

Coalitions & Collaboratives, Inc. (COCO)

PO Box 746

Lake George, CO 80827-0746


# Invoice

Closing Date	Invoice #
9/27/2018	2018-089

<b>Bill To</b>
Lower Arkansas Valley Water Conservancy D 801 Swink Avenue Rocky Ford, CO 81067

Date Mailed	09/27/18
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Terms	Project
	HaydenPassFire

Quantity	Description	Rate	Amount
	ARWC Fire Recovery - Hayden Pass Fire July 1 - Sept. 30, 2018 CWCB PO#: POGG1 PDAA 201700000985  Requested to date: \$100,000.00  Match this period: \$14,164.76 Match to date: \$36,389.11  I certify the above to be true and accurate to the best of my knowledge, that payment of which has not previously been invoiced or received, and that this represents work completed pursuant to the agreement, contract, or grant being billed against.  	27,175.17	27,175.17
Thank you !		<b>Total</b>	\$27,175.17

# HAYDEN PASS FIRE Final Report

A rainless lightning strike on July 8, 2016, started the Hayden Pass fire in the Sangre de Cristo Wilderness above Coaldale, Colorado. By the time the fire was contained, it had scorched nearly 16,700 acres of forest dominated by beetle-killed trees. Following the fire, monsoon rains arrived in early August, bringing the first flash floods and debris flows. These extreme weather events and flash floods continued in 2017 and 2018, with the worst damage to date occurring on July 24, 2018, with an estimated flow rate of ~4000 CFS which caused the loss of homes, outbuildings, vehicles, and bridges, and required a helicopter rescue.

The Lower Arkansas Water Conservancy District, working as fiscal host with the Arkansas River Watershed Collaborative received a \$100,000 Grant from CWCB to work on mitigation of impacts to downstream values at risk. With funding, LAWCD and ARWC accomplished the following:

1. Sandbagged three structures in order to remove berms that landowners created to protect property, but that constrained the channel to much.
2. Tied down several trailer houses in the flood zone.
3. Cleaned ~10,000 feet of creek, removing large debris dams.
4. Removed a private vehicle bridge that was severely damaged in the July 24 flood event. This bridge was removed two days prior to a second flood event.
5. Removed 5 small private foot bridges from the stream corridor.
6. Coordinated with the County, BLM, and other stakeholders.

More detailed reports were submitted with individual invoices.

Item	Total Request to Date	Match to Date	Total to Date
Heavy Equipment Work	\$41,297.50	\$0.00	\$41,297.50
Hand Crew Work	\$43,092.85	\$33,915.26	\$77,008.11
Planning, Management, Reporting	\$15,609.65	\$2,473.85	\$18,083.50
<b>Total</b>	<b>\$100,000.00</b>	<b>\$36,389.11</b>	<b>\$136,389.11</b>



# HAYDEN PASS FIRE JULY – SEPTEMBER REPORT 2018

## HAYDEN CREEK

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**Flat car used for a bridge.** This photo shows the protrusion and the large spruce tree just downstream of the bridge. If you enlarge the photo, you may be able to see the deep cracks to the right of the tree indicating this undermined protrusion and tree were at risk of failing in the next flood event.

BILL WOODS, the downstream neighbor wrote the following to us: "I wanted to follow up on our text discussion of last Friday regarding the bridge removal at Sullivan's house. The contractor completed the work yesterday, and he did an excellent job.

As he and I were sizing up the bridge removal, we took a look at an undermined protrusion of soil and rock just downstream of the bridge. This protrusion had a large spruce tree on it, and there were deep cracks in the soil behind the tree. It was apparent to us that this protrusion, including the tree, stood a good chance of failing and causing downstream impacts to houses in a future flood event. This was made even more likely by the removal of the bridge abutment. This is why we recommended to you that the protrusion and the tree be removed along with the bridge.

As you know, I was a hydrologist in my working days. I have seen a lot of fire and flood effects in my career. This bridge and the protrusion concerned me greatly, not only for my property but for downstream neighbors as well. The contractor did an outstanding job, and I recommend him wholeheartedly for future projects."





This photo shows the excavator at work. The protrusion has been removed in the left center of the photo.



This photo shows the completed project with bridge and the protrusion (formerly in left center) removed.





This photo shows the bridge and the overhanging branches of the removed tree.

We had high confidence that this bridge was not going to make another flood event. We talk to the district NRCS engineers, and the county engineers. They all agreed with our assessment. The bridge had to go, exigent.

The excavator used to remove the bridge was a beast. Mobilization required a special permit, plus two highway flagging vehicles. It had to be roaded (driven) up the road from highway 50.



The first picture showed the cracks in the soil. The ground caved back to the cracks in the soil. We could not leave the gaping hole. We had to repair the bank as well as do some bank protection down stream. We were under a flood potential warning for the area.

It rained the next day. The driver under contract to move the excavator to the next project site was glad to say goodbye to Cottonwood drainage. The day after that it flooded again. I feel we did a really good thing, by removing this bridge when we did. I think it would have gone in the latest flood, which occurred the week after this bridge was removed.

