

RECLAMATION

Managing Water in the West

New York Canal

Canal Assessment Session – Denver, Colorado

May 14, 2008

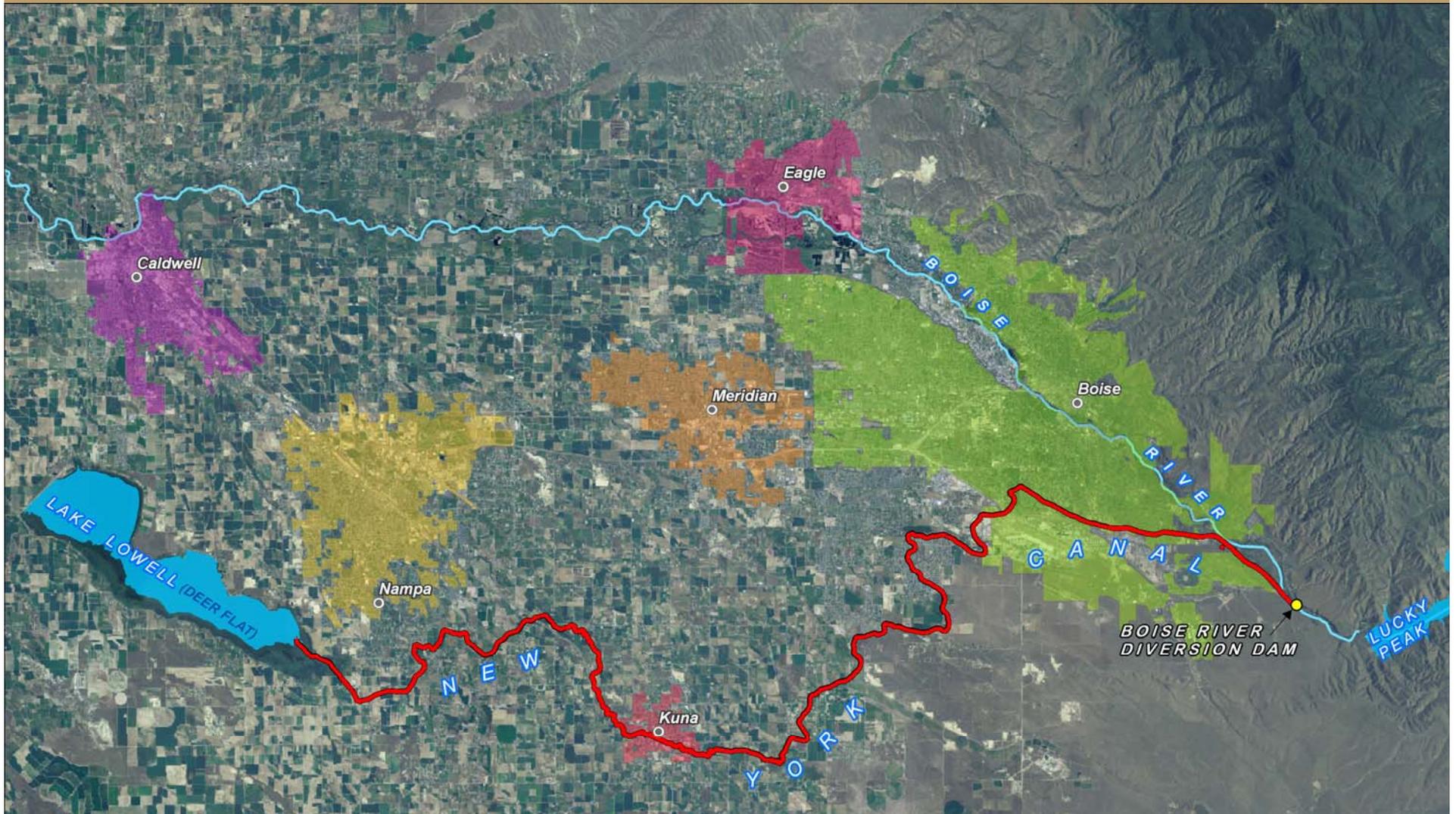


View from Boise River Diversion Dam



U.S. Department of the Interior
Bureau of Reclamation

New York Canal

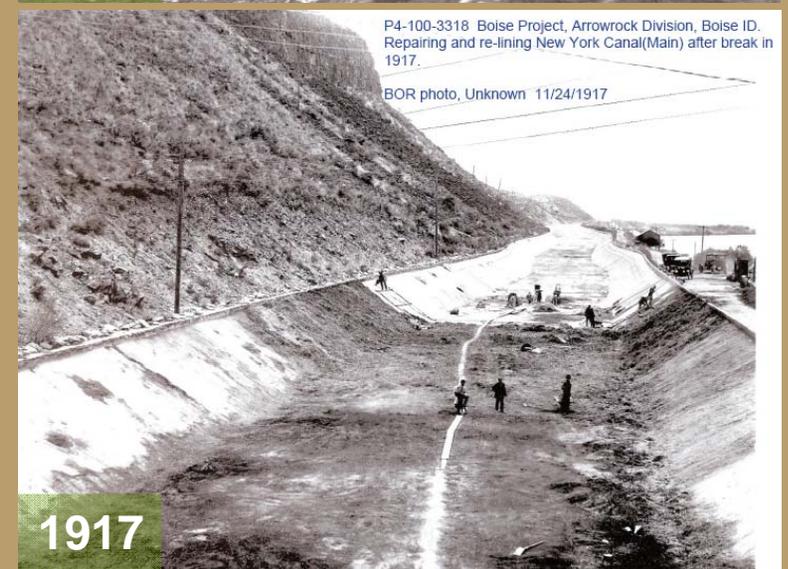
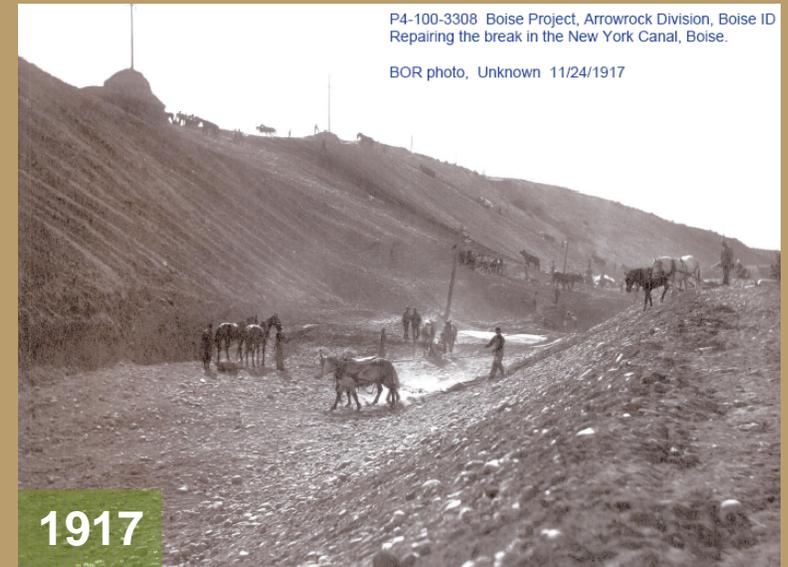


- Boise River Diversion Dam, 7 miles southeast of Boise to Lake Lowell, 4 miles southwest of Nampa

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New York Canal Past Performance

- Features – 40 miles, 2,800 cfs, 8 feet deep, 40' bottom width
- Has operated for a hundred years – (1906-08, enlarged 1909-12)
- Construction practices – horsepower!
- Past Failures
 - 1917, 1955
- Current condition
- Recent scares



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New York Canal Past Performance (cont.)



