

Operations & Education Committee Meeting
Wednesday, June 29, 2016 8:30 AM
Lower Platte North NRD Office
P.O. Box 126
Wahoo, NE 68066

1. RV Dump Station Contract Update & Bid Approval

Wanahoo RV Dump Station JEO Contract update - Contract with JEO is \$25,920, to date the District has paid \$14,703.50 as of July 11, 2016.

We are currently advertising for bids on the Dump Station. Bids are due Friday, August 5th at 11:00 a.m. at which they will be read aloud. It is anticipated that a bid will be accepted during the August Board Meeting August 8th.

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5. Grass Drill Revenue Saunders County

Rezac Seed has provided the District a check for \$1,587.94 for grass drill rental for the first half of 2016. There were 17 cooperators that used the grass drill.

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7. WILD NE/CREP REPORT

There are no payments due.

8. OPERATION & MAINTENANCE & OTHER ITEMS

8.A. O & M Crew

The O & M Crew continues to inspect our watershed dams and are just about complete. Assisting in forming park bench sites. Maintenance on vehicles. The interns are in full swing with Chemigation inspections led by Tyler Benal.

8.B. Ice Jam Agreement Invoice

The Papio-Missouri NRD has sent an invoice for \$1,723.60 for our District's portion in keeping the Ice Jam Inter-local agreement fund balance at \$150,000. The expenses took place in 2015 and 2016. See attached letter.

8.C. Lake Wanahoo Water Level

Lake Level Discussion

Testimony was received during the May 9 board meeting concerning the flooding in Wahoo Creek and unhappiness on flood damage reduction from Lake Wanahoo. Most of those testifying asked that the lake level be dropped to provide additional flood damage reduction.

Mike Sotak from FYRA Engineering presented information on the Hydrology and Hydraulics for Lake Wanahoo (copy attached). The information provided shows that the annual flood damage savings from Lake Wanahoo is \$335,199. He also explained that the height of the dam is set by Todd Valley to the east and more specifically the elevation of the Wahoo Airport runway. Tabular and graphic data showed the inflow and outflow for Lake Wanahoo at various storm events that reduce flow in Sand Creek between 36% and 60% depending on the event.

Sotak went on to show the rainfall for the May 10-11, 2016 event and how the highest rainfall occurred over Wahoo Creek. By 7:00 a.m. on May 11 the entire Wahoo Creek flood plain south, east and west of Wahoo was covered by floodwater. Sand Creek flooded over old highway 77-92 for close to two hours beginning at 4:00 p.m. on May 11.

Sotak explained and graphically showed the difference that operating Lake Wanahoo at a lower conservation pool would make on a five year storm event. Lowering the Lake one foot would reduce outflows 130 cfs (5%) and lowering the Lake two feet would reduce outflows 305 cfs (13%).

Those present were invited to attend the O, E & RW Committee Meeting on June 29 if they wish to have a dialogue concerning operation of Lake Wanahoo. Those that wish to discuss additional dams in the Wahoo Creek Watershed were invited to attend the Projects Committee on June 30.

Mike Sotak has been asked to attend the June 29 committee meeting to be part of the discussion as well as Kent Zimmerman from the Department of Natural Resources Representing the Natural Resources Commission (\$12.3 million funding sponsor).

Zimmerman has forwarded the resolution passed by the NRC in September of 2011 that allowed us to lower the lake elevation by one foot for the year 2012.

Attachments:

Sotak Presentation
NRC Resolution – 9-27-11
NRC Minutes 9-27-11

8.D. Erosion Downstream from Lake Wanahoo

Several landowners along Sand and Wahoo Creeks southwest of Wahoo complained of excess stream bank erosion.

8.E. Eagle Scout Project Expenses

Max Hohn completed his Eagle Scout Park Bench installation at Lake Wanahoo. He and his Troop constructed four park benches. He found four sponsors to help pay for the benches, 3 at \$300 and 1 at \$350. The District will cover construction expense incurred by him and his family which is \$169.84. See attache spreadsheet by Max Hohn.

8.F. Robert Schmit Bellwood Dam Repair Request

Bob Schmit is asking for assistance in repairing a dam in the Bellwood watershed built in 1974. His dam is located between two NRD PL-566 structures 6-G and 6-E, see attached aerial photo. Mr. Schmit's estimate is from Krivanek Construction at \$10,130.00. This structure is due south of Bellwood, if it breaches and is not repaired the silt load damages downstream landowners.

8.G. Trouble Creek Dam & Rawhide Ditch Kremlacek Request

Early morning Saturday June 18th portions of Dodge County had large rainfall amounts ranging from 5-7 inches. Trouble Creek dam was at a record level, see photo. All creeks, ditches, storage cells and fields were covered with water. On Monday Heimann and Miyoshi inspected the area and opened two of four gates of one storage cell that had 4 feet of water, two gates are froze shut and need to be worked on to open. There are areas of bank erosion on Ditch 8 that may need repaired.

Below Trouble Creek dam the water washed out a low water crossing at Ditch 8 and caused severe erosion on Ditch 8 below the sheet pile wall we put in 3-4 years ago, see picture. We will need add to the Rawhide budget line.

Water from the dam may have also caused damage to Gary Kremlacek's 48" concrete culvert water crossing by plugging with trees and over topping, this is his only access to a field. See aerial photo. We are not sure what Mr. Kremlacek wants as far as repair. He is also asking for assistance to fill sink holes in his field along Ditch 8 in which he claims trees were buried when the Ditch was constructed. Work on these problems can occur after harvest. Staff will ask Mr. Kremlacek for an estimate to be presented at a later date.

8.H. Wanahoo SRA Electrical Panel Bollards

It was requested at the last Board Meeting to get an estimate in placing bollards around the five electrical panels and transformers at the Lake Wanahoo SRA. Mike Murren has put together an estimate of approximately \$4,825 for materials and

labor, see attachment. The Committee discussed the situation and felt it unnecessary to place bollards around each electrical panel and transformer because the distance from the roads to these structure is substantial and they are insured.

It was brought to attention that the insurance cost of \$2,700 for insuring 75 electrical camper pedestals was out of line and that the District self insure these pedestals. A motion was made to self insure the 75 electrical pedestals, however it was discovered that the cost for the insurance is actually \$393 per year. Director Gibney that made the motion asked that it be withdrawn.

8.I. Equipment

Staff would like to replace our current 2008 ATV and trailer with a Side by Side Utility vehicle. The current ATV is narrow 44" and becomes top heavy with a 20 gallon sprayer tank on board when spraying dams and ditch berms. Mitch O'Reilly has researched the side by side utility vehicles and trailers and reviewed his findings. (See attachment). Staff would recommend selling the ATV and trailer and replace it with wider utility vehicle and trailer therefore budgeting \$15,000.

8.J. Wanahoo Wildlife Area Parking

North and South of County Road O in the wetlands of Lake Wanahoo many people bird watch. There is not an adequate area to park and we would like to keep parked vehicles off of the County Roads. Staff suggest developing a five vehicle parking area at the old farmstead north of County Road O on Co. Rd 17. This parking lot could also be used by the hunters who use the Ducks Unlimited Blind. Limestone will be used as the base.

9. ROCK AND JETTY

10. EROSION & SEDIMENT RULES & REGULATIONS

11. INFORMATION AND EDUCATION

11.A. Information

11.A.1. Radio & eAds

The KTIC Radio ad this month focused on Chemigation. The recording is attached. The Wahoo Newspaper eAd continued this month with promotion for Czechland Lake Recreation Area.

11.A.2. Viaduct/Annual Report

The summer issue of the Viaduct and 2015 Annual Report has been sent to Suburban Newspapers for printing and distribution. Distribution is planned for the following area newspapers: Fremont Tribune, David City Banner Press, Schuyler Sun, Columbus Telegram, Albion News, Newman Grove Reporter, Humphrey Democrat, Wahoo Newspaper, North Bend Eagle and the Ashland Gazette.

11.B. Education

11.B.1. Husker Harvest Days

NARD is looking for volunteers during Husker Harvest Days on September 13th-15th. The deadline to sign up is Friday, July 29th. The shifts are 3 hours and the roles are tree give-a-ways, greeters, floaters (answer questions and retrieve trees from cooler), and Native Prairie Outreach Display. The current sign-up sheet is attached. Please let Desirae know if you are interested in signing up to volunteer.

11.B.2. Platte River Time-lapse Project

This project was launched by photographer Michael Forsbert and NET Special Projects Director Michael Farrell to provide an unprecedented look at the Platte Basin and the importance of agriculture as it relates to the Platte Basin. The Platte River Time-lapse Project will provide educational materials for the general public, classrooms, and out-of-school programs. The project will also create STEM curricula, meeting Nebraska state standards, for elementary, middle, and high school students.

Currently, NARD and 13 NRDs are considering participation in the project. The cost of participation in the Platte River Time-lapse Project is \$1,800 a year for three years. This financial partnership will support the development of:

- Identify location/partner for time-lapse cameras
- Install image-gathering technologies on ag location
- Assemble team of corn/agriculture experts and educator advisors
- Identify best STEM themes that align to Nebraska State Standards
- Create storyboards and wireframes for content

11.B.3. Nature Education Trail/Disc Golf Course

A proposed project for FY2017 is the addition of a nature education trail/disc golf course at Lake Wanahoo State Recreation Area. The 9-hole disc golf course will include environmental education that is specific to the local area. Tee signs will include traditional tee sign information, disc golf pro tips, and educational information of our choosing (Lake Wanahoo, the Saunders County Poor Farm, bald eagles, prairie grasses, etc.). We will choose 9 themes for the tee signs. There are 3 themes for scorecards: birds, trees, greens. These will include species specific to the area.

Kids in Parks is a national company that will develop artwork, signage, and scorecards. This company will also administer the rewards program for visitors that connects disc golf courses across the country that are a part of this organization. LPNNRD staff have researched cost-effective materials to utilize in the building and installation of the disc golf course.

Estimated costs through Kids in Parks is \$7,600. The design and development of the disc golf course is estimated at \$5,000. The total estimated project cost is \$12,600. There is a little less than \$15,000 remaining in the NRDF grant funds-making the cost share for the project approximately \$5,040.

Cost break down per hole is \$790.

- Signage: \$250
- Building Materials: \$140
- Basket: \$400

To help alleviate costs, we have developed a sponsorship plan. There has been strong interest and positive responses from potential sponsors. Community sponsors could support the project at the following levels:

- Basket Sponsorship: \$400 (Would include decal of company logo/business name along top of basket)
- Tee Sign Sponsorship: \$250 (Would include company plaque)
- Full Hole Sponsorship: \$500 (Would include both plaque and decal)

11.C. Computer

12. RURAL WATER SYSTEMS

State required Consumer Confidence Reports (CCR's) have been completed, mailed to customers and all reporting information submitted to DHHS.

Continue to work with Phoenix Group moving forward on radio read system for both Colon and Bruno.

12.A. Colon System

Service leak on Oak street was isolated and repaired.

Replaced one defective service meter.

Coordinating new rural service customer on Browning drive. Once connection fee (\$3,000) is paid work will begin installing meter pit, trenching line and tapping main.

Meters were read 6-28-16 and monthly samples collected. Bills will be sent out 6-29-16.

12.B. Bruno System

Meters were read 6-28-16 and monthly samples collected. Bills will be sent out 6-29-16.

Conducted air relief inspections along system.

12.C. Other

13. Adjournment

LPNNRD - Lake Wanahoo Hydrology and Hydraulics Recap



BOB GREGALUNAS, PE, CFM
MIKE SOTAK, PE

LPNNRD SUBCOMMITTEE MTG
JUNE 29, 2016

Why we're here....



- Since the construction of Lake Wanahoo, flooding has still occurred at times
- Questions about the dam's ability to meet the designed flood reduction benefits have been raised

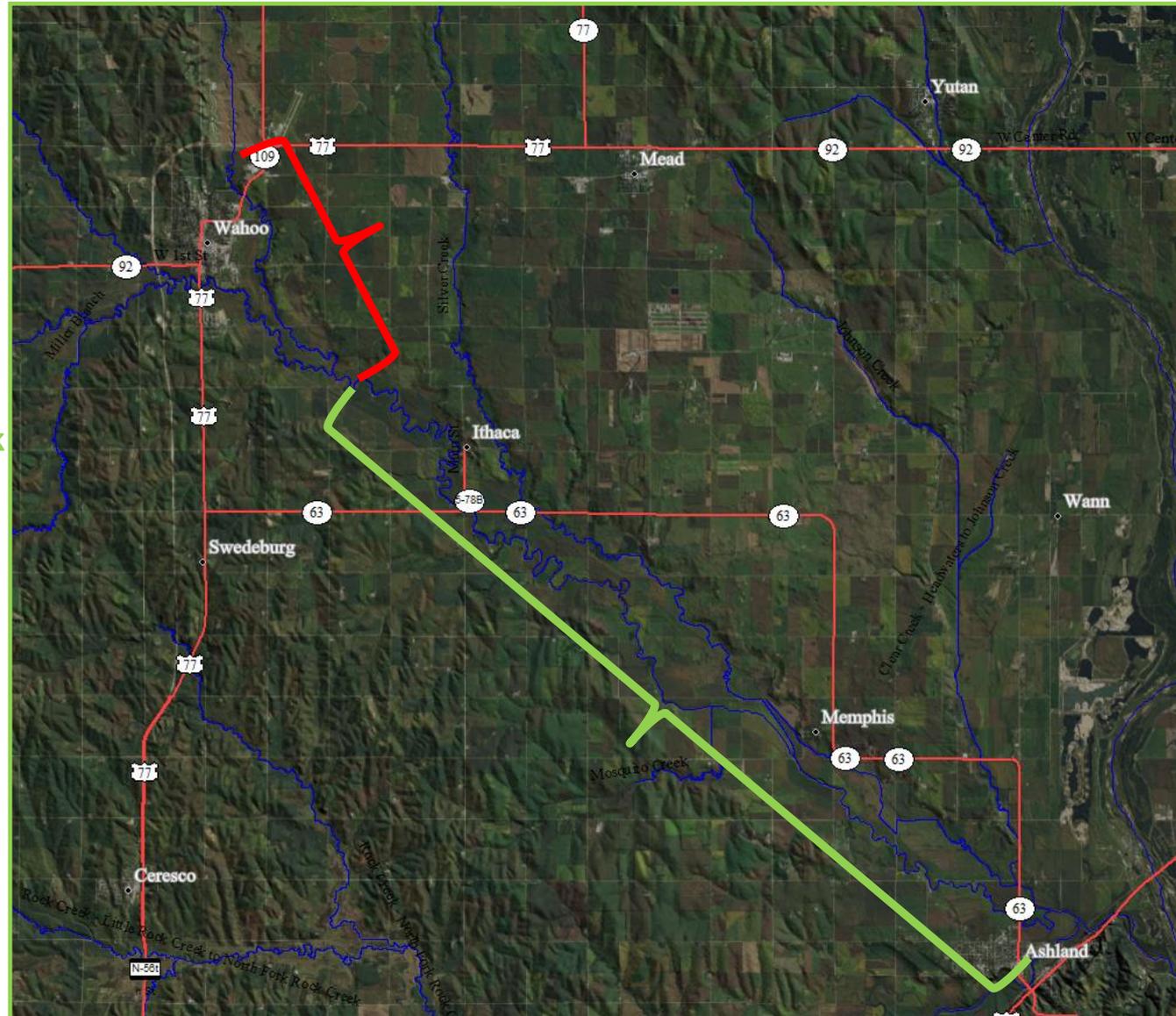
Design Background

- Lake Wanahoo was one component of the USACE Sand Creek Restoration Project
- The Project was funded under Section 206 of the Water Resources Development Act for Aquatic Ecosystem Restoration
- Flood Control was considered a “secondary benefit”
- Total average annual flood control benefits were calculated to be \$335,199

