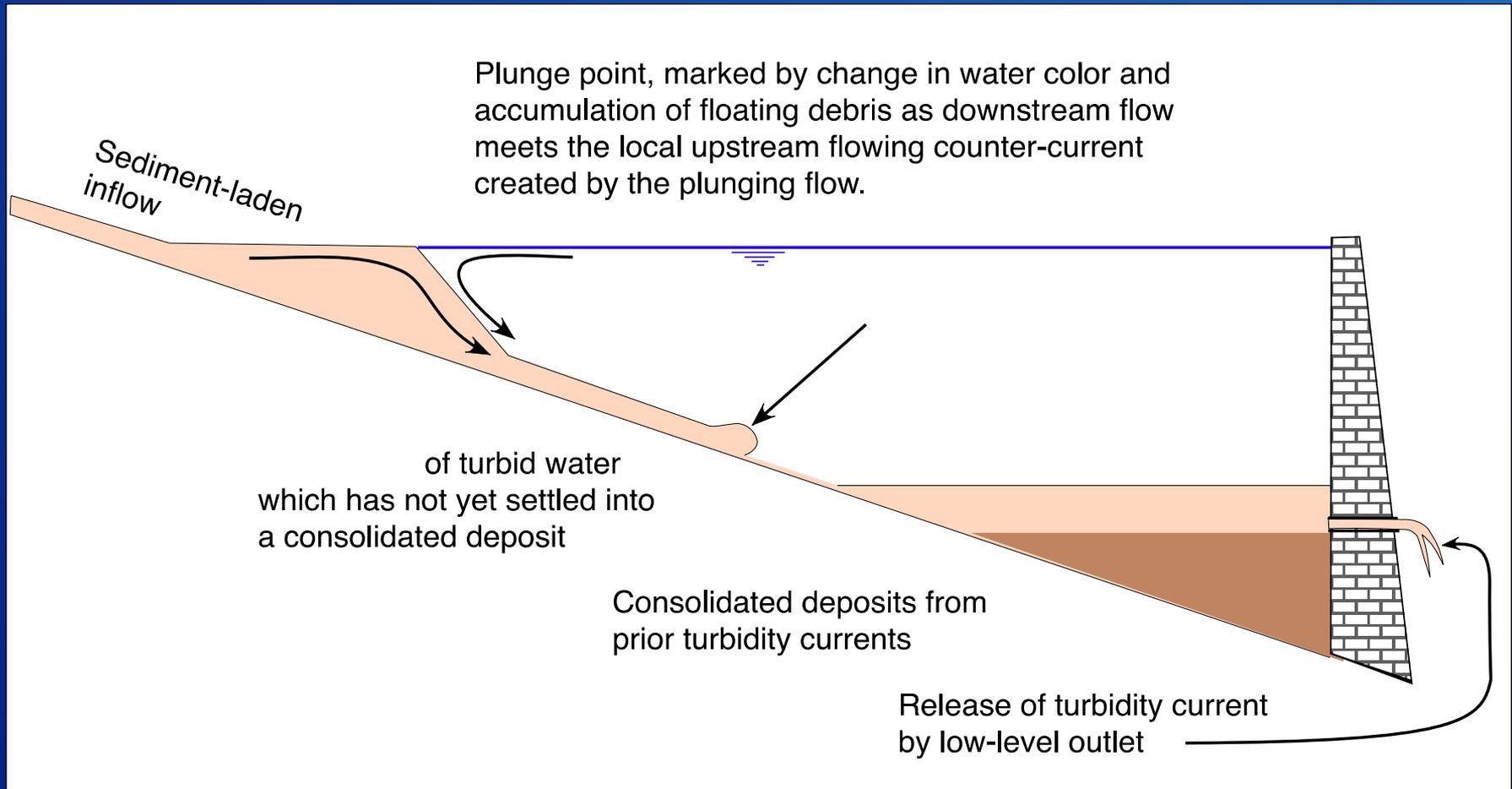
Pilot Studies of Reservoir Sustainability Options – Large Reservoirs

- 1) Further develops and evaluates reservoir sediment management options
 - FY 2017 evaluates options for controlling sediment at Horseshoe Bend
- 2) Investigate long term sustainability of the reservoir
 - Continued operation of Yellowtail dam for the purpose of delivering water and power into the future

Pilot Studies of Reservoir Sustainability Options – Large Reservoirs

- Applicable and potential solutions to manage sediment while reservoirs are at normal operating levels
 - 1) Venting turbid density currents
 - 2) Altering the geometry of the upper portion of a reservoir to improve the passage of sediment downstream
 - 3) Dredging
 - 4) Other methods that manage reservoir sedimentation

Turbidity currents are important in explaining patterns of fine sediment transport and deposition in many reservoirs