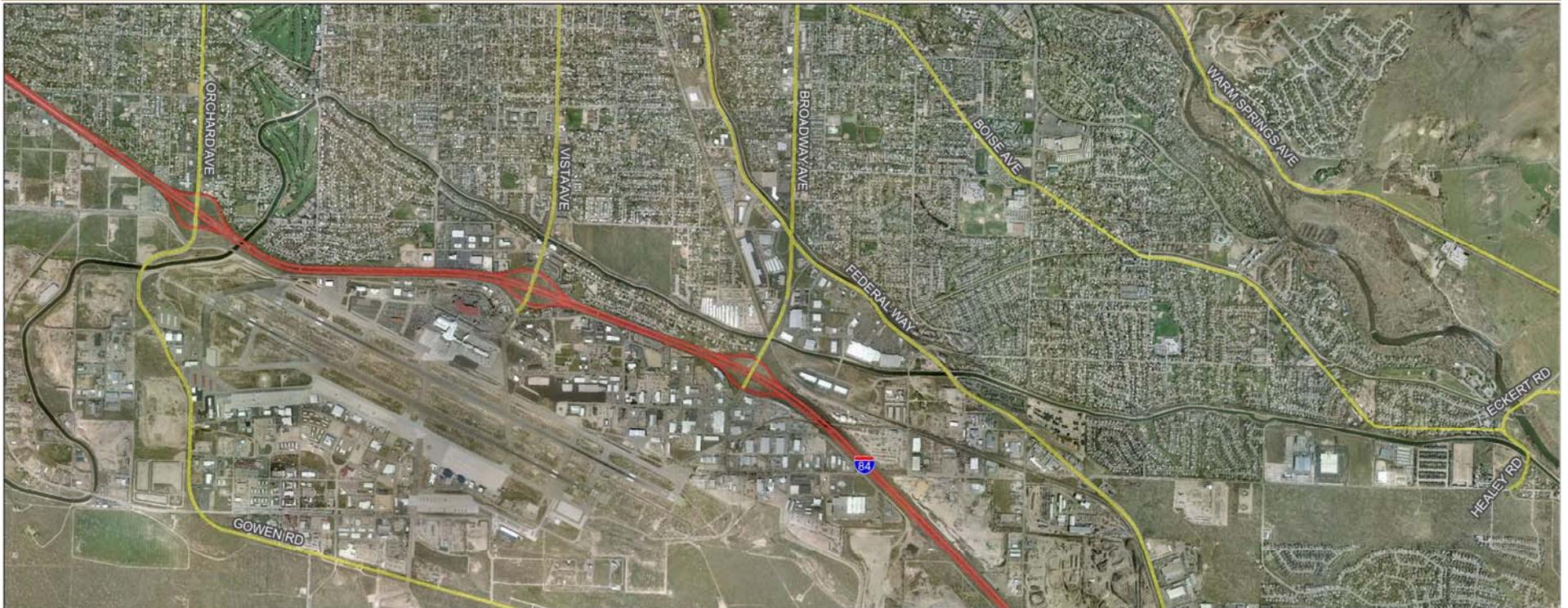
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New York Canal Encroachment



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New York Canal Special Review



- **Mile post 2.5 to Mile Post 10.8**
 - **3-25-08**
 - Healey Rd. to Vista Ave. then I-84 to Gowen Rd. (no water in canal)
 - **5-2-08**
 - Vista Ave. to Gowen Rd. ($\approx 2,350$ ft³/s in canal)

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New York Canal Special Review 3-25-2008

- “Annual Physical”
- Vegetation
- Historical seepage areas
- Cracking and buckling of lining



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New York Canal Special Review 5-2-2008

- Encroachment of ROW
- No burrowing animals
- **Conclusion: Provides a general indication of condition**
- Fresh eyes may identify new areas of concern



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Boise Project Board of Control

- Comments on “Special Review”
 - Checklist is a superficial review
 - Issues already known
 - Assistance with technical investigation of issues needed

DRAFT – CANAL ASSESSMENT CHECKLIST

Part 1 – Pre-Inspection Activities

Project: Boise Project - Arrowrock Division
 Feature: New York Canal
 Specification No.: Spec Nos. 68 & 79
 Original Construction Date: 1908-1909
 Major Rehabilitation Date: 1909 - 1912, additional lining 1956

Name of canal/canal system: New York Canal
 Purpose & Use (transmission/feeder canal, distribution canal, M&T): Feeder and Distribution Canal
 Reach name or location: Milepost 2.5 to Milepost 10.8
 Estimated population at risk: 1000 + (from inventory)
 Reach's last inspection date: 2008

Location of check structure immediately upstream of reach (station or milepost): None
 No. of check structures in reach: 3
 Check structures locations (station or milepost): MP 5.6 (not used), MP 8.3, MP 10.8
 Estimated storage capacity between check structures at design freeboard: _____ (ac-ft)

No. of wasteway structures: 2 (none in reach); Wasteway location: Barber WW - MP 1.6, Hubbard WW - MP 21.6
 Wasteway design flow: _____ ft³/s; 2,800 (Barber, est.), 2,000 (Hubbard, est.)

