



# Big Thompson Watershed News





~ Newsletter of the Big Thompson Watershed Forum ~

## Big Thompson News 2015





Hello Forum members, stakeholders and watershed communities. The Forum continued its robust water quality monitoring and assessment of the Big Thompson River and its major tributaries in 2015. We also completed our 4<sup>th</sup> major state of the watershed water quality report and held our 14<sup>th</sup> watershed conference in September in Loveland. A quick 'thank you' to all of our major and minor contributors, to our board of directors, to our staff and monitoring volunteers and, of course, to all of our members and individuals who help sustain the Forum and allow us to continue our mission in protecting our most precious resource, our water. Ok... let's visit some of our highlights in 2015.

### In This Issue:




#### **Water Quality Monitoring and Assessment**

-  Volunteer Program (p. 2)
-  Cooperative Program (p. 3)
-  2015 State of the Watershed Water Quality Report (p. 4)
-  Forum Sample Sites (p. 7)

#### **Education and Outreach**

-  Loveland Spring Waterway Cleanup (p. 8)
-  Dave Cole Environmental Scholarship (p. 9)
-  Forum 14<sup>th</sup> Watershed Conference (p. 10)
-  Forum Website (p. 15)

#### **Forum General**

-  Forum Contributors (p. 15)
-  Forum Mission (p. 15)
-  Become a Member (p. 15)



*Forest Canyon, headwaters of the Big Thompson River.*

# Water Quality Monitoring & Assessment

## Volunteer Program

The Forum continued its high quality volunteer monitoring and assessment program into 2015. The Forum relied on the USEPA Region 8 laboratory, through an on-going 319 non-point source grant, and the High Sierra Water Laboratory (HSWL) in California for nutrient, metals, pathogens and major ions. The Forum collects and analyzes all physical variables through its in-house



### 2015 Forum Volunteers

*(L to R): – Tim Schmitt, Amanda Webber, Kyrstle Ervin, Eddie Trevino, Bob Alexander, Jeri Feil, Fred Renner, Clint Jones & Annelies DeGroot. Not pictured: Jennifer Stephenson, Traci Shambo, Calvin Andrade, Joe Chaplin, Nicolette Lind, Zach Dahlgren, Kali Arenas and Crystal Lesmeister*

laboratory and monitoring equipment. This is done by Forum staff and volunteers. In 2015, the Forum used a record 16 volunteers on seven sample events through-out the year. Not one sample event or station was missed. This says a lot about our volunteers and staff. And a big thank you to our EPA and HSWL staff who make this monitoring possible.

We continue to monitor '12' sites on the Big and Little Thompson Rivers, Glacier Creek, North Fork of the Big Thompson and Fall River....sites extending from Rocky Mountain National Park to the confluence with the South Platte River. Tim Schmitt, the Forum's Watershed Specialist, continues to do an outstanding job in assisting and running the volunteer monitoring program and maintaining the Forum's lab and equipment. If you would like to be a regular or back-up volunteer, please call [Zack Shelley at 970-613-6163](tel:970-613-6163) or email [zshelley@btwatershed.org](mailto:zshelley@btwatershed.org).

*Traci Shambo, with Larimer County's Engineering Department, collects a bridge sample on the Big Thompson River near the City of Loveland's Water Treatment Plant.*





# COOP USGS Program



The Forum's Cooperative Monitoring and Assessment Program continued to run smoothly with the U.S. Geological Survey (USGS) and its cooperative partners (Cities of Fort Collins, Greeley and Loveland, and Northern Water and the Tri-Districts).

The program continues to monitor '15' sites in the watershed. Most of these sites are located on the mainstem of the Big Thompson River with '1' site on the North Fork of the Big T. and '1' site on Buckhorn Creek.

*USGS Hydrologic Technicians, Ethan Newman and Sue Hartley taking flow measurements in the Little Thompson River near the Town of Milliken.*

As a part of our 2015 Joint Funding Agreement (JFA) with USGS, we have also added a flow monitoring site (VT05) on the Little Thompson River. The Little Thompson is currently being monitored as part of our volunteer program with USEPA8. The Forum, and several stakeholders are trying to get a permanent long-term discharge monitoring gage, with real-time telemetry on this major tributary before it enters into the Big Thompson. There are currently no gages located in the lower reaches of the river/watershed.



