

# Bowers Rock State Park – Project Alternatives

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# Outline

- Fish use
- Restoration goals
- BRSP opportunities



# ESA-listed Fish

- Spring Chinook



- Winter Steelhead



NMFS listed Upper Willamette River spring Chinook and Upper Willamette River winter steelhead as threatened species in 1999

Photo: Matt Stoecker

# Bowers Rock Fish Use

Season	Site Name	Site Type	# NATIVE	# NON-NATIVE	TOTAL #	% NATIVE	% NON-NATIVE
Spring	Bowers Rock	Lake	2	371	373	1	99
Spring	Bowers Rock Slough	Slough connected	120	19	139	86	14
Summer	Bowers Rock Slough	Slough connected	58	31	89	65	35

Season	Site Name	Site Type	# NATIVE SPECIES	# NON-NATIVE SPECIES	# TOTAL SPECIES	% SPECIES NATIVE	% SPECIES NON-NATIVE
Spring	Bowers Rock	Lake	2	6	8	25	75
Spring	Bowers Rock Slough	Slough connected	6	5	11	55	45
Summer	Bowers Rock Slough	Slough connected	6	5	11	55	45

# Fish Use in Reach

Site Name	Site Type	# NATIVE	# NON-NATIVE	TOTAL #	% NATIVE	% NON-NATIVE
Willamette River (Slice #152)	Mainstem	255	7	262	97	3
Willamette River (Slice #153)	Mainstem	270	4	274	99	1
Willamette River (Slice #155)	Mainstem	71	0	71	100	0
Willamette River (Slice #156)	Slough	20	13	33	61	39

Site Name	Site Type	# NATIVE SPECIES	# NON-NATIVE SPECIES	# TOTAL SPECIES	% SPECIES NATIVE	% SPECIES NON-NATIVE
Willamette River (Slice #152)	Mainstem	12	4	16	75	25
Willamette River (Slice #153)	Mainstem	13	2	15	87	13
Willamette River (Slice #155)	Mainstem	8	0	8	100	0
Willamette River (Slice #156)	Slough	6	4	10	60	40

# Expected Native Fish Use at BSRP

- Seasonal off-channel rearing habitat for salmonids and other natives species
- Seasonal spawning habitat for native non-salmonid species
- Continued use by non-native species active during spring and summer
- Fish use patterns at similar nearby floodplain habitats expected at BSRP

# BRSP Restoration Goals

- Goals to Address Limiting Factors
  - Improve off-channel habitat connections
  - Improve off-channel habitat conditions
  - Floodplain reforestation
  - Address invasive plant species