Benefit Locations

Sand Creek from Lake Wanahoo to the confluence with Wahoo Creek

Wahoo Creek from the confluence with Sand Creek to Ashland, NE



Design Background



- Lake Wanahoo is a High Hazard Potential Dam
- This requires the dam to safely pass a Probable Maximum Flood (PMF) Which is around 22" in 24 hours
- The dam's flood storage is between the permanent pool and the top of dam
- In the case of Lake Wanahoo, the maximum top of dam elevation was controlled by the planned intersection of the Hwy and the Airport

Top of Dam Elevation



Image Courtesy of Google Earth

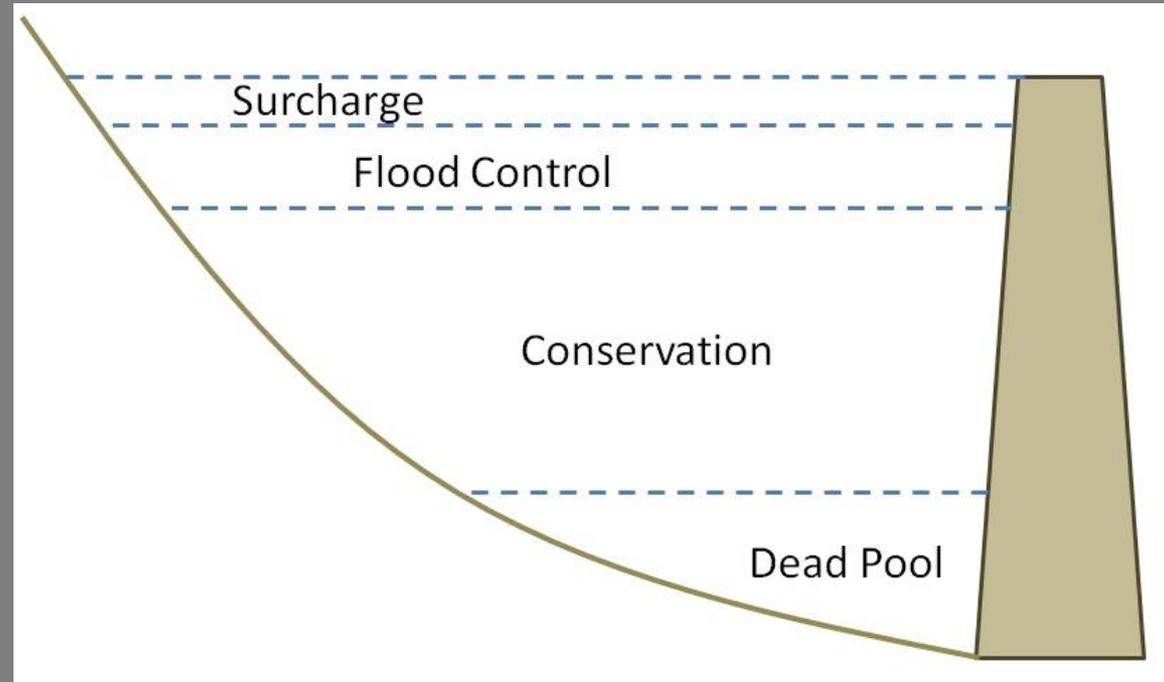


Wahoo Airport Approach Flight Path



Flood Storage in a Reservoir

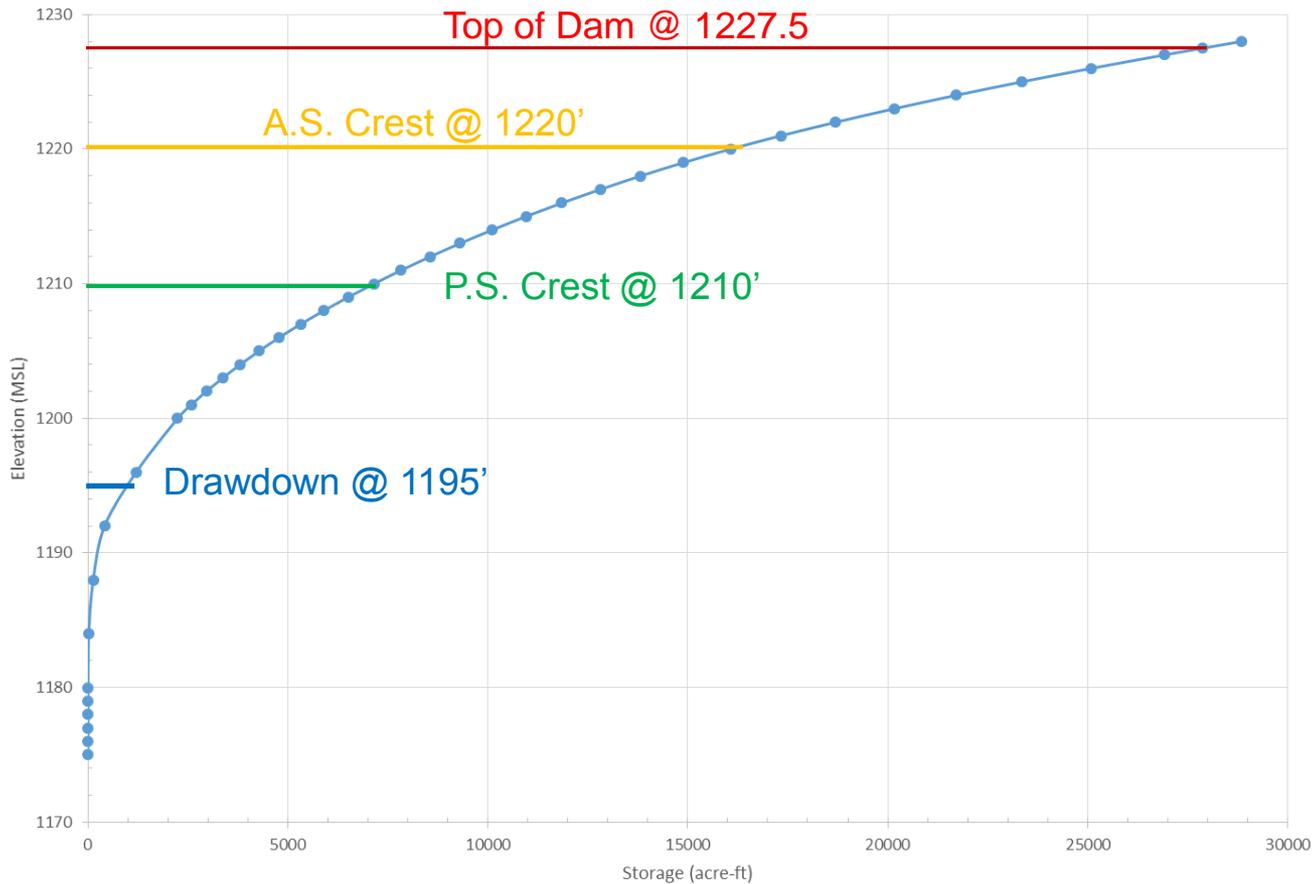
- The volume of flood storage required is inversely related to the capacity of the spillway
- In Lake Wanahoo's case, the available flood storage was set by the top of dam elevation (controlled by Hwy and Airport) and the permanent pool elevation (set by required water quality standards and environmental benefits)



Flood Storage in Lake Wanahoo



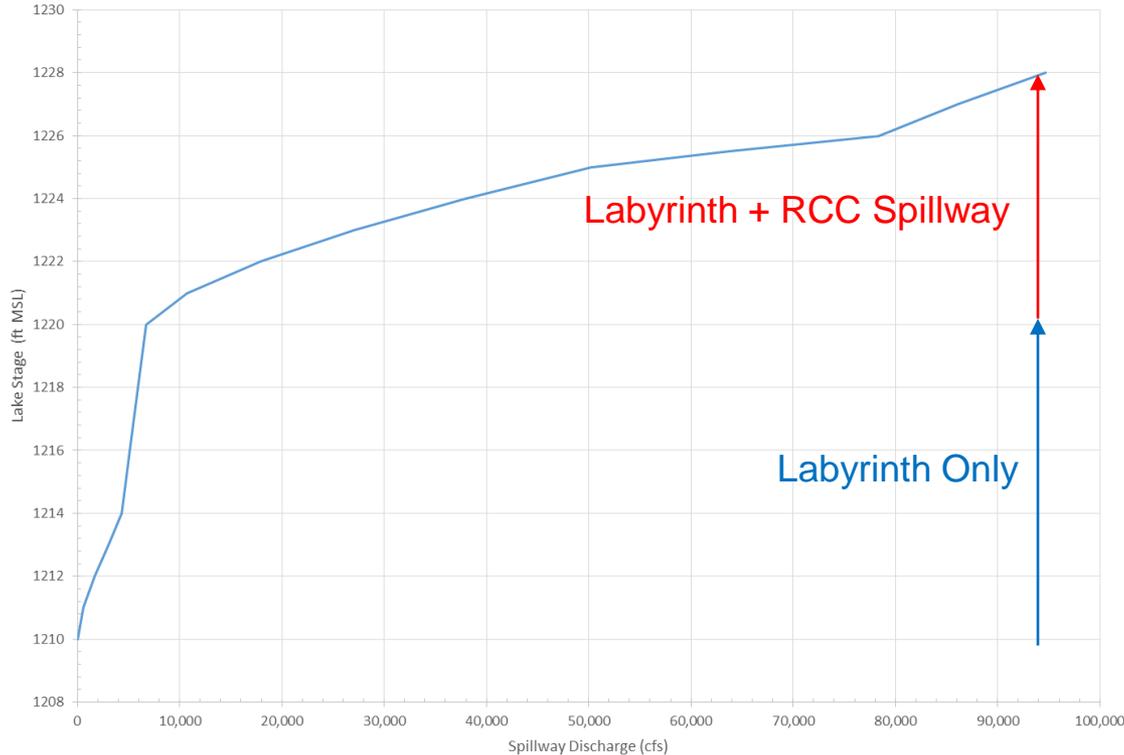
Lake Wanahoo Stage-Storage



Spillway Capacity of Lake Wanahoo

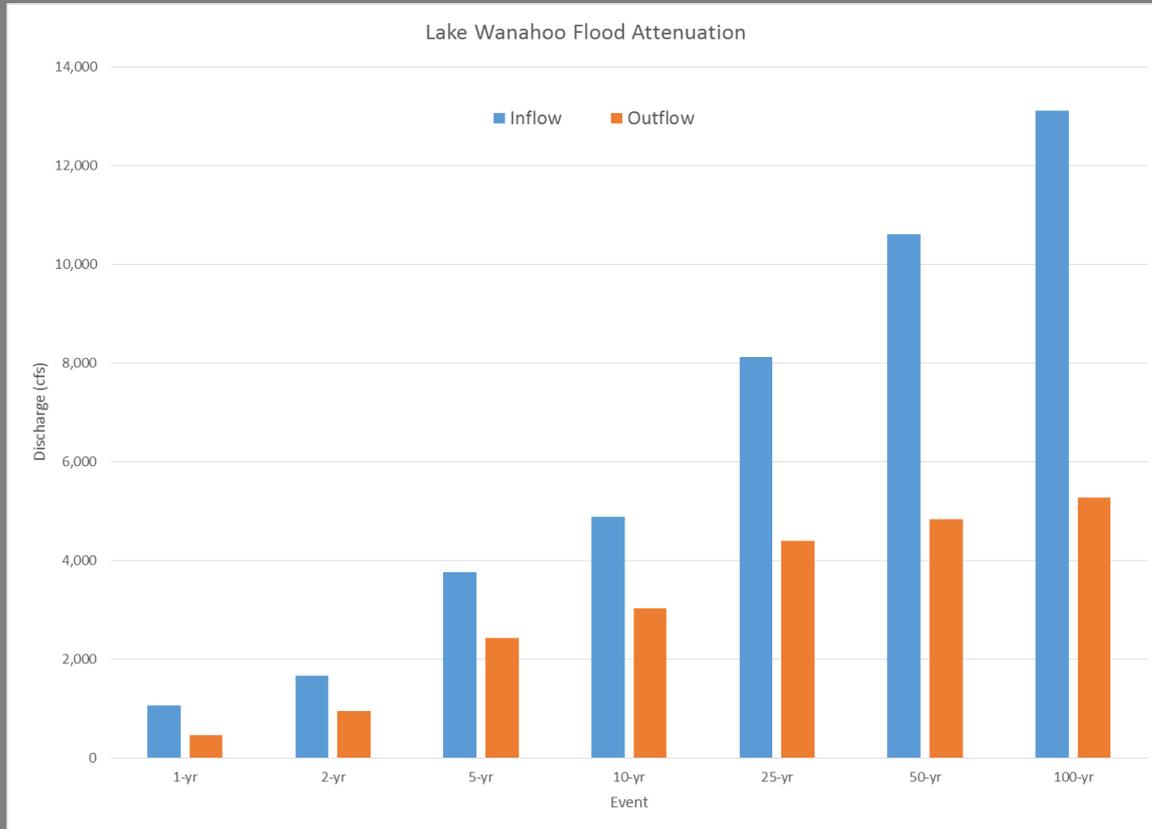
Lake Wanahoo Stage-Discharge Curve

RCC Stage Discharge Curve



Labyrinth Spillway

How Does Lake Wanahoo Affect Flooding?