*Josh Fulson with USGS readies equipment for taking flow measurements on the Big Thompson River near I-25 in Loveland.*

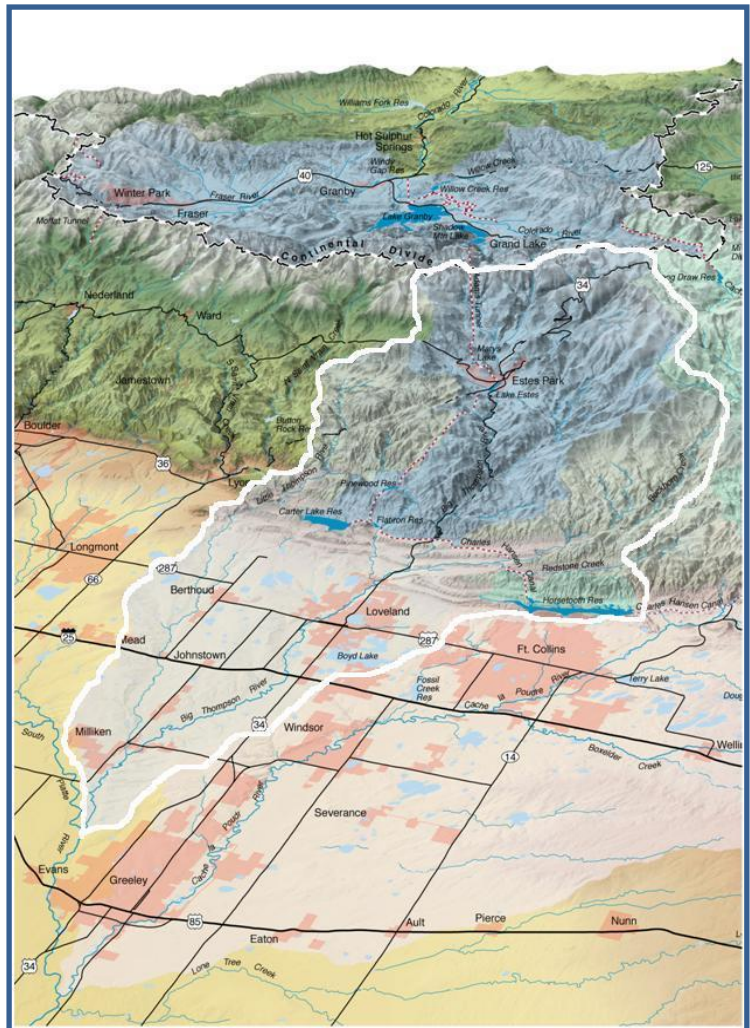
Northern Water also continues to monitor major canal sites on the East Slope that are a part of the Colorado-Big Thompson Project (C-BT) system. Between the two programs, the Forum has '27' total sites located throughout the entire watershed. We continue to collect pathogen, nutrient, metals, physical variables and flow data at all Coop sites. Big thanks to our cooperative partners and USGS staff for all of their hard work.

# 2015 State of the Watershed Water Quality Report

In September, 2015, the Forum and Hydros Consulting completed its 'five' year State of the Watershed Water Quality Report for the rivers, streams, and canals in the Big Thompson River Watershed. This water quality assessment report supports the Forum's continuing efforts to identify and evaluate strategies for watershed management and protection in the process of maintaining a comprehensive watershed management plan. The Forum would like to thank Hydros for doing a fantastic job on the report and presenting at the Forum's 2015 watershed conference.

## *Results & Summary of Findings....*

Overall, the state of the watershed varies from pretty good in the upper portion of the watershed to fair in the lower watershed.



**Upper Watershed:** The upper watershed is generally characterized by good water quality. This reflects the igneous and metamorphic rock of the subsurface geology, low populations, and natural runoff patterns. Concentrations of dissolved solids, metals, nutrients, chlorophyll *a*, total organic carbon (TOC), suspended solids, and coliforms all tend to be low, especially relative to the lower watershed. TOC concentrations peak during the spring snowmelt runoff period, with the magnitude of these peaks similar to the TOC peaks observed in the lower watershed.