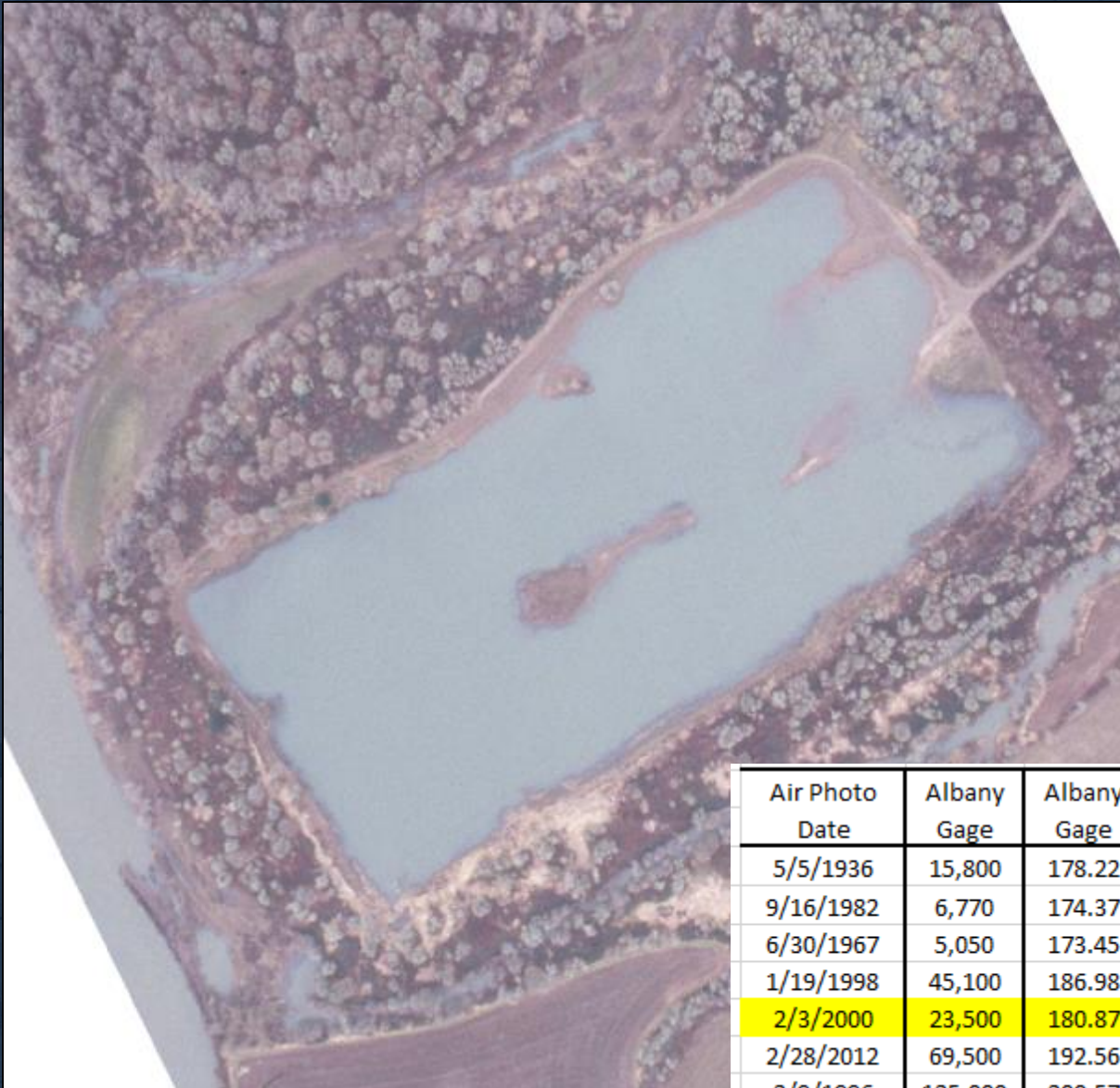


# BRSP Gravel Pit Pond

- Hub City Concrete leased from Edholm
- Developed 1975
- 50 acre pit
- Gravel washed at ASG gravel pit pond
- ~ 1.95 mcy potential
- Purchased by Morse Bros. 1995
- Permit closed 2003



# Air Photo and Discharge Analysis



- Connects at 2-yr
- <4 days/yr
- NE corner low
- Photo shows inundation at 23,500 cfs

Air Photo Date	Albany Gage	Albany Gage	Approximate Elevation at BRSP Gravel Pit Pond	Average Annual Duration
5/5/1936	15,800	178.22	185.2	90 days
9/16/1982	6,770	174.37	182.9	250 days
6/30/1967	5,050	173.45	182.0	329 days
1/19/1998	45,100	186.98	192.9	18 days
2/3/2000	23,500	180.87	188.5	73 days
2/28/2012	69,500	192.56	198.0	4 days
2/9/1996	125,000	200.57	203	

# BRSP Gravel Pit Pond

- Goals

- Improve seasonal fish access to floodplain habitats
- Improve water quality
- Reduce ponded water habitat
- Increase riparian forest
- Minimize effects to adjacent private land

- Options

- Alt 1 – Channel Outlet
- Alt 2 – Flow-through Connection
- Alt 3 – Floodplain Channel
- Alt 4 – No Action

# Alt 1 – Channel Outlet

- 1,550 ft channel
- Balance **12,000 cy**
- Tie to Coon Creek
- 110 days/yr inundation
- Lowest cost (\$149k) and risk
- Least ecological benefit



# Alt 2A – Flow-through Connection

- 2,010 ft channel
- Balance **32,000 cy**
- Tie to Coon Creek
- 70-110 days/yr inundation
- Moderate cost (\$310k) and risk
- Moderate ecological benefit



# Alt 2B – Flow-through Connection

- 1,830 ft channel
- Balance **26,000 cy**
- Tie to Coon Creek
- 70-110 days/yr inundation
- Moderate cost (\$223k) and risk
- Moderate ecological benefit



# Alt 3 – Floodplain Channel

- 3,740 ft channel
- Fill 345,000 cy
- Tie to Coon Creek
- 70-110 days/yr inundation
- High cost (\$4.6M) & moderate risk
- Greatest ecological benefit



# Alternatives Comparison

<b>Alternative</b>	<b>Cost</b>	<b>Risk</b>	<b>Ecological Benefit</b>
Alt 1 – Outlet	\$150k	Low	Low
Alt 2A – FT Connection	\$310k	Moderate	Moderate
Alt 2B – FT Connection	\$223k	Moderate	Moderate
Alt 3 – FP Channel	\$4.6m	Moderate	High
Alt 4 – No Action	\$0	Low	Lowest



# Construction Schedule

- Fill material to be generated on-site
- Import select materials not generated on-site (large rock, select rock, wood)

Alternative	Approximate Time to Complete	Truck Round Trips
Alt 1 – Outlet	3 weeks	70
Alt 2A – FT Connection	4 weeks	90
Alt 2B – FT Connection	4 weeks	90
Alt 3 – FP Channel	3 months	160
Alt 4 – No Action	0	0

# Crossings

- East Slough – 2 crossings
- West Slough – 3 crossings
- Goals
  - Improve seasonal fish access to floodplain habitats
  - Improve water quality
- Options
  - Improve
  - Remove
  - No Action

# East Slough

- Historical feature
- 1.75 mi long
- 2 crossings in BRSP
- Dense riparian
- Downed wood



# East Slough – Crossing #1

- Recommendation
  - Replace with larger pipe or box culvert



# East Slough - Crossing #2

- Recommendation
  - Remove



# West Slough

- Historical feature
- ASG mine at head
- Reduced forest coverage
- Potentially ditched
- 3 crossings
- Connected to ASG gravel pit pond



# West Slough – Crossing #1

- Recommendation
  - Improve with road surfacing, overflow



# West Slough - Crossing #2

- Recommendation
  - Remove





# West Slough - Crossing #3

- Recommendation
  - Remove



# Crossing Alternatives – Cost Estimates

- Costs are estimated as “stand-alone” projects
- Costs reflect design/permitting/construction

Crossing	Improve	Remove	No Action
East Slough – Crossing 1	<b>\$59k</b>	\$37k	\$0
East Slough – Crossing 2	\$48k	<b>\$30k</b>	\$0
West Slough – Crossing 1	<b>\$15k</b>	N/A	\$0
West Slough – Crossing 2	\$22k	<b>\$15k</b>	\$0
West Slough – Crossing 3	\$19k	<b>\$12k</b>	\$0

# Summary

- Project goals –
  - Improve connectivity and water quality to benefit native species.
- Native fish use expected in winter and spring
- Increase flow-through, reduce ponded habitats
- Recommendations
  - Gravel pit pond: Alt 2B - Flow-through Channel
  - East Slough: Improve Xing 1, Remove Xing 2
  - West Slough: Improve Xing 1, Remove Xing 2 and 3