Event	Rainfall Depth <i>in</i>	Flood Event Discharge		
		Inflow <i>cfs</i>	Outflow <i>cfs</i>	Reduction %
1-yr	2.21	1,060	470	-56%
2-yr	2.68	1,660	950	-43%
5-yr	3.54	3,770	2,430	-36%
10-yr	3.91	4,880	3,030	-38%
25-yr	4.83	8,120	4,400	-46%
50-yr	5.43	10,600	4,830	-54%
100-yr	5.98	13,110	5,270	-60%

Event	Rainfall Depth <i>in</i>	Labryinth Depth <i>ft</i>	Lake Elevation <i>ft MSL</i>	Lake Storage <i>AF</i>
1-yr	2.21	0.8	1210.8	7,180
2-yr	2.68	1.3	1211.3	7,530
5-yr	3.54	2.5	1212.5	8,420
10-yr	3.91	3.0	1213.0	8,800
25-yr	4.83	4.2	1214.2	9,770
50-yr	5.43	5.3	1215.3	10,710
100-yr	5.98	6.4	1216.4	11,720

Reservoir Attenuation by Design Event



Floodplain Hydraulic Analysis Locations

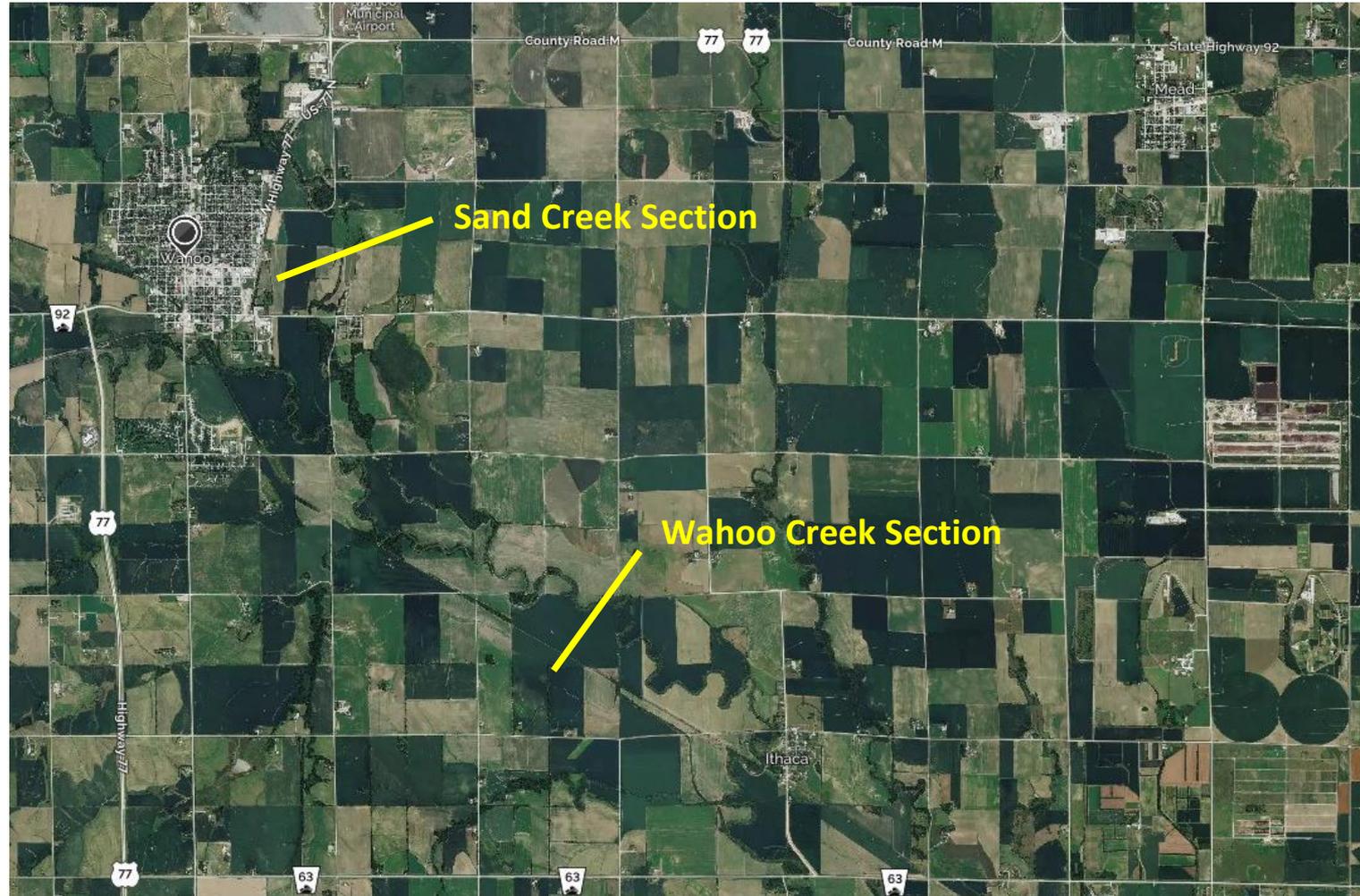
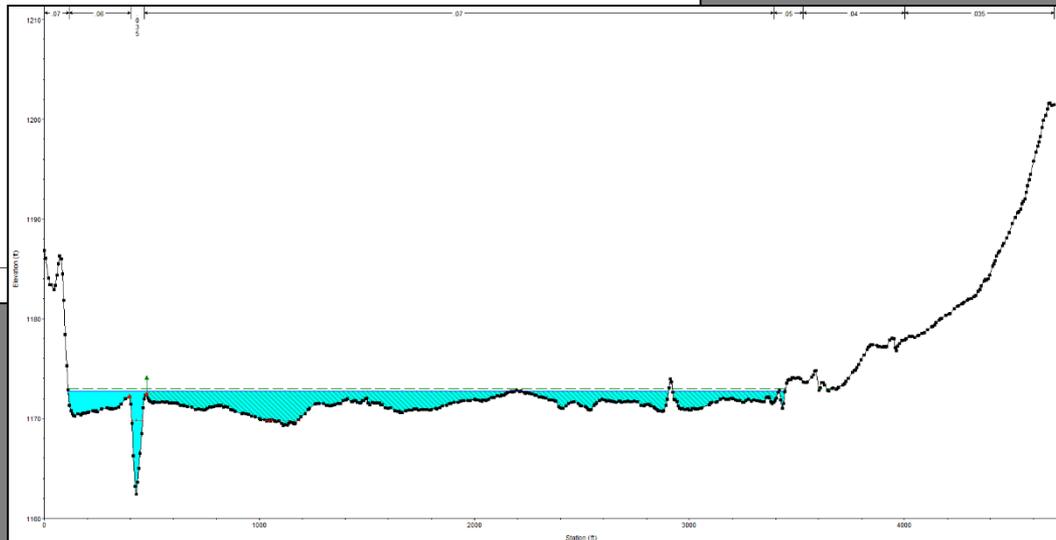
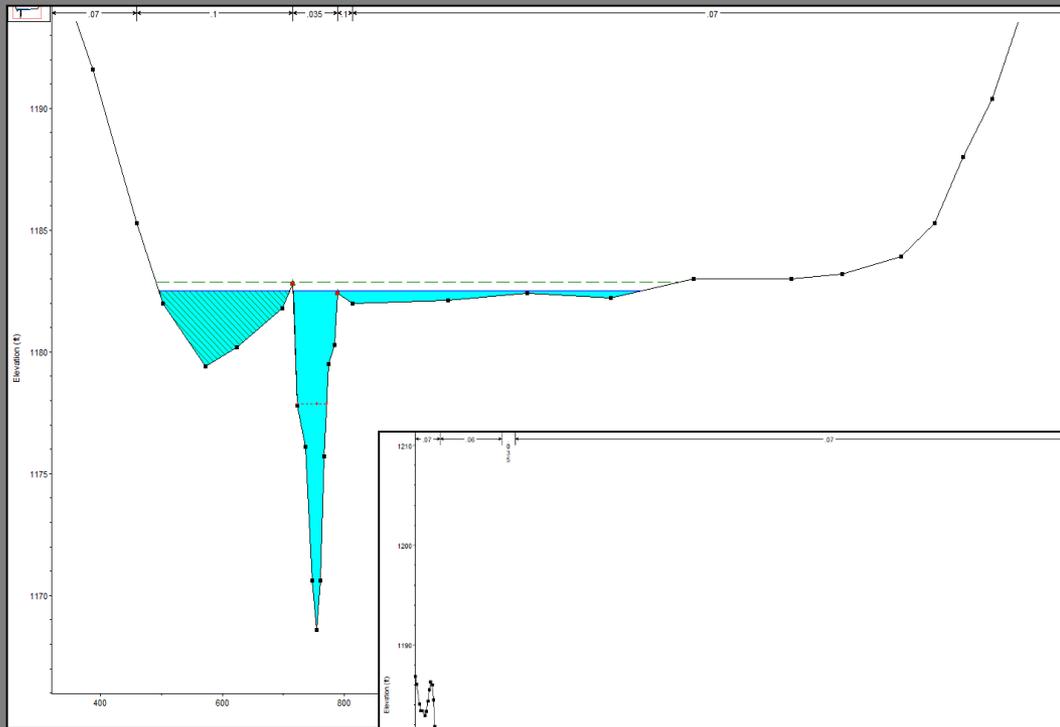


Image Courtesy of Mapquest



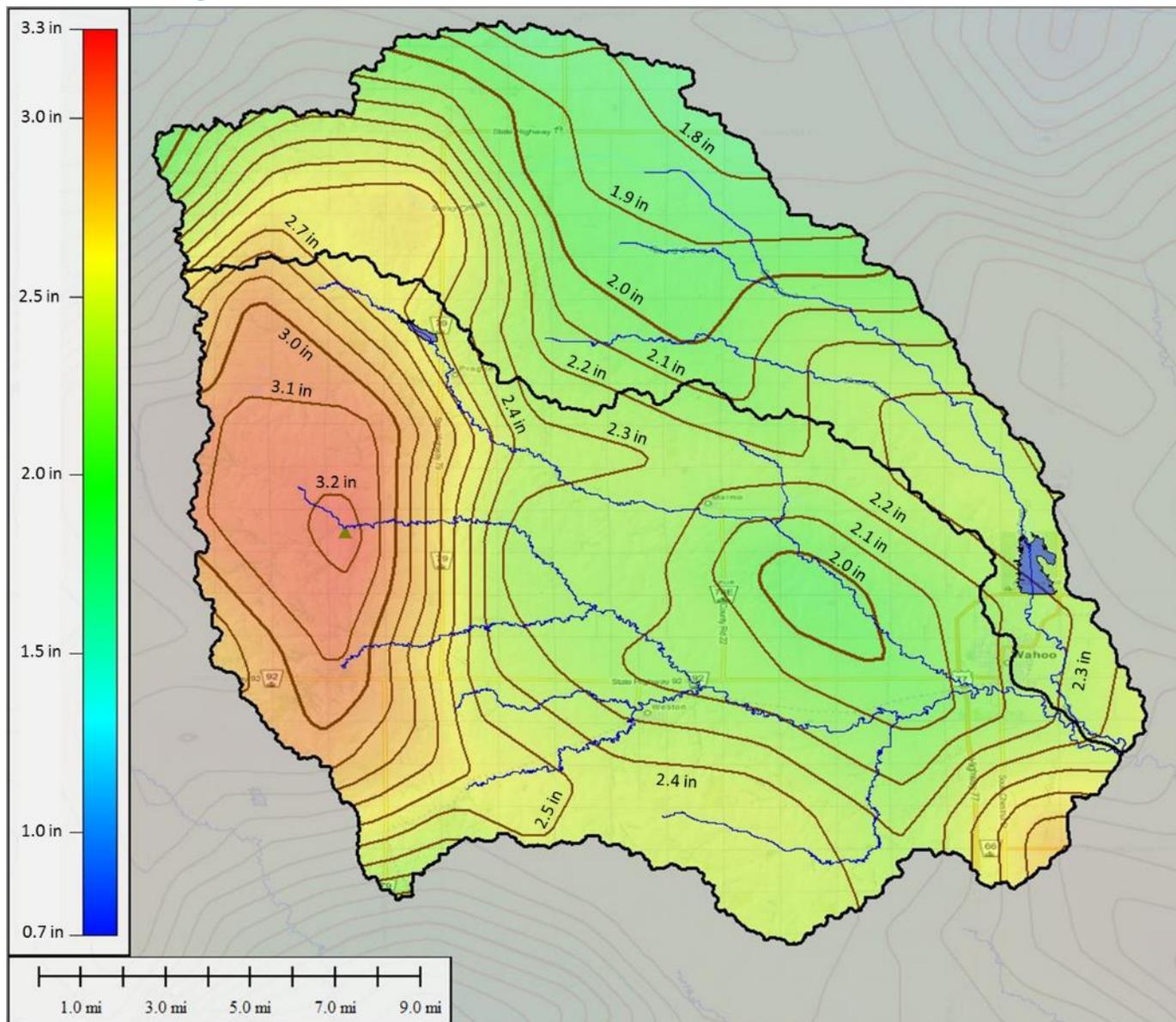
Floodplain Hydraulic Analysis – Sand and Wahoo Creeks



2-5 year channel capacity in both Sand and Wahoo Creeks

Flow breaks out of banks in areas near the 2-3 year event, with widespread floodplain inundation at the 5-year event.