**Lower Watershed:** The water quality in the lower watershed is generally fair. It is characterized by higher populations, urban development, agriculture and livestock, more WWTP effluent, more alluvial groundwater, and sedimentary subsurface geology, including the Pierre shale. The lower watershed exhibits lower annual flow rates due to the City of Loveland drinking water treatment plant intake and numerous irrigation ditch diversions. Snowmelt runoff signals are also minimized in the lower watershed. Relative to the upper watershed, the lower watershed exhibits notably higher concentrations of dissolved solids, nutrients, chlorophyll *a*, TOC, suspended solids, and coliforms. Selenium is also consistently higher in the lower watershed due to the underlying Pierre shale.

**C-BT Canals:** Water quality in the C-BT canals is generally good and reflects the conditions in Grand Lake on the west side of the continental divide. However, these flows do not follow consistent seasonal patterns. Water quality in the canals is generally comparable to that of the upper-most Big Thompson watershed, with low nutrients, TOC, metals, and suspended solids.



Some differences include lower coliforms, orthophosphate and nitrate, and slightly higher chlorophyll a, TOC, and dissolved solids from the 13 mile long Adams Tunnel.

Major Tributaries: Major tributaries with sampling data in the Big Thompson watershed include Glacier Creek, Fall River, the North Fork, Buckhorn Creek, and the Little Thompson River.

- **Glacier Creek, Fall River, and the North Fork** drain fairly pristine high-mountain granitic watersheds. As such, the water quality from these tributaries tends to be good and similar to that of the upper watershed on the mainstem of the Big Thompson River.
- **Buckhorn Creek** also exhibits low nutrients, TOC, and chlorophyll a. However, measures of dissolved solids are more similar to lower watershed conditions. Specifically, Buckhorn Creek has high alkalinity, hardness, specific conductivity and sulfate. This is indicative of the change in subsurface geology from granitic to sedimentary rock and the presence of several quarries.
- **The Little Thompson River** exhibits water quality similar to that observed on the mainstem of the Big Thompson in the lower watershed. This includes elevated concentrations of TOC, chlorophyll a, sulfate, and coliforms. Ammonia, nitrate, dissolved solids, and selenium concentrations are also elevated and tend to be greater than those in the lower Big Thompson.

Below WWTPs: WWTPs serve an important function in the watershed, treating wastewater and returning it to the river. For many rivers, including the Big Thompson, WWTPs represent major point sources for loading of nutrients, organic matter, and sometimes metals. In the Big Thompson watershed, total nitrogen and total phosphorus concentrations increase at stations below each of the major WWTPs in the watershed. Implementation of the recent Regulation 85 for nutrients is expected to reduce these concentrations in the treated WWTP effluent by 2020.

### *Long-Term Trends....*

Testing of the 15-year record for statistically-significant trends revealed two key findings:

- Increasing TOC in canals and the upper watershed; and
- Decreasing nitrate at the top of the upper watershed.