**Turbid density current running through
Dos Bocas Reservoir, Puerto Rico**

**Turbid water exiting turbines
below dam**

Dam

Clear surface water

**Sediment-laden water
entering reservoir**

Dos Bocas was built in 1942



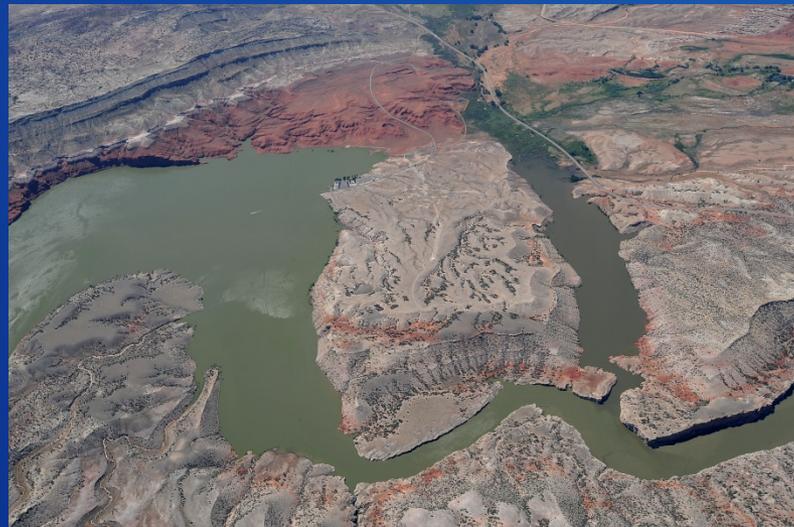
Pilot Studies of Reservoir Sustainability Options – Large Reservoirs

- Fiscal Year 2016 → Review data, plan options, collect data
- Fiscal Year 2017 → 2D sediment modeling of passage to increase sediment transport capacity; work with stakeholder to plan potential long-term options
- Fiscal Year 2018 → Develop Report and Guideline of options

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Horseshoe Bend

- Data collection FY 2016 if reservoir fills

Pilot Studies of Reservoir Sustainability Options – Large Reservoirs



Upstream of Causeway

- Possible in the future if additional funding is obtained

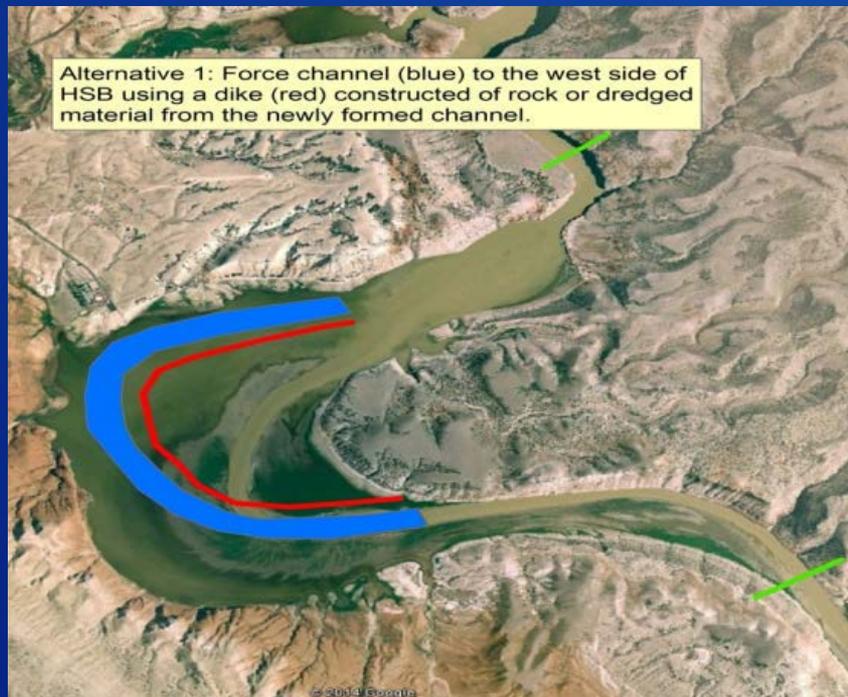
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Bighorn Lake Sediment Management Study

USACE 2010

- Reconnaissance Level
- Developed Alternatives and Estimated Costs



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Alternatives Considered

1. Force channel to the west side of the HSB using a dike
Cost estimate - \$24 Million and up + maintenance
2. Force all flow to the east side of the HSB using a dike
Cost estimate - \$24 Million and up + maintenance
3. Sediment removal with Flow barrier dikes
Cost estimate - \$34 Million and up + maintenance
4. Sediment removal without Flow barrier dikes
Cost estimate - \$145 Million and up + maintenance

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Next Steps & Questions?

- Reclamation – continue the planned FY 2016 and FY 2017 efforts evaluating alternatives and looking for additional opportunities to fund research or projects
- Sedimentation Committee – reinitiate efforts on public education and continue efforts to identify funding sources