May 10-11, 2016 Storm Event

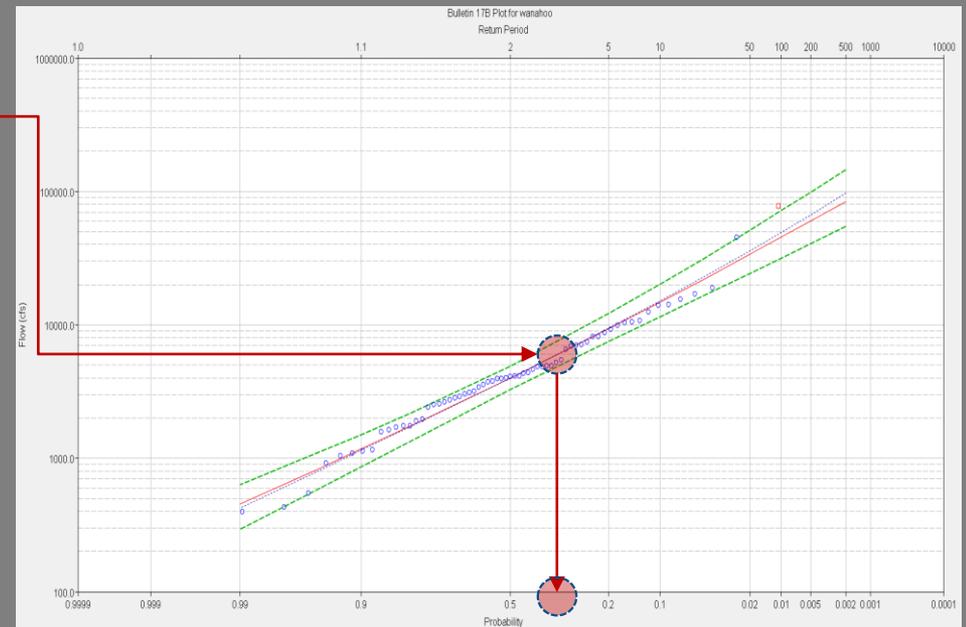
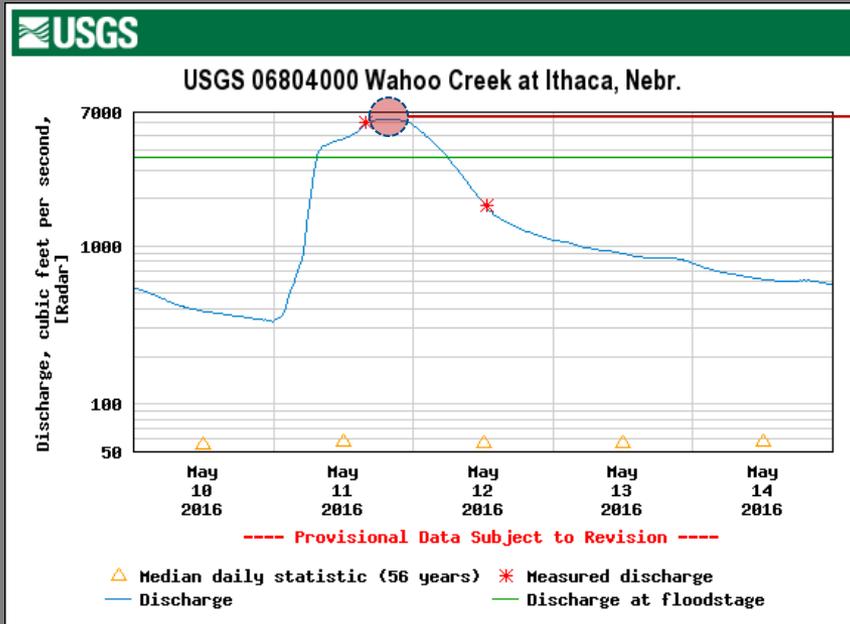


Rainfall depths ranged from 1.8 to 3.2-inches

Watershed averaged 2.45 inches

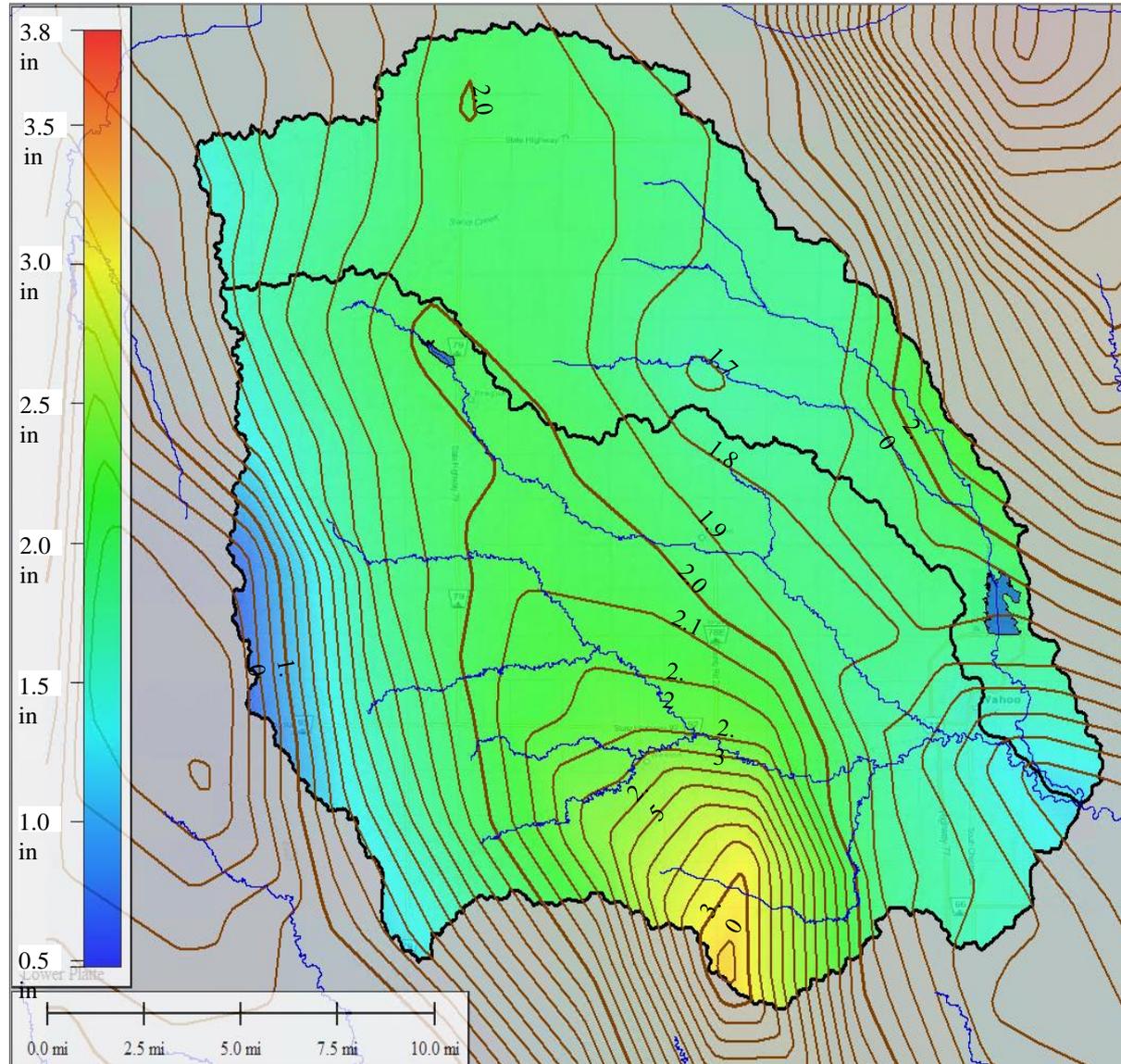


May 10-11, 2016 Storm Event



May 10-11 Event produced 6,330 cfs at Ithaca USGS Gage. This corresponds to between a 2- and 5-year peak discharge based on an approximate flood frequency analysis.

June 18, 2016 Storm Event

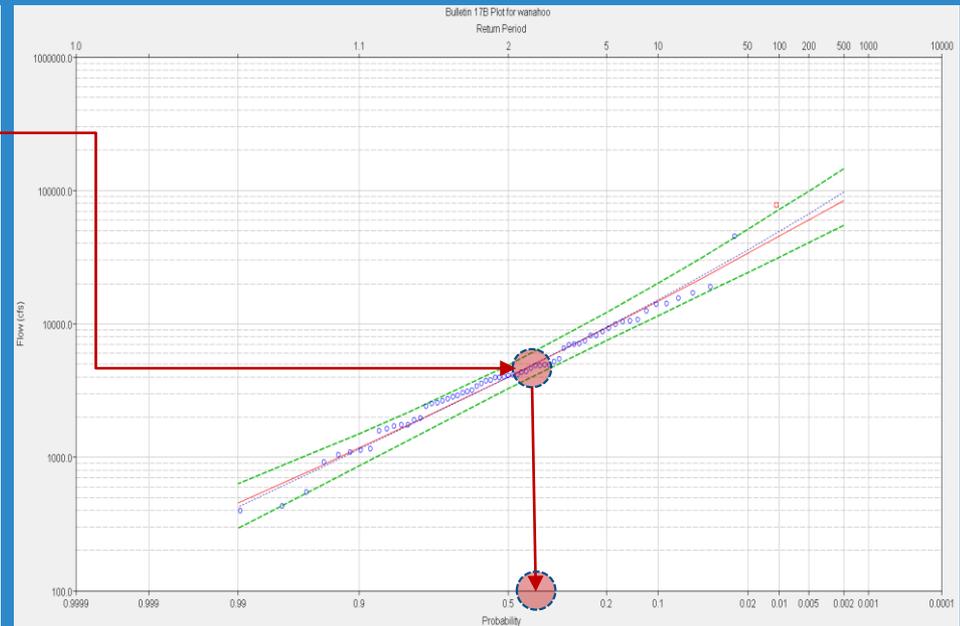
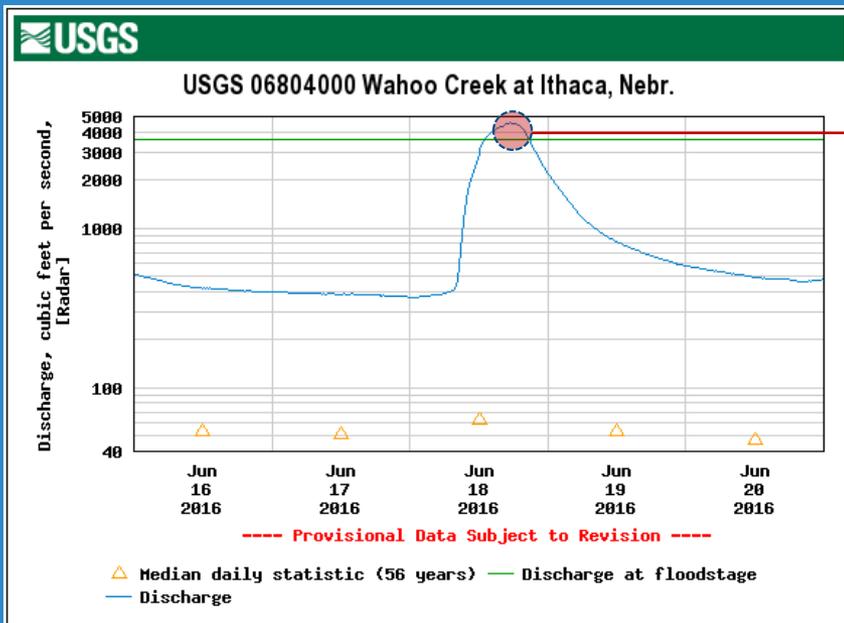


Rainfall depths
ranged from 1.3 to
3.2-inches

Watershed averaged
1.9 inches

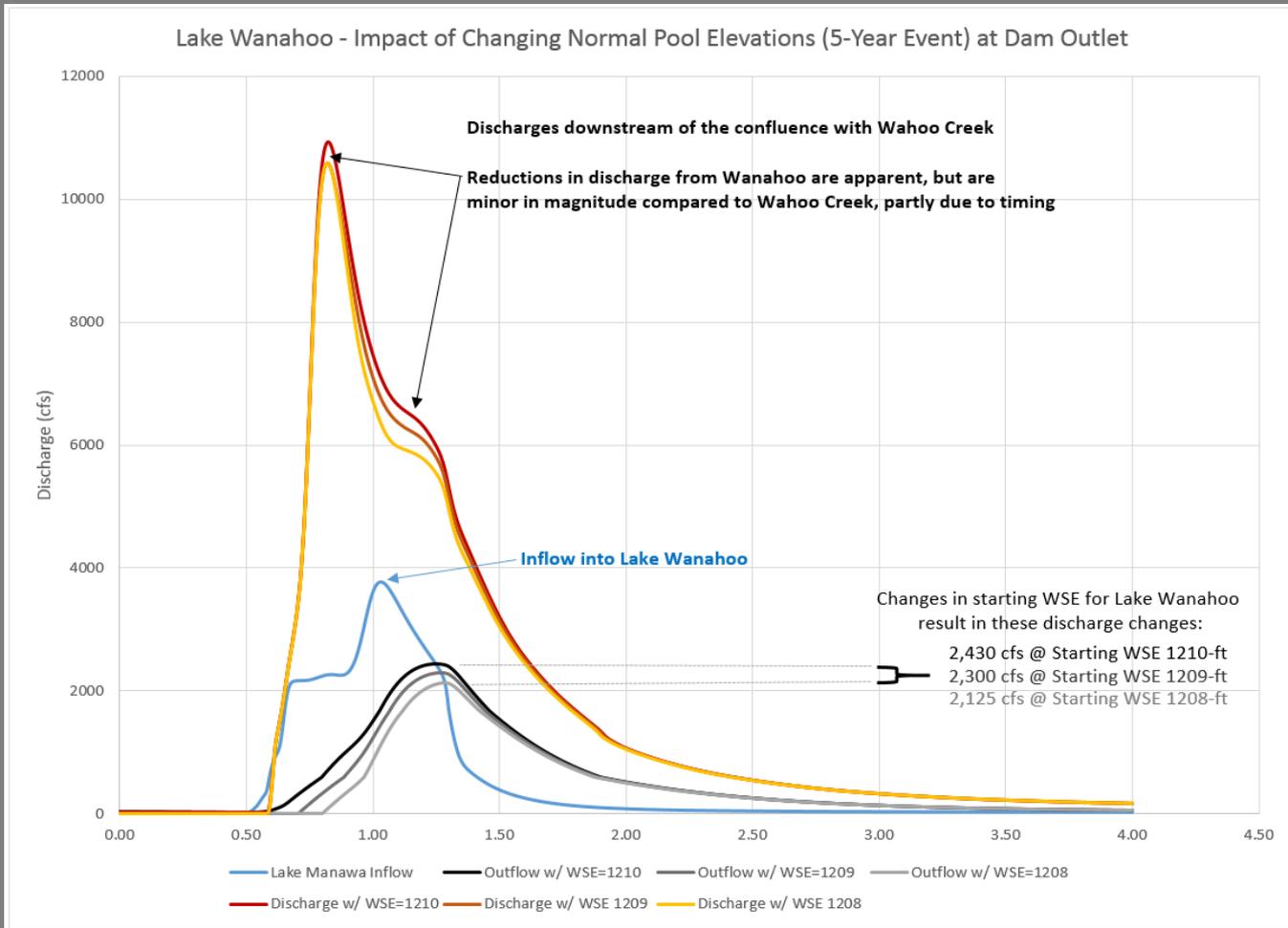


June 18, 2016 Storm Event



June 18 Event produced 4,570 cfs at Ithaca USGS Gage. This corresponds to between a 2- and 5-year peak discharge based on an approximate flood frequency analysis.