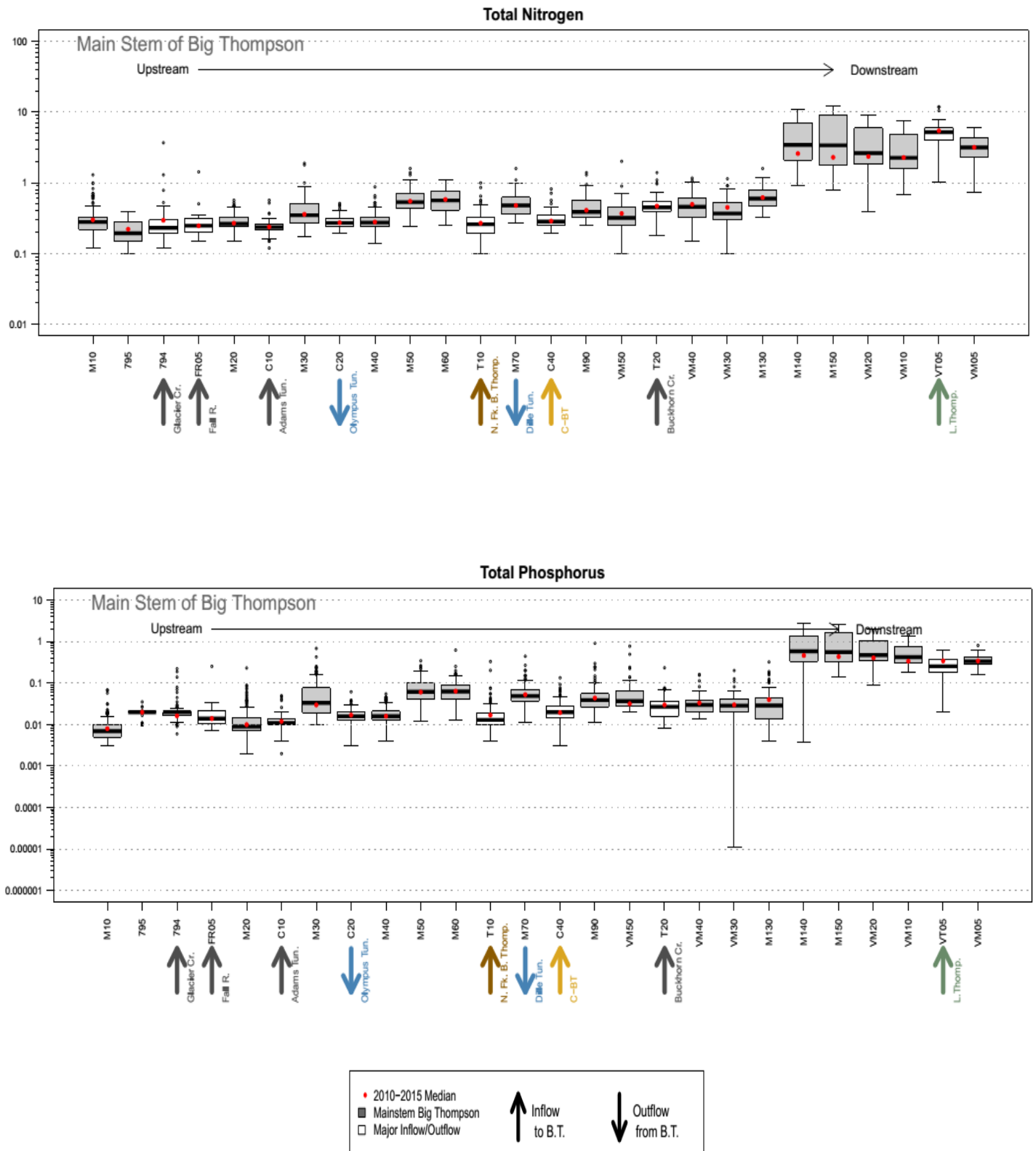
### *Compliance.....*

Comparison of the Forum's water-quality dataset to relevant standards produced a few noteworthy findings:

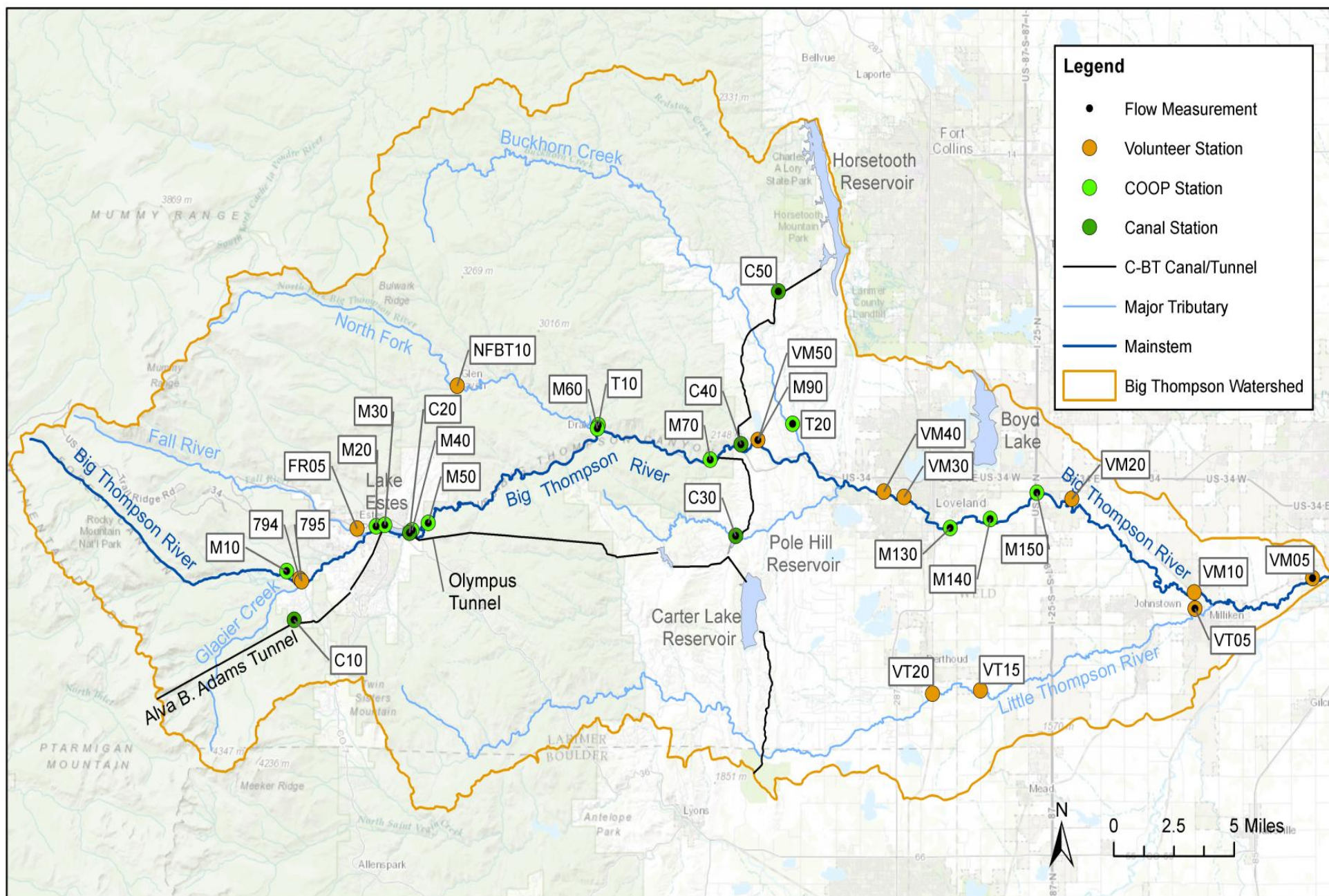
- Acute and chronic copper exceedances in the upper reaches of the watershed;
- Lower watershed exceeds chronic standard for selenium;
- Frequent exceedances of *E. Coli* in the lower watershed and Little Thompson River;
- Recently-updated sulfate standards indicate issues at '1' site on the lower Little Thompson River;
- The Forum's current dataset does not support the 2012 303(d) listings of cadmium, copper, and zinc; and
- Interim Nutrient Criteria review suggests possible future challenges.

The Forum's website is currently being upgraded and under construction. This and past reports and technical findings may be found on the Forum's website in January/February of 2016 at [www.btwatershed.org](http://www.btwatershed.org).

## 2015 Report Water Quality Box Plots of TN & TP (mg/L) in the Big Thompson River Watershed, 2000-2014



## Forum Water Quality Monitoring Sites





# Education and Outreach

## Annual Spring Waterway Cleanup



The City of Loveland and the Big Thompson Watershed Forum's 2015 12<sup>th</sup> Annual Spring Waterway Cleanup was held on Saturday, May 16<sup>th</sup>.



*Caitlin Shelley and Lexie McGehee participate in the cleanup event at Jayhawker Ponds.*

This year's event re-focused on the river, streams, ponds and canals in the Loveland area. We also continued to concentrate on debris left behind by the historic and devastating flood that occurred in September, 2013, along the Big Thompson River.

Unfortunately, the weather turned fairly nasty and the event had to be cancelled and moved from April to May. As one might expect, it reduced our attendance volume but we still had a nice turnout and day.

A total of 150 volunteers participated in this year's event along with seven adopt-a-waterway groups, 18 City of Loveland staff and Four Forum staff and board members. In addition, '26' sponsors and donors contributed their support, time, materials and equipment for the 2015 event.



*City employees and family members participate at the Centennial Park check-in location.*



The Forum would like to thank the City's Public Works and Parks and Recreation Departments for their hard work, time and providing goody bags, and to all sponsors for providing treats and gifts for the goody bags to all participants!

**Save the Date!**.....Be on the lookout for the 2016 Waterway Cleanup to be held on Saturday, October 8<sup>th</sup>.

## Dave Cole Environmental Scholarship Fund & Award

Dave Cole served on the Big Thompson Watershed Forum's Board of Directors for 10 years, 1998 – 2008, and was keenly interested in water science education for our region's youth. Dave has long been a steward for improving and protecting water quality and promoting water conservation.