Design Canal flow rate: 2,800 ft³/s; Max. Operating flow rate: 2,800 ft³/s
 Is the canal capable of passing designed flow? Lining overlay has reduced capacity: No Yes
 Are there problems with controlling canal flows? No Yes
 If yes describe problem: Accurate deliveries dependent upon maintaining adequate forebay elevation at Barber
River-Division-Plan (canal headworks)

Design depth 8 ft.; Checked or Operating depth 8 ft.
 Design inner side slope 1.5:1; Design outer side slope 1.5:1
 Design lining freeboard 1 ft.; Design earth freeboard _____ ft.
 Design bottom width: _____ ft. (lined sections)
 _____ ft. (inlet sections)

Type of lining (unlined, earth lined, rock, membrane, concrete, _____)

Embankment materials used (Well graded sands, clays, etc.): Unbr

Extent of irrigation season: _____ ~ 6 Months (month/days)

Canal history (failures, seepage, flooding, overtopping, past problem Canal Break 1955 (seepage), Several near failures since 1955: TS17, large failure 1917)

Any significant incomplete/outstanding O&M recommendations? _____

Define potential canal concern locations within the reach (station or etc.): _____

3/25/08 - DRAFT 1

Part 2 – Inspection Activities

Visual Observations

General Inspection Information

Date of exam/inspection: 3/25/08 - Chris Keith, Karl Ames
 Names of examiner(s): 5/2/08 - Chris Keith, Karl Ames, Mike Marriott

Operating entity personnel participating: 3/25/08 - Phil Comegys, Paul Deveau (attended part of exam) 5/2/08 - Richard Young, Paul Deveau (attended part of exam)

Canal flow rate at time of inspection (estimated or actual): 3/2/08--0 ft³/s 5/2/08--2,350 n3/s

General Canal Reach Information

Urban with some commercial

1. What is the land use surrounding the canal reach (downhill/uphill)? commercial
2. Has there been additional development observed that may affect the current PAR? No Yes
3. Provide an estimate of the canal reach in a fill _____ % , partial fill _____ % or benched sections _____ %?
4. Is the canal reach adjacent to residential development? No Yes
5. Is the canal reach adjacent to railroads? No Yes
6. Is the canal reach adjacent to roads (County, State, Interstate)? No Yes
7. Is the canal reach adjacent to critical infrastructure (school buildings, water treatment plants, etc.)? No Yes
8. Any areas of this canal reach that have experienced failures? No Yes
 If yes provide failure date: 8/1/55 Location (station or milepost): MP 3.7

If your response is “Yes” to any of the questions below or have comments, provide additional information in the Description Table.

Observations on Canal Prism, Embankment and Sideslopes

1. Any canal side slope instability observed (cracking, sloughing)? No Yes
 Cracking: No Yes; Sloughing: No Yes;
 Steep side slopes: No Yes; Subsidence: No Yes;
 Bulging at toe of slope: No Yes
2. Any trees, deep-rooted, or woody vegetation growing in, on or within 15-ft from outside of embankment toe? No Yes
 Rotting trees or stumps: No Yes; Trees (alive/dead): No Yes;
 Woody Vegetation: No Yes; Grasses: No Yes
3. Any evidence of rodents or burrowing animal holes? No Yes
 Any significant concentration of rodents or burrowing animal holes? No Yes

3/25/08 - DRAFT 3

Reach Description:			
Location (Northing/Easting, Station, or Distance)	Description	Category Type	Photo #
The below items pertain to the "General Canal Reach Information" section of the Inspection Activities (pg. 3).			
The entire reach from Healey Rd. to Gowen Rd. (MP 2.5 to MP 10.8)	Typical residential development below canal and natural bench. Typical residential development on canal's uphill side.	Residential Development	1,2,3,4
MP 5.8	Union Pacific Railroad crossing directly under Broadway Ave. bridge. Natural gas pipeline crossing in same location	Railroad & Critical Infrastructure (natural gas pipeline)	5
MP -- 2.5, 5, 5.1, 5.5, 5.8, 6.8, 7.4, 8, 8.9, 9.4, 10.8	Road crossings within specially reviewed reach	Roads	
The below items pertain to the "Observations on Canal Prism, Embankment and Sideslopes" section of the Inspection Activities (pg. 3,4)			
MP 2.5 to MP 8.9	Vegetation along downhill embankment, natural bench, and uphill side of canal.	Trees, Woody Vegetation, Grasses	6,7,8
Appr. MP 4	minor erosion of canal road and outer downhill embankment, where pedestrian trail(s) has been developed and used	Minor Erosion	9

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- **Bacon Property**

- Seepage
- Drain(s)
 - Base of retaining wall
- Observation Wells
- Engineering Management
- Cost



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- **Encroachments**

- Make our job even more difficult
- Difficult enforcement for districts and Reclamation
- Cities and Counties cannot be depended upon
- Toe of embankments even more difficult to protect
- Need bigger enforcement hammer



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Operation and Maintenance

- **Annual Maintenance**
 - Post season inspection
 - Lining replacement
 - AquaLastic™ Sealant



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