Operating Lake Wanahoo at Different Normal Pool Elevations



Modeling a 2-Year Event (2.68 inches in 24 Hours)

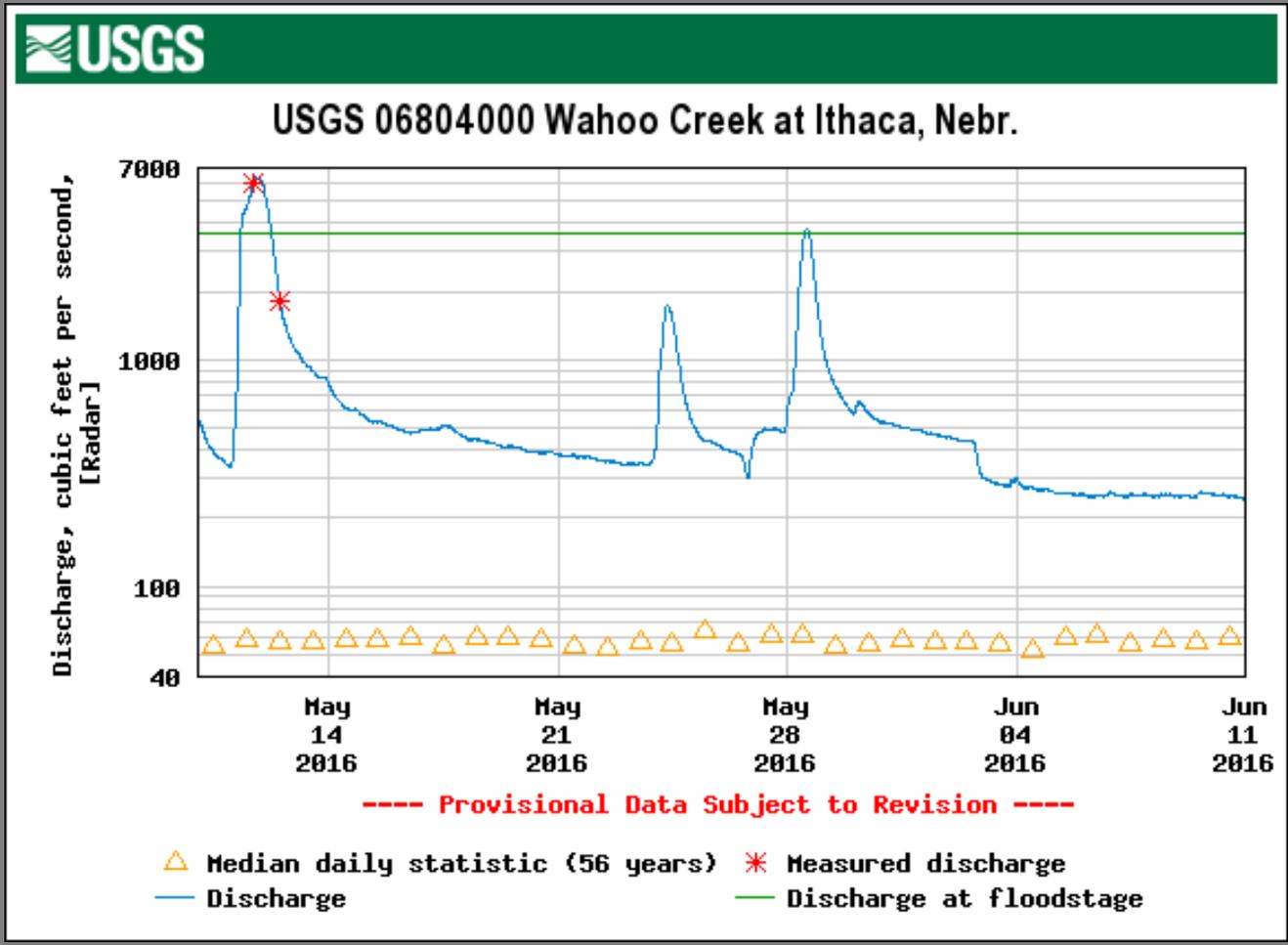


	2-Yr Event			
	Watershed	Runoff Volume	Peak Discharge	Reduction
	<i>mi²</i>	<i>WS inches</i>	<i>cfs</i>	<i>%</i>
Upstream of Lake Wanahoo	87	0.44	1,660	-43%
Downstream of Lake Wanahoo	87	0.44	950	
Wahoo Ck US of Sand Ck Confluence	153	0.67	4,970	
Wahoo Ck at Ithaca*	239	0.59	5,120	
Wahoo Ck at Ashland	428	0.56	6,330	

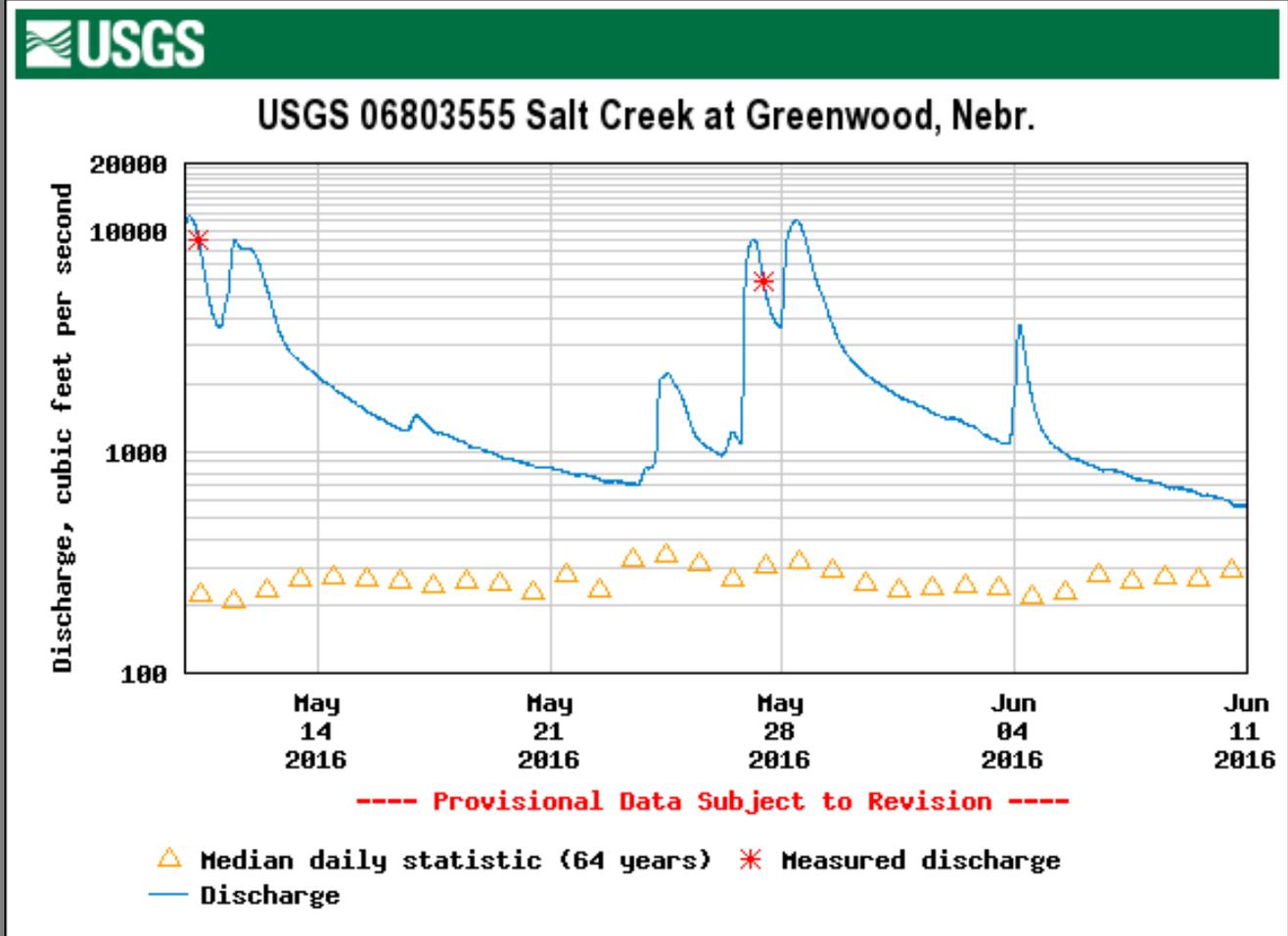
**Downstream of confluence of Wahoo and Sand Creeks*



Wahoo Creek at Ithaca (May 2016 to Present)



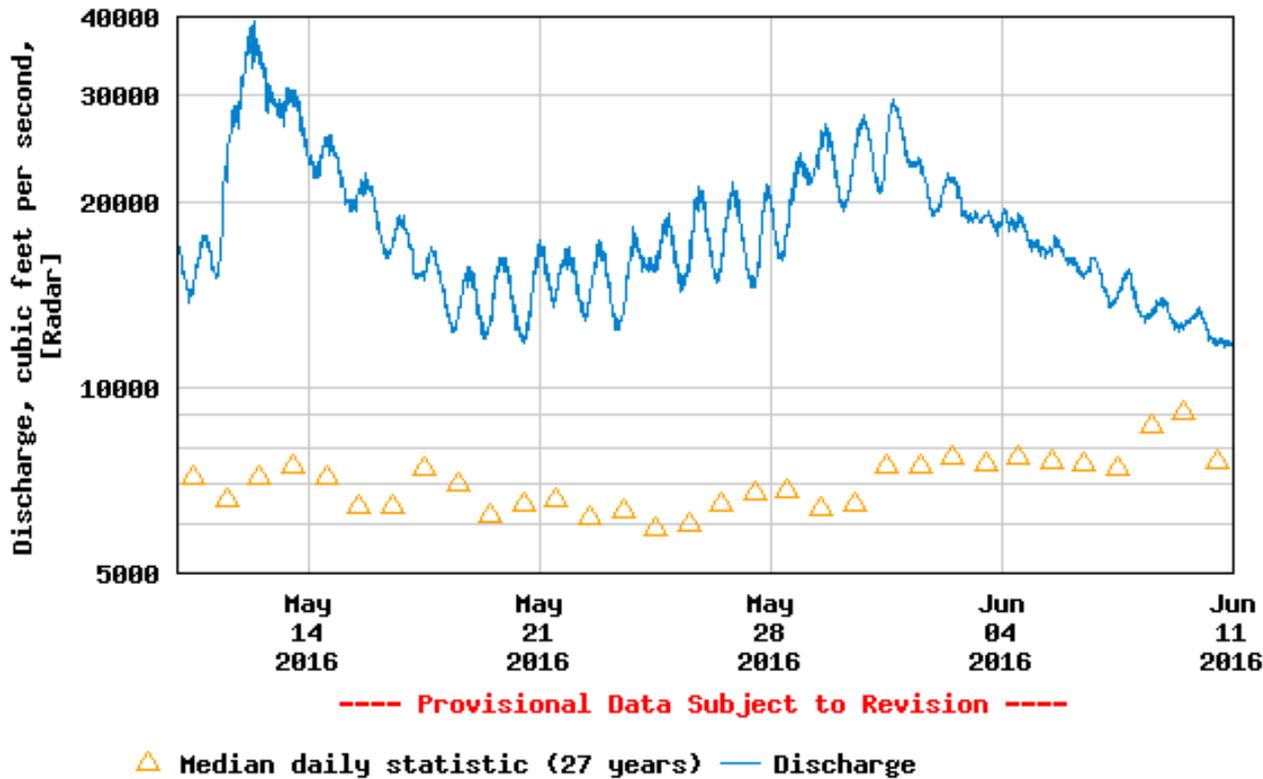
Salt Creek at Greenwood (May 2016 to Present)



Platte River near Ashland (May 2016 to Present)



USGS 06801000 Platte River near Ashland, Nebr.