To be considered, the candidate must be a freshman, sophomore, junior or senior student by the Fall semester, in an approved academic program with a primary focus of study in hydrology, water resources, watershed science, water pollution, and/or water quality. Applicants must have a minimum GPA of 3.0.

The scholarship provides a great volunteering and networking opportunity with the Forum that can provide the candidate with great unique and valuable learning experiences. In 2016/17, the Forum will award an environmental scholarship to a student attending Colorado State University or the University of Northern Colorado in the amount of \$1,500. If selected, the candidate will agree to volunteer a minimum of 40 hours for the Forum over a 12-month period beginning in October, 2016.



*2015/16 winner, Emilie Abbott, major in Environmental Engineering, CSU*

For more information about the award, the acceptable fields of study, a list of acceptable volunteer activities, and instructions for submitting an application, please consult our website at [www.btwatershed.org](http://www.btwatershed.org).

Emilie Abbott is the 2015/2016 winning recipient and is currently a Junior at Colorado State University, working toward a second bachelor's degree in environmental engineering (her first degree was in Spanish and Italian from the University of Colorado at Boulder...wow). Upon completion of her studies at CSU, she plans to seek a career in water resources management or water education.

Per Emilie, "....It has been interesting to see the breadth and depth of the issue of nutrient pollution in our watersheds." And in creating the e-newsletter for the CSU Water Center, "I see recurring themes....'water shortages,' 'farmers piloting new tools for water efficiency,' 'climate change causing an increase in waterborne disease,' the list goes on. One can argue that the world may someday find a replacement for fossil fuels, but there is no substitute for water."

## Forum's 14<sup>th</sup> Watershed Conference

### *"From Flood to Future . . . Rising from Mud and Ashes"*



The Forum's 2015 watershed conference, *"From Flood to Future...Rising from Mud and Ashes,"* was held at the Fireside Café in Loveland on September 24<sup>th</sup>.

This year's conference concentrated on several themes important to Northern Colorado stakeholders and communities. This year we addressed the functionality and monitoring in the Colorado-Big Thompson Project (C-BT) system; impacts on our municipalities, infrastructure and operations from the 2013 Big Thompson flood; presented two great flood plenary panels discussing pre and post flood observations, regulatory issues, and lessons learned from local, state and federal perspectives as well as the effects on aquatic wildlife, forestry and ecology in the watershed; and of course, we presented the scope, results and findings from our most recent water quality report looking at pre and post flood water quality and data going back 14 years!

The Forum would like to send out a big thank you to everyone who attended the conference and to our wonderful speakers for their great presentations.

### 2015 Speakers & Presentations



*City of Loveland Mayor, Cecil Gutierrez, gets the conference started as John Matis, Forum Chairman of the Board looks on.*



## *Session I: Your River & Who Runs It ~ Functionality & Monitoring in the C-BT System.....*

*James VanShaar,  
Lead for the Water  
Resources Group  
with the U.S.  
Bureau of  
Reclamation.*



*\*Note: not shown are speakers Esther Vincent, Water Quality Manager with Northern Water and Zack Shelley, Program Director with the Forum.*