Effects of Running Wanahoo 1-3 feet below PP

With low flow discharge (200cfs at 1210)

Lake Wanahoo			2-Year Storm = 2.68"				5-Year Storm = 3.54"				10-Year Storm = 3.91"			
Perm Pool Elev	Surface Area	Storage Volume	Lake Wanahoo		Wahoo Creek Discharge		Lake Wanahoo		Wahoo Creek Discharge		Lake Wanahoo		Wahoo Creek Discharge	
			Peak WSE	Peak Discharge	US of Sand Crk	DS of Sand Crk	Peak WSE	Peak Discharge	US of Sand Crk	DS of Sand Crk	Peak WSE	Peak Discharge	US of Sand Crk	DS of Sand Crk
(ft.)	(Acres)	(Acre-Ft)	(ft.)	(cfs)	(cfs)	(cfs)	(ft.)	(cfs)	(cfs)	(cfs)	(ft.)	(cfs)	(cfs)	(cfs)
1210	662	7,151	1,211.2	777	5,272	5,136	1,212.5	2,346	11,144	10,889	1,212.9	2,945	14,018	13,759
1209	628	6,506	1,210.9	545	5,272	5,111	1,212.4	2,168	11,144	10,779	1,212.8	2,775	14,018	13,650
1208	594	5,895	1,210.5	401	5,272	5,098	1,212.2	1,950	11,144	10,764	1,212.7	2,584	14,018	13,634
1207	557	5,320	1,210.1	244	5,272	5,083	1,212.0	1,676	11,144	10,750	1,212.5	2,374	14,018	13,620

Without low-flow drawdown (zero discharge at 1210)

Lake Wanahoo			2-Year Storm = 2.68"				5-Year Storm = 3.54"				10-Year Storm = 3.91"			
Perm Pool Elev	Surface Area	Storage Volume	Lake Wanahoo		Wahoo Creek Discharge		Lake Wanahoo		Wahoo Creek Discharge		Lake Wanahoo		Wahoo Creek Discharge	
			Peak WSE	Peak Discharge	US of Sand Crk	DS of Sand Crk	Peak WSE	Peak Discharge	US of Sand Crk	DS of Sand Crk	Peak WSE	Peak Discharge	US of Sand Crk	DS of Sand Crk
(ft.)	(Acres)	(Acre-Ft)	(ft.)	(cfs)	(cfs)	(cfs)	(ft.)	(cfs)	(cfs)	(cfs)	(ft.)	(cfs)	(cfs)	(cfs)
1210	662	7,151	1,211.3	947	5,272	5,118					1,213.0	3,030	14,018	13,797
1209	628	6,506												
1208	594	5,895												
1207	557	5,320	1,210.6	338	5,272	4,926					1,212.6	2,533	14,018	13,458



Effects of Running Wanahoo 1-3 feet below PP

With low flow discharge (200cfs at 1210)

Lake Wanahoo			2-Year Storm = 2.68"				5-Year Storm = 3.54"				10-Year Storm = 3.91"			
Perm Pool Elev (ft.)	Surface Area (Acres)	Storage Volume (Acre-Ft)	Lake Wanahoo		Wahoo Creek Discharge		Lake Wanahoo		Wahoo Creek Discharge		Lake Wanahoo		Wahoo Creek Discharge	
			Peak WSE (ft.)	Peak Discharge (cfs)	US of Sand Crk (cfs)	DS of Sand Crk (cfs)	Peak WSE (ft.)	Peak Discharge (cfs)	US of Sand Crk (cfs)	DS of Sand Crk (cfs)	Peak WSE (ft.)	Peak Discharge (cfs)	US of Sand Crk (cfs)	DS of Sand Crk (cfs)
1210	662	7,151	1,211.2	777	5,272	5,136	1,212.5	2,346	11,144	10,889	1,212.9	2,945	14,018	13,759
1209	628	6,506	1,210.9	545	5,272	5,111	1,212.4	2,168	11,144	10,779	1,212.8	2,775	14,018	13,650
1208	594	5,895	1,210.5	401	5,272	5,098	1,212.2	1,950	11,144	10,764	1,212.7	2,584	14,018	13,634
1207	557	5,320	1,210.1	244	5,272	5,083	1,212.0	1,676	11,144	10,750	1,212.5	2,374	14,018	13,620

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1209	628	6,506												
1208	594	5,895												
1207	557	5,320	1,210.6	338	5,272	4,926					1,212.6	2,533	14,018	13,458



WEIR IS OVERTOPPED
BY 2-YEAR STORM,
EVEN STARTING 3
FEET LOW



In Conclusion....

- Stream gage analyses show that the Lake Wanahoo Dam is performing exactly as intended
- With such a large watershed and high spillway capacity, there will still be flooding downstream of Lake Wanahoo, albeit at a reduced frequency
- Flooding downstream of Lake Wanahoo has to be analyzed for the source of the flooding
- Additional flood control efforts on Wahoo Creek can help to reduce downstream flooding

NEBRASKA NATURAL RESOURCES COMMISSION

DRAFT MEETING MINUTES – September 27, 2011

Those in attendance were:

Garry Anderson, Member	Dick Mercer, Vice-Chair	LeRoy Sievers, NDNR
Kenneth Brockman, Member	Clint Johannes, Member	Rex Gittins, NDNR
Stan Clouse, Member	Keith Rexroth, Member	Kent Zimmerman, NDNR
Dave Deines, Member	Jeff Steffen, Member	Craig Derickson, NRCS
Dick Hadenfeldt, Member	Dan Watermeier, Chair	Mike Onnen, LBNRD
Joseph Hergott, Member	David Kadlecek, Member	John Miyoshi, LPNNRD
Tom Knutson, Member	Ladd Reeves, Member	Mike Murren, LPNNRD

CALL TO ORDER & ROLL CALL

The meeting was called to order by Commission Chairman Watermeier at 2:00 p.m. at the Younes Conference Center in Kearney, Nebraska. The following members were absent: Beverly Donaldson and Dan Nelsen.

NOTICE OF THE MEETING

Notice of the meeting was published on the State Public Meetings Calendar and on Department's web site at www.dnr.ne.gov. A copy of Nebraska's public meeting statutes was available in the room.

INFORMATIONAL MATERIALS

The following informational materials were distributed at the Program Committee and Commission meetings. A copy of each is attached to the file copy of these minutes.

1. Commission Meeting Agenda
2. Selected Agenda Topics Explanation Paper
3. NRCS Report to the NRC
4. Expenditures Report
5. Resources Development Fund
 - Status Report as of September 15, 2011
 - Quarterly Report – July 31, 2011
 - Turkey Creek Project Overview Map
 - Lake Wanahoo Dam Storm Release Rates Study Graph
6. Small Watershed Flood Control Fund Status Report as of September 19, 2011
7. Nebraska Soil & Water Conservation Fund Status Report as of August 31, 2011
8. Nebraska Water Quality Fund Status Report as of August 31, 2011
9. Water Well Decommissioning Fund Status Report as of August 31, 2011
10. IWMPP Active Projects Funding Needs Table
11. Little Blue NRD Project #45 Request Letter & Map
12. Draft Changes to Commission Rules

MINUTES

Staff reported that two minor changes had been made to the draft minutes distributed to Commissioners. These included a correction to the title of one attendees and revising the distribution of the Lake Wanhoo Project's FY 2012 obligation among its components.

Rexroth moved and Anderson seconded a motion to approve the minutes of the Program Committee meetings held on June 8, 2011, and the Commission meeting on June 9, 2011, as amended.

Motion Passed.

Aye: Anderson, Brockman, Clouse, Deines, Hergott, Knutson, Mercer, Rexroth, Steffen and Watermeier

Nay: None

Abstain: Reeves, Hadenfeldt, Kadlecek and Johannes

Not Present: Donaldson and Nelsen

EXPENDITURES REPORT

Fund expenditures reports showing financial activity and ending balances for July and August were distributed prior to the meeting. No unusual expenditures were reported. Gittins reminded everyone that Cash Fund appropriation balances provide the authority, not actual money.

ADVISOR REPORTS

NRCS

Craig Derickson distributed and highlighted a report from NRCS to the Commission.

- Administratively, Nebraska's 77 NRCS Field Offices are now divided into three operations areas.
- A new budgeting method is being employed in all 50 states using a process designed to be more of a strategic planning based exercise. This will allow staff to address their resource concerns and problems using programs and funds that are best equipped to do that.
- Nebraska is working with North & South Dakota and Kansas to develop a regionalized conservation payment schedule to make incentive payment costs more consistent throughout the region.
- Nebraska received about \$55 million from the NRCS programs during 2011.
- Derickson has the lead in a new regional special initiative EQIP program dealing with quantity and quality issues of the Ogallala Aquifer. Nebraska received about \$2.5 million this year and looks for about the same level next year.

UNL WATER CENTER

No report given.

ENVIRONMENTAL TRUST

No report given.

DNR UPDATE

Director Dunnigan was unable to attend the Commission meeting but had presented a briefing on Department activities in the NARD Conference as part of the general session.

ADMINISTRATIVE RULES CHANGE

LeRoy Sievers referenced an initial draft of proposed rules distributed prior to the meeting for the Commissioners' consideration. The changes deal with administrative procedures like conducting hearings and are intended to bring Commission rules into compliance with applicable portions of model rules promulgated by the Attorney General's office. Sievers then explained that the next step of the process would be for the Commission to authorize staff to refine the draft rules into a final format for consideration at the next meeting. Upon approval by the Commission, the proposed rules would be submitted to the Governor's Policy Research Office and the Attorney General's Office for review. If approved, a public hearing would be scheduled and conducted, and results would be presented to the Commission for its final consideration and possible action.

Knutson moved and Clouse seconded a motion to authorize staff to proceed with the formal rules change process.

Motion Passed.

Aye: Anderson, Brockman, Clouse, Deines, Hergott, Knutson, Mercer, Rexroth, Steffen, Watermeier, Reeves, Hadenfeldt, Kadlecek and Johannes
Nay: None
Abstain: None
Not Present: Donaldson and Nelsen

PROGRAM COMMITTEE

Program Committee Chair Johannes reported that the Committee met on September 26, 2011, to discuss program activities and to review project statuses. Johannes noted that no unusual activity had been reported and then brought forward the following action items.

Resources Development Fund

Due to overstatement of the balance available for allocation on July 1, 2011, the balance of allocations exceeded the \$18.5 million statutory cap. To correct this error, it was recommended that the total allocation to the Pigeon/Jones Project be reduced by \$4,083.40 as it was awarded the remaining balance after needs of previously funded projects had been met.

Johannes moved and Knutson seconded to correct the July 1, 2011, allocation for the Pigeon/Jones Creek project to \$1,086,404.24, a reduction of \$4,083.40.

Motion Passed.

Aye: Anderson, Brockman, Clouse, Deines, Hergott, Knutson, Mercer, Rexroth, Steffen, Watermeier, Reeves, Hadenfeldt, Kadlecek and Johannes
Nay: None
Abstain: None
Not Present: Donaldson and Nelsen

Johannes then briefly described the Committee's discussion on the Lower Platte North NRD's proposed lowering the Lake Wanahoo water elevation and possible implications of the reduced number of surface water acres with regard to the original basis for approving the request for cost share assistance.

Johannes moved and Anderson seconded to adopt the following resolution:

WHEREAS, the Lower Platte North Natural Resources District (LPNNRD) is the sponsor for the Sand Creek Watershed Environmental Restoration (Lake Wanahoo) Project.

WHEREAS, the LPNNRD submitted an Application and Feasibility Study for the Lake Wanahoo Project to obtain financial assistance from the Nebraska Natural Resources Development Fund (NRDF).

WHEREAS, the Department of Natural Resources (DNR) performed project reviews and evaluations based on the submitted specifications to determine eligibility for NRDF cost-sharing.

WHEREAS, the Natural Resources Commission (Commission) relied upon the DNR staff finding of eligibility and sponsor's assertions of benefit realization from operation as specified over a 50 year project life in its decision to approve cost-sharing at 60% of local cost, a commitment of State funding not to exceed \$12,268,720.

WHEREAS, the Sponsors are responsible for assuring that projects for which State NRDF funds have been committed adhere to specifications unless changes are approved by the Commission.

WHEREAS, the LPNNRD now believes a change in operations resulting in maintaining a smaller reservoir than originally specified and upon which the Commission based its review and approval, would help to reduce flood flows resulting from certain small rain events under specific conditions for the benefit of a few private downstream landowners at the expense of environmental restoration and recreation.

WHEREAS, the five additional upstream dams are being constructed and are scheduled for completion next summer for the purpose of sediment retention and flood control. The additional upstream dams are unrelated to this NRDF project and are not eligible for cost share assistance through the RDF fund.

WHEREAS, the Commission has authority to adjust cost-share allocation and the Department may require return of funds previously provided if the approved Project is not constructed, maintained or operated as specified.

NOW THEREFORE BE IT RESOLVED that the Commission agrees to a temporary variance in the original number of lake surface acres, as determined by the surface elevation maintained through operations conducted by District staff, to no less than an elevation of 1209 for a period of one year from the date of this resolution.

NOW THEREFORE BE IT FURTHER RESOLVED that DNR staff will periodically review how Project is being operated and report observations to the Commission.

Watermeier pointed out that the resolution will provide Lower Platte North NRD with a year to evaluate the benefits or lack of benefits realized by the proposed change. It was also pointed out that Mike Murren commented during the Program Committee meeting that the

lake has to be gradually lowered from February through July 1st each year to comply with stipulations of the U.S. Fish and Wildlife Service, a requirement which was not noted in the project application.

Motion Passed.

Aye: Anderson, Brockman, Clouse, Deines, Hergott, Knutson, Mercer, Rexroth, Steffen, Watermeier, Reeves, Hadenfeldt, Kadlecek and Johannes
Nay: None
Abstain: None
Not Present: Donaldson and Nelsen

Johannes noted that the Program Committee had directed DNR staff to meet with project sponsors before the November meeting and report back on their views regarding distribution of the expected FY 2013 appropriation. He then invited John Miyoshi, Manager of the Lower Platte North NRD and sponsor of the Sand Creek Environmental Restoration Project, to explain his rationale for believing the Lake Wanahoo project should be entitled to receive a larger share of the FY 2013 funding distribution. Miyoshi noted Legislative action during the 2002-03 biennium that resulted in a \$1.7 million increase in appropriation to the NRDF “earmarked” for projects with large federal grants in progress during that budget biennium. The Lake Wanahoo Project had not yet been in progress at that time and thus received no benefit from the “earmark” which was removed from the budget bill language in all subsequent session.

Interrelated Water Management Plan Program Fund

Mike Onnen, Manager of the Little Blue NRD described the tools produced by JEO to allow the District staff to electronically score any of the components that go into the District’s risk map. This score is used by the Little Blue NRD board to determine whether or not to assign conditions to any new irrigation permit. The District also sought legal review and a method to evaluate soils scoring.

Johannes moved and Clouse seconded to approve the Little Blue NRD’s request to expand the scope of the IWMPP project #45 with no additional funding.

Motion Passed.

Aye: Anderson, Brockman, Clouse, Deines, Hergott, Knutson, Mercer, Rexroth, Steffen, Watermeier, Reeves, Hadenfeldt, Kadlecek and Johannes
Nay: None
Abstain: None
Not Present: Donaldson and Nelsen

LEGISLATIVE & BUDGET UPDATE

Reeves announced that he invited Dean Edson to address the Commission during the November Commission meeting.

Knutson is Coordinator of one of the LR 314 work groups which was tasked with putting together the projected funds needed by cities, NRDs, environmental groups and irrigation districts for future water-related projects. The Legislature's Natural Resources Committee is holding a hearing on October 7th during which the six work groups created to address aspects of the interim study will present summaries of their findings. Staff was asked to send Commissioners the schedule and location of the hearing.

DISCUSSION & POSSIBLE ACTION ON PROPOSED RESOLUTION – Dan Nelsen

At the June Commission meeting, Nelsen discussed the potential benefits of trans-basin diversion for purposes of augmentation and damage mitigation during times of flooding. With Nelsen absent, there was no further discussion.

ANNOUNCEMENTS/OTHER BUSINESS

Commissioners were asked by Chairman Watermeier to plan on a group dinner on November 16th, the Wednesday evening before the November meeting.

The next Program Committee and Commission meetings will be held on November 16 and 17 in Lincoln.

* * * * *

The meeting was adjourned at 2:36 p.m.

NEBRASKA NATURAL RESOURCES COMMISSION

Resolution re: Sand Creek Watershed Environmental Restoration (Lake Wanahoo) Project Operations

WHEREAS, the Lower Platte North Natural Resources District (LPNNRD) is the sponsor for the Sand Creek Watershed Environmental Restoration (Lake Wanahoo) Project.

WHEREAS, the LPNNRD submitted an Application and Feasibility Study for the Lake Wanahoo Project to obtain financial assistance from the Nebraska Natural Resources Development Fund (NRDF).

WHEREAS, the Department of Natural Resources (DNR) performed project reviews and evaluations based on the submitted specifications to determine eligibility for NRDF cost-sharing.

WHEREAS, the Natural Resources Commission (Commission) relied upon the DNR staff finding of eligibility and sponsor's assertions of benefit realization from operation as specified over a 50 year project life in its decision to approve cost-sharing at 60% of local cost, a commitment of State funding not to exceed \$12,268,720.

WHEREAS, the Sponsors are responsible for assuring that projects for which State NRDF funds have been committed adhere to specifications unless changes are approved by the Commission.

WHEREAS, the LPNNRD now believes a change in operations resulting in maintaining a smaller reservoir than originally specified and upon which the Commission based its review and approval, would help to reduce flood flows resulting from certain small rain events under specific conditions for the benefit of a few private downstream landowners at the expense of environmental restoration and recreation.

WHEREAS, the five additional upstream dams are being constructed and are scheduled for completion next summer for the purpose of sediment retention and flood control. The additional upstream dams are unrelated to this NRDF project and are not eligible for cost share assistance through the RDF fund.

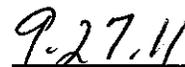
WHEREAS, the Commission has authority to adjust cost-share allocation and the Department may require return of funds previously provided if the approved Project is not constructed, maintained or operated as specified.

NOW THEREFORE BE IT RESOLVED that the Commission agrees to a temporary variance in the original number of lake surface acres, as determined by the surface elevation maintained through operations conducted by District staff, to no less than an elevation of 1209 for a period of one year from the date of this resolution.

NOW THEREFORE BE IT FURTHER RESOLVED that DNR staff will periodically review how Project is being operated and report observations to the Commission.



Chairman



Date

Estimated Cost - Max Eagle Scout Project March 30, 2016					Not - grey, reimburseable expense	
Materials	Number	Cost a piece	Planned Cost	Provider	Actual Cost	Final Comments
4 - Heavy Duty Park Benches (#B6WBPERFS)	4	\$ 200.00	\$ 800.00	\$500 each but Sponsor covering \$300/bench	\$800.00	NRD paid \$2,000 total and reimbursed \$1200 in Sponsor checks (\$800 Actual).
4 - Sponsor Plates (7.5"x 4") -Metal/Aluminum (black with silver print)	4	\$ 15.00	\$ 60.00	Trophy Case	\$60.00	\$60.00, as expected
1.5 Yards of Concrete delivered and poured (.33 Yard per Bench estimated)	1	\$ 200.00	\$ 200.00	Wahoo concrete	\$354.00	\$154.00 overage, NRD already paid for
2"x6" studs (8' long) - 5 per bench area (framing and shoring)	20	\$ 3.64	\$ 72.80	Menards	\$86.06	\$13.26 overage
Misc - Framing nails, wooden spikes, and long screws for Sponsor plaques	1	\$ 15.00	\$ 15.00	Menards	\$17.58	\$2.58 overage
Subtotal -			\$ 1,147.80		\$1,317.64	\$169.84 over on materials
Supplies						
5 Gallons gas for Ford Tractor	5	\$ 1.89	\$ 9.45	NRD	\$0.00	No cost, \$9.45 underage
Pizza and Lemonade (donated)	5	\$ 20.00	\$ 100.00	Pizza Hut/Inner Serenity	\$91.77	\$8.23 underage, already paid by Inner Serenity
Goggles and Gloves (donated)	20	\$ 1.99	\$ 39.80	Menards	\$39.80	\$39.08 as expected, already paid by Inner Serenity
Subtotal -			\$ 149.25		\$131.57	\$17.68 under on Supplies
Grand Total (NRD Cost that excludes Sponsor funding and donated items)			\$ 1,157.25		\$1,449.21	
			\$ 1,297.05		\$1,449.21	\$152.16 Total overage for the project
					\$169.84	NRD amount owed to my dad

Bob Schmit Dam Repair Request

This structure is in the Bellwood Watershed between two NRD dams 6-G and 6-E.

Legend



Bellwood Reservoir 6-E

Google earth

© 2016 Google



1000 ft









Below Trouble Creek Dam

Kremlacek Property, Crossings are washing away or washed out.
Low spots in field claimed to be buried trees from the ditch project.
Wash below retaining wall.

Legend



Plan for Bollards

5 electrical panels at Wanahoo Recreation Area

Have to stay 48" from outside of panel

Filled with Flowable Fill

Post Cost 40 post @ \$63/post = \$2,520

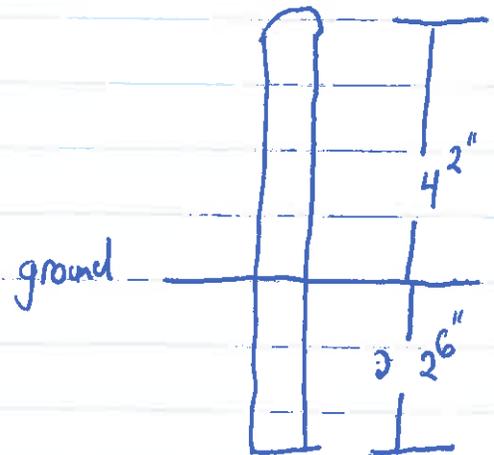
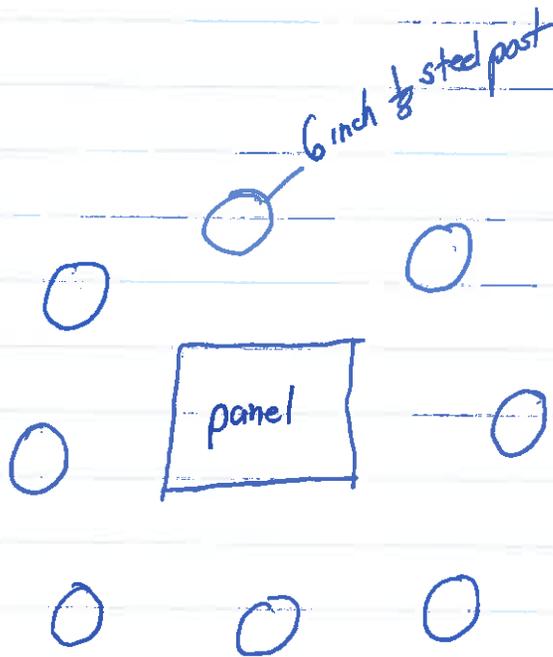
Flowable Fill 2.5 sq. yd. @ \$72/yd = \$180

paint - reflective 5 gallon @ \$25/gallon = \$125

Total \$2,825 material

prepare steel to paint and install \$2,000 labor

\$4,825



Considerations:

- Wide stability
- Roll cage/roof/rack to hang sprayers
- Engine power/reliability
- Turn radius
- Power steering a plus

\$18,571 Bobcat 3600

- Full cab w/HVAC
- Hydrostat transmission
- Diesel
- Skid plates/CV protection
- Seats 3
- Excellent turn radius 91 in
- 63.2 in wide x 122.2 in long
- Power steering

\$14,390 Bobcat 3600

- Roof
- Hydrostat transmission
- Diesel
- Skid plates/CV protection
- Seats 3
- Excellent turn radius 91 in
- 63.2 in wide x 122.2 in long
- Power steering

\$14,021 2015 Polaris Ranger XP 900 EPS

- Tool Rack/roof
- Power Steering
- Narrow at 60 in x 116.5 in long
- 160.8 in turn radius
- Power steering

\$11,441 2015 Polaris Ranger XP 570 EPS

- Tool Rack/roof
- Power Steering
- Narrow at 60 in x 116.5 in long
- 160.8 in turn radius
- Power steering
- 46 vs 68 HP gas motor

\$12,999 Kawasaki Pro-FX EPS LE

- Seats 3
- Roof
- Power Steer
- Wide at 64 in x 133.3 in long
- Wide turn radius 192 in

\$13,700 Kawasaki Pro-FXT EPS

- Seats 6 with innovative fold up utility box w/out lengthening frame
- Don't believe quote includes roof
- Power Steer
- Wide at 64 in x 133.3 in long
- Wide turn radius 192 in

\$13,345 Kubota RTV X900

- Seats 2
- Back rack but no roof on quote
- CV/skid plates
- Diesel
- Hydrostat transmission
- Wide 63.2 in x 120.3 in long
- 157.2 in turn radius

\$9,798 John Deere XUV 625i

- Seats 2ish on bench
- Same frame as 825i 62 in x 116 in
- 148.8 in turn radius
- 617cc 23 HP gas has reputation for being loud, cold blooded, underpowered, and unreliable
- NO power steering/roof/rack/skid plates on this bid

\$11,626 John Deere XUV 825i

- Seats 2ish on bench
- Same frame as 625i 62 in x 116 in
- 148.8 in turn radius
- 812cc 50 HP gas has solid reputation
- NO tool rack
- INCLUDES roof/CV shaft guards/power steering

\$12,079 John Deere XUV 825i

- Seats 2ish on bench
- Same frame as 625i 62 in x 116 in
- 148.8 in turn radius
- 812cc 50 HP gas has solid reputation
- NO tool rack/roof
- INCLUDES aggressive tires on ridiculous alum rims, power steering, deluxe cargo box with liner and lights (dealer took a few liberties)

\$10,805 John Deere XUV 825i BASE

- Seats 2ish on bench
- Same frame as 625i 62 in x 116 in
- 148.8 in turn radius
- 812 cc 50 HP gas has solid reputation
- BASE MODEL with no power steering/rack/roof/CV protection

\$12,650 John Deere XUV 825i

- Seats 2ish on bench
- Same frame as 625i 62 in x 116 in
- 148.8 in turn radius
- 812 cc 50 HP gas has solid reputation
- INCLUDES roof/tool rack/CV guards/power steering

Mitch's choice of options

We own a 2008 Yamaha Big Bear 400 ATV valued around \$2500 with a 2011 5ftx8ft H&H utility trailer valued \$500+

We will need a larger trailer with extra length for a sprayer boom...looking for 6' x 12'

\$1,390 6'x12' Wood Floor Utility Trailer

- QC Store in Schuyler
- Unsure of brand/warranty/capacity

\$1,450 8'x12' Wood Railside

- Klute Truck Equipment

\$1,400 76"x12' H&H RS 8x12F RS

- Larry's Auto and Trailer Sales
- 2,990lb GVWR
- Includes jack (would likely store UTV on trailer)

Husker Harvest Days – September 13-15, 2016 ~ Volunteer Schedule

- Please fill in your name and NRD.
- Please sign up before Friday, July 29th.

	Tree Give-A-Way (No more than 3 at a time)	Greetings (2 people to greet for each time)	Floater (No more than 2, to answer questions and get trees from cooler)	Native Prairie Outreach Display
Tuesday 7:30-10:30				David Carr
Tuesday 10:30-1:30	Scot Lennemann LRNRD Allan McCoy LRNRD Ron McConnell LRNRD	Scot Dicke LRNRD		David Carr
Tuesday 1:30-4:30				David Carr
Wednesday 7:30-10:30	Deb VanMatre - CPNRD UNWNRD UNWNRD			Shane Max (get there at 9:30 am)
Wednesday 10:30-1:30	Terry Julesgard LNNRD Brittnay Nurnberg - LRNRD/NRCS Cliff Loseke, LLNRD Director	Bob Lorenske Shirley (Bob's friend)		Shane Max
Wednesday 1:30-4:30	Virgil Gellermann, LLNRD Director	Mike Clements LRNRD		Shane Max
Thursday 7:30-10:30	Kelly Cole - CPNRD			
Thursday 10:30-1:30	Carolyn Janda - LBNRD Melanie McPherson - LBNRD Rachelle Tompkin - LBNRD			Bill Carhart
Thursday 1:30-Close and Clean up				David Carr

**Jennifer, Dustin, Dean, Jeanne & Erika will be floating around Tuesday, Wednesday and Thursday.

Thank you for your help. It is greatly appreciated!