## *Session II: The 2013 Flood ~ Impacts on Operations & Infrastructure.....*



*Chris Matkins, Water  
Utility Manager with  
the City of Loveland.*

***Amy Johnson, Project Manager  
with Northern Water.***



***Mark Peterson, Civil Engineer  
with Larimer County.***

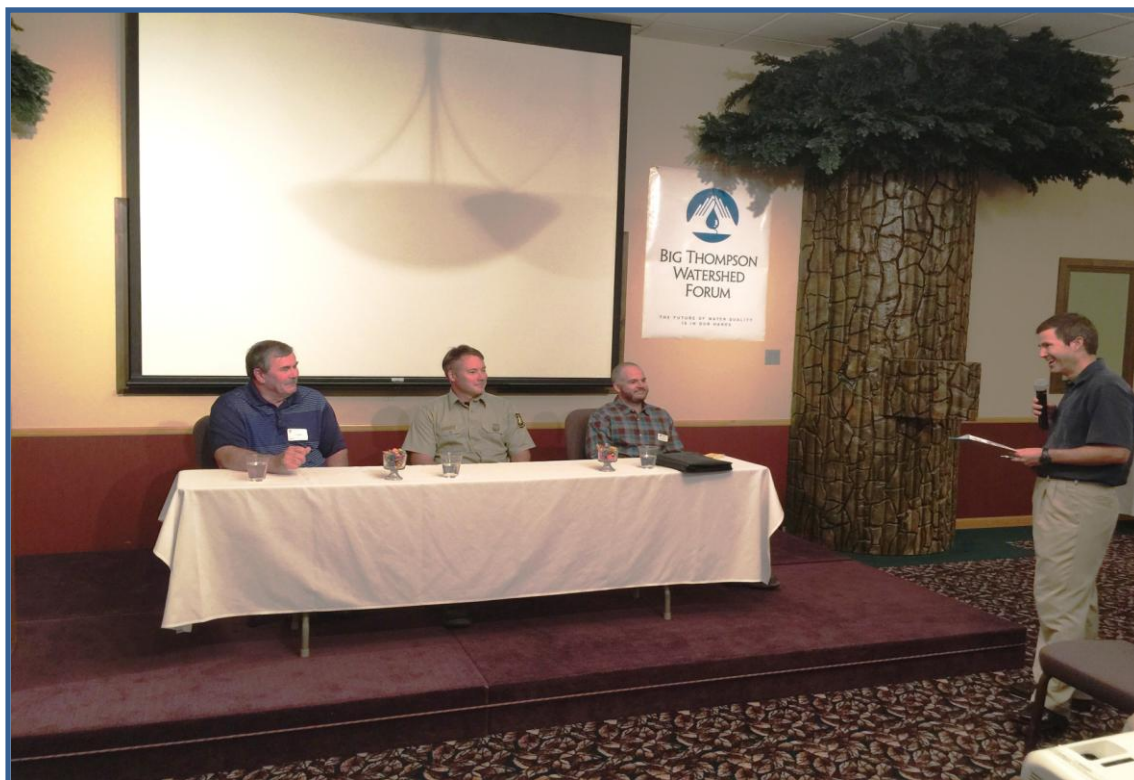
### ***Session III: 2015 State of the Watershed Water Quality Report....***

***Christine Hawley,  
Environmental Engineer with  
Hydros Consulting.***





## *'From Flood to Future' ~ Plenary Panel I.....*



***Chris Carlson,  
Panel  
Facilitator  
with the City of  
Loveland's  
Public Works  
Department  
engages the 1<sup>st</sup>  
panel.***

***From L to R: Gordon Gilstrap, President of the Big Thompson Conservation District; James White, Forester and Flood Recovery Team Lead for the U.S. Forest Service; and Chris Sturm, Stream Restoration Coordinator with the Colorado Water Conservation Board.***