If you have any questions or changes please contact Erika Hill at (402) 471-7672 or cell phone at (402) 570-2283.

Platte Basin Timelapse and agriculture

Timelapse: Monitoring Change Over Time.

FORMAT:

This comprehensive educational effort will be delivered via the web on the Platte Basin Timelapse website (<http://plattebasintimelapse.com/>). The project's educational materials will be available to teachers, students and the general public and includes time-lapse images and videos; interviews with researchers and subject matter experts; information on the Platte's diverse ecosystems; maps and related graphics, and links to other relevant sites and resources.

AUDIENCE/VENUE:

The educational material created as part of the PBT project will be available for classroom use and to any interested member of the general public; it will be accessible by any person or classroom with an Internet connection. This material will also be available to private schools, home schooled students and for use in after-school/out-of-school programs. Some of the learning experiences will also be available nationally on the PBS Virtual Learning Library

EDUCATION:

The project will create STEM curricula, meeting Nebraska standards for late elementary, middle and/or high school learners. Materials are being developed in consultation with teachers and curriculum designers, with input from ag subject matter experts and the Nebraska Department of Education.

PRODUCERS:

Launched in 2011 by photographer Michael Forsberg and NET Special Projects Director Michael Farrell, PBTL provides an unprecedented look at at the Platte Basin. Together with our educational media producers, the importance of agriculture as it relates to the Platte Basin is an important part of that story that must be told.

ACTION ITEMS (if funding is received)

This budget request for FY16 will allow us to begin the process of creating educational content during this coming growing season. Budget includes staff time, travel and honorariums to:

- Identify location/partner for time-lapse cameras (1-2 ag locations)
- Install image-gathering technologies on ag location
- Assemble team of corn/agriculture experts and educator advisors
- Identify best STEM themes that align to Nebraska State Standards
- Create storyboards and wireframes for content

FUNDING REQUEST: \$25,000 this budget year.

(This is the first year of a multi-year project.)



Ron Kallhoff | rkallhoff@netnebraska.org | 402.470.6410

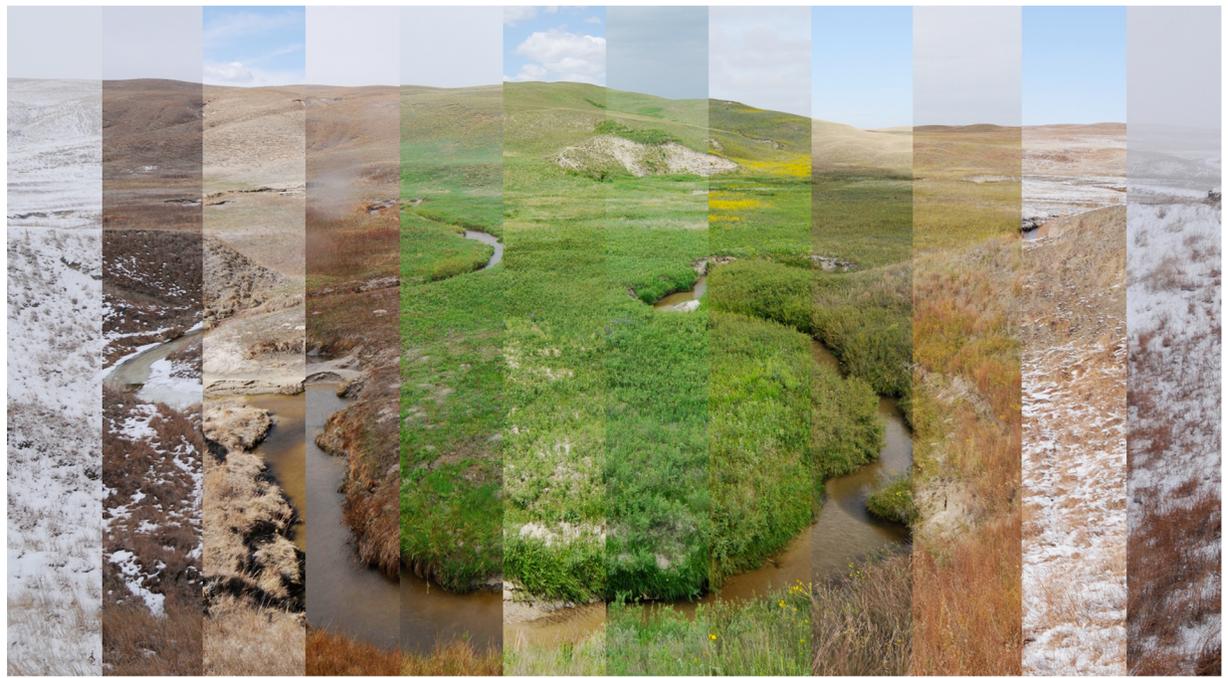
NET Television | Educational Media | 1800 North 33rd Street | Lincoln, NE 68503



Platte Basin Timelapse with conservation photographer
Michael Forsberg and NET's Michael Farrell, the team from
Great Plains: America's Lingerin Wild

Seeing a watershed in motion
website: www.plattebasintimelapse.com

PLATTE BASIN TIMELAPSE



Water is essential for life

On the Great Plains, where water is measured in 100ths of an inch, it is also essential for growth. Nebraska sits atop half the volume of the Ogallala Aquifer, but as recently as 2012's record-setting drought, our state experienced conditions in which one more year without significant precipitation would have spelled disaster—for our ecology and our economy. In the fragile Plains ecosystem, the water story impacts us all.



Michael Forsberg Photos

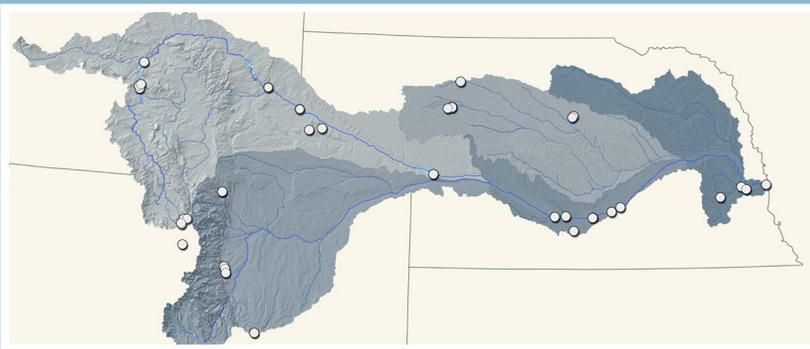
Along the Platte Basin, nature and human engineering are constantly on the move. Timelapse photography can record that transformation. Timelapse photography shows the state of the water we rely on as it interacts with the land, providing graphic evidence of changes as they occur—evidence that can help to inform water policy discussions and water conservation efforts in Nebraska and throughout the region.



Foundation for Television

Ron Kallhoff | rkallhoff@netNebraska.org | 402.470.6410

NET Foundation for Television 1800 North 33rd Street • Lincoln, NE 68503 402.472.3611 | 800.634.6788



Over forty camera locations placed along the Platte Basin
 Nearly one million images have been captured since 2011

The Water Story

The Platte Basin Timelapse (PBT) project is an unprecedented look at a river system in motion. Timelapse cameras are placed at 40 locations across the Platte Basin in Nebraska, Wyoming and Colorado. These cameras record and transmit images daily. Nearly one million images have been captured since 2011. Led by Michael Farrell and Michael Forsberg, a youthful team of next-generation-journalists uses today's media tools (video, data visualization and a robust website) as they create stories that put these images in context.

With your support, NET will help our communities become better informed about this critical topic. NET will use Platte Basin Timelapse imagery and storytelling in projects that raise awareness of water issues, highlighting the need for thoughtful stewardship of precious water resources in our region and state: for agriculture, for wildlife, for urban development and recreation.

Timelapse: monitoring change over time

PRODUCE A DOCUMENTARY FILM FOR PBS **\$100,000**

The Platte Basin is a natural system where water demand exceeds the supply. Public policy questions and challenges for stakeholders going forward will address how to achieve balance between agricultural use, urban use, and wildlife and habitat use. A documentary film will combine Michael Forsberg's dramatic images of habitat and wildlife along the river with reports of researchers and others who are dedicated to conserving our water resources.

CREATE RESOURCES FOR EDUCATION **\$200,000**

PBT is developing rich stories of Nebraska animal and plant species that include video interviews, location footage and Michael Forsberg's photographs. This material will be available free to Nebraska schools. These resources will include lesson plans and web based tools to introduce Nebraska students to the species in their own backyard and inspire them to go outdoors.



Wet meadows along central Platte

Ron Kallhoff
 rkallhoff@netNebraska.org | 402.470.6410

NET Foundation for Television 1800 North 33rd Street
 Lincoln, NE 68503 402.472.3611 | 800.634.6788



Tree ID

Deciduous Trees

Use this scorecard to identify a few of the trees found here at Enka. These trees lose their leaves for winter (deciduous). Every time you hit a tree, try to ID it. Look at its bark, leaf shape and other identifying features. Identifying deciduous trees will be as easy as making a five foot putt.

Poplar



Maple



Northern Red Oak



White Oak



Chestnut Oak



Sassafras



Sourwood

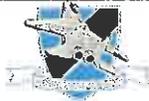


Register your Round... Earn a Prize!

The mission of the Blue Ridge Parkway Foundation's Kids in Parks program is to get kids and their families "un-plugged", outdoors and reconnected to nature. Since disc golf is a great way to do that, we want to give you some disc golf gear to ensure you are able to enjoy future rounds. All you have to do is register your rounds at: www.kidsinparks.com.



Enka High Nature Trail Disc Golf Course



1	2	3	4	5	6	7	8	9	OUT	10	11	12	13	14	15	16	17	18	IN	TOTAL
199	204	208	182	131	215	228	213	174	1774	188	226	375	188	159	185	292	290	283	2186	3960
3	3	3	3	3	3	3	3	3	27	3	3	3	3	3	3	3	3	3	27	54

Enka High School Nature Trail Disc Golf Course...
 The trail is the trail and the tee-signs and scorecards act as your nature guides.
 It's a Frisbee... So, as you play your round of disc golf, use the trail to learn about and connect with some of the natural resources at Enka High School. Who would have thought that playing in and around a school could be so much fun?

Rules: Complete each hole in the fewest number of throws by starting at the tee-pad and finishing with your disc in the basket. Each consecutive shot must be taken from where your previous shot landed. If your disc comes to rest in a parking lot or road, you're OB (Out-of-Bounds). Penalize yourself one stroke, and throw from where your disc was last in-bounds. Be Safe and Have Fun!

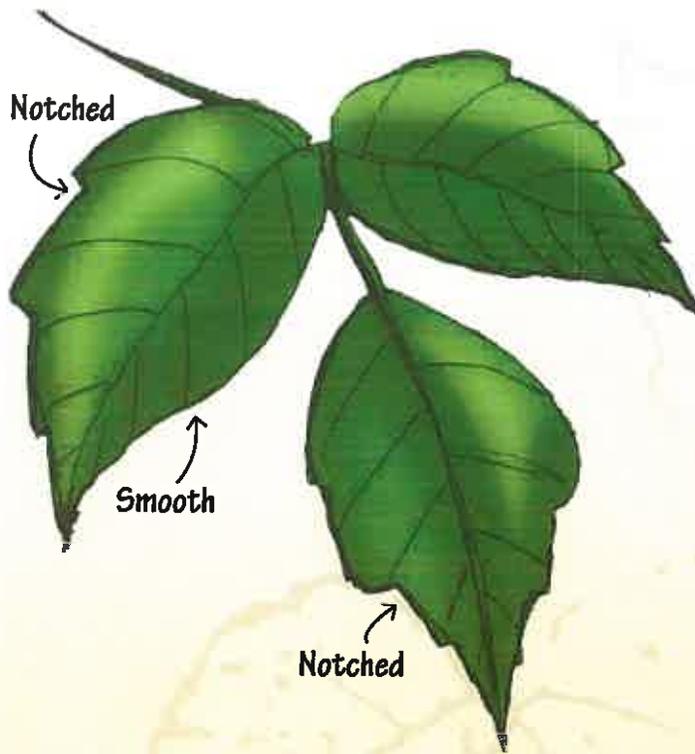
Safety: Disc golf discs can cause serious damage to people and property. You are responsible for any damages caused by your disc. Be aware of your surroundings and be patient of others. Do not stand in front of other players who are throwing and don't throw when other players are in front of you!



Enka High Nature Trail Disc Golf Course - Map

Leaves of Three

Illustration by David Williams, 'Wingin' It Works



If your disc ends up in the brush, be on the lookout for poison ivy (*Toxicodendron radicans*). Poison ivy is a woody vine that produces an oil called urushiol on its stems and leaves. For many people, urushiol is a skin irritant that causes an itchy rash.



Poison ivy grows in leaflets of 3, leading to the rhyme: "Leaves of three, leave it be." However, many other plants also have leaves that grow in clusters of three, so there are a few other ways to identify poison ivy. Notice how the outer two leaflets are notched on their outer edge, while the inner edges are relatively smooth, and how the central leaflet is notched on both sides.

"Don't climb the hairy vine!"

The brown hairy vines of poison ivy plants also contain urushiol.

PRO TIP: PUTTING

There is more than one way to putt the disc into the basket. Here are a few tips:

1. Grip the disc looser than if you were throwing a driver.
2. The putting motion is more of an in-line push from your stomach outward than it is a twisting throw.
3. Whichever stance you use (in-line or straddle), make sure you have solid footing and are in balance when you putt.
4. Be confident in your putt. Know you are going to make the putt before you throw, otherwise it's best to lay-up.



Hole 3

255'

Par 3

Catawba Meadows Drive

Hole 4