## *'From Flood to Future' ~ Plenary Panel II.....*

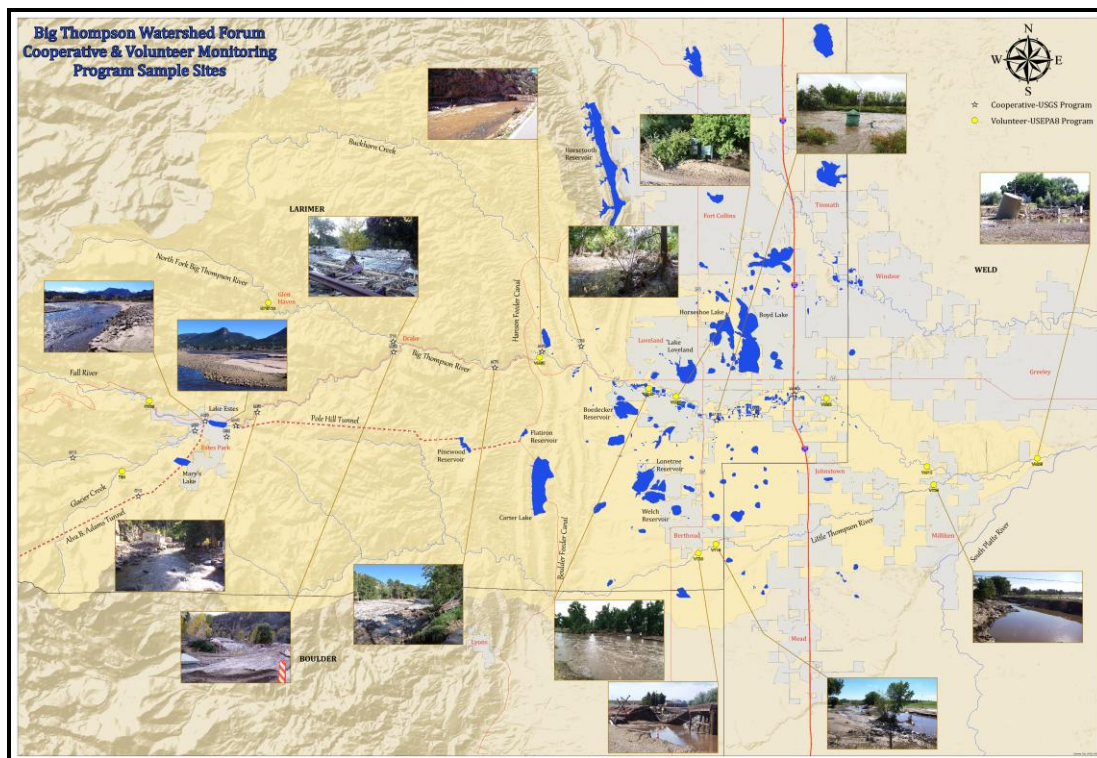


***From L to R:  
Bob Kimbrough,  
Associate  
Director,  
Hydrological  
Data with the  
U.S. Geological  
Survey; John  
Giordanengo,  
Principal &  
Restoration  
Ecologist with  
AloTerra  
Restoration;  
and Ben Swigle,  
Biologist with  
Colorado Parks  
and Wildlife.***



A group of six people, including two men and four women, are standing together indoors. The man on the far left is wearing a striped polo shirt and dark pants, and is speaking into a microphone. The four women are standing in the center, wearing various casual and business-casual attire. The man on the far right is wearing a dark suit jacket, a white shirt, and a tie. In the background, a sign is visible that reads "BIG THOMPSON WATERSHED FOR...". The setting appears to be a conference room or a meeting space with a patterned carpet and a stone wall in the background.

The Forum also recognized Tim Schmitt, our part-time watershed specialist and volunteer and the Hach Company with environmental stewardship awards for their support of the Forum and our mission and for their donations to our laboratory for water quality monitoring. Thank you Tim and Hach, we greatly appreciate our relationship with the both of you!



[www.btwatershed.org](http://www.btwatershed.org)



## BTWF Website

Our website is currently being upgraded and under construction. All water quality reports, conference and meeting presentations, monitoring program information and maps, and education and outreach information will be available soon, so please be sure to visit us.

## Major and Minor Contributors

The Board of Directors and staff of the Forum would like to say thank you to the following for their continued support:

City of Fort Collins  
City of Fort Morgan  
City of Greeley  
City of Loveland Public Works  
City of Loveland Water and Power  
Larimer County  
Northern Water (NCWCD)  
North Front Range Water Quality  
Planning Association (NFRWQPA)

Soldier Canyon / Tri-Districts  
Thompson School District R2J  
Town of Estes Park  
Town of Milliken  
U.S. Environmental Protection Agency 8  
U.S. Geological Survey  
Weld County

We appreciate your efforts to ensure the success of the Forum and the integrity of the Big Thompson Watershed Forum, and we look forward to our continued partnerships and collaborations.

## Forum Mission

The mission of the Big Thompson Watershed Forum is to protect and improve water quality in the Big Thompson River watershed through collaborative monitoring, assessment, education and restoration programs. The Forum fosters stakeholder teamwork by conducting scientifically sound watershed assessments, identifying priority protection measures, educating affected interests, and promoting voluntary practices that protect the quality of Big Thompson waters.

*Please send any ideas regarding how the Forum can better serve our community or relay your suggestions to the Forum Outreach Team at [zshelley@btwatershed.org](mailto:zshelley@btwatershed.org).*

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**PLEASE BECOME A PART OF THE LEADING WATER QUALITY PROTECTION  
ORGANIZATION IN OUR REGION**

With your **tax-deductible** financial support in 2016, we will be able to gather an even wider array of water quality monitoring data, produce better periodic assessments and conduct more community outreach and education.....

Please send a check for your annual donation *along with your email address* to:



*Big Thompson Watershed Forum*  
800 South Taft Avenue  
Loveland, CO 80537