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# Invoice

Closing Date	Invoice #
12/31/2017	2017-140

Bill To
Lower Arkansas Valley Water Conservancy D 801 Swink Avenue Rocky Ford, CO 81067

Date Mailed	7/18/18
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Terms	Project
	HaydenPassFire

Quantity	Description	Rate	Amount
	ARWC Fire Recovery - Hayden Pass Fire Jan. 1 - Jun 30, 2018, 2018 CWCB PO#: POGG1 PDAA 201700000985  Match this period: \$0.00  I certify the above to be true and accurate to the best of my knowledge, that payment of which has not previously been invoiced or received, and that this represents work completed pursuant to the agreement, contract, or grant being billed against.   7/19/18	37,049.07	37,049.07
Thank you !		<b>Total</b>	\$37,049.07



# HAYDEN PASS FIRE REPORT

## January - June 2018

### HAYDEN CREEK

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#### **ABOVE: UPPER LOG JAM**

On May 10th ARWC staff met with Jamie Krezelok, Hydrologist for US Forest Service, Pike-San Isabel. After discussing options we developed a strategy to remove excess woody debris and large logjams that have built up in Hayden Creek after the Hayden Pass Fire, which will cause significant damage in a flood event. Potential hand work within the Wilderness Boundary was discussed, but the decision was made not to work in the Wilderness.

A new scope of work was created for CWCB for the work in Hayden Creek. The new work is in line with the original set objectives:

1. Reduce erosion and flooding in and downstream of the Hayden Creek burn scar, protecting human life and safety.
2. Reduce sediment and debris flows moving downstream, greatly protecting public health, critical infrastructure and watershed health.
3. Protect habitat for T&E species (The Colorado Greenback Cutthroat Trout), fisheries and wildlife.

#### **Hand Crew Work**

ARWC staff and SWIFT Crew walked Hayden Creek from the Wilderness Boundary to the area of Cutty's Resort. We discussed the phases and progression of the project. SWIFT Crews started on May 21st. SWIFT crews spent 3 days with half crew, 1 day full crew, 4 days full crew extended hours 1 day with a chipper. On June 14th hand crew work was completed.

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Approximately 2.10 miles of Hayden Creek were cleared of excess woody debris. Larger logs were cut into 20 in length and moved out of the floodplain and left in piles for local residents. This was a request by USFS.



**ABOVE: SWIFT HAND CREW WORK AREA**





## Heavy Equipment Work

On May 25th staff met on site with contractor, to plan removal of large logjams located in Hayden Creek. The week of June 11th the contractor removed three large log jams located in Hayden Creek.



**LOCATION OF LOG JAMS**



**ABOVE: AFTER UPPER LOG JAM REMOVED**

Jamie Krezelok inspected work afterward and thanked us for getting this material cleaned up.



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# Invoice

Closing Date	Invoice #
12/31/2017	2017-140

Bill To
Lower Arkansas Valley Water Conservancy D 801 Swink Avenue Rocky Ford, CO 81067

Date Mailed	01/30/2018
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Terms	Project
	Hayden Pass Fire

Quantity	Description	Rate	Amount
	ARWC Fire Recovery - Hayden Pass Fire November & December, 2017 CWCB PO#: POGGI PDAA 201700000985  Match this period: \$0.00  I certify the above to be true and accurate to the best of my knowledge, that payment of which has not previously been invoiced or received, and that this represents work completed pursuant to the agreement, contract, or grant being billed against.   1/30/18	1,127.40	1,127.40
Thank you !		<b>Total</b>	\$1,127.40

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# **HAYDEN PASS FIRE OCTOBER 2017 COALITIONS & COLLABORATIVES, INC.**

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**PREPARED FOR LAVWCD, CWCB (PO # POGG1 PDAA 201700000985)**

*PREPARED BY JASON MOORE*

Only activity this period is a site visit between a consultant with Fremont County OEM and Road Department and BLM staff to review the work required on road that will lead to a spring project through BLM land, and Carol Ekarius' time on prepping invoice for work through November 15, 2017. Work will resume in spring.

**Recovery Team: Jason Moore and Theresa Springer**

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Coalitions & Collaboratives, Inc. (COCO)

PO Box 726

Lake George, CO 80827-0726

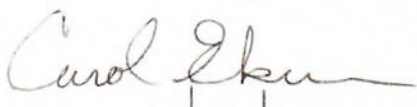
# Invoice

Closing Date	Invoice #
10/31/2017	2017-113

<b>Bill To</b>
Lower Arkansas Valley Water Conservancy D 801 Swink Avenue Rocky Ford, CO 81067

Date Mailed	11/13/17
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Terms	Project
	Hayden Pass Fire

Quantity	Description	Rate	Amount
	ARWC Fire Recovery - Hayden Pass Fire October, 2017 CWCB PO#: POGG1 PDAA 201700000985  Match this period: \$0.00  I certify the above to be true and accurate to the best of my knowledge, that payment of which has not previously been invoiced or received, and that this represents work completed pursuant to the agreement, contract, or grant being billed against.   11/13/17	2,089.80	2,089.80
Thank you !		<b>Total</b>	\$2,089.80

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# **HAYDEN PASS FIRE OCTOBER 2017 COALITIONS & COLLABORATIVES, INC.**

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**PREPARED FOR LAVWCD, CWCBC (PO # POGG1 PDAA 201700000985)**

*PREPARED BY JASON MOORE*

1. COCO staff (Carol Ekarius and Theresa Springer) met with Fremont County Commissioners, Fremont County OEM staff, and NRCS to discuss and review potential projects for completion with NRCS EWP funding.

**Recovery Team: Jason Moore and Theresa Springer**

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Coalitions & Collaboratives, Inc. (COCO)

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Lake George, CO 80827-0726


# Invoice

Closing Date	Invoice #
9/30/2017	2017-104

Bill To
Lower Arkansas Valley Water Conservancy D 801 Swink Avenue Rocky Ford, CO 81067

Date Mailed	10/09/2017
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Terms	Project
	Hayden Pass Fire

Quantity	Description	Rate	Amount
	ARWC Fire Recovery - Hayden Pass Fire September, 2017 CWCB PO#: POGGI PDAA 201700000985  Match this period: \$0.00  I certify the above to be true and accurate to the best of my knowledge, that payment of which has not previously been invoiced or received, and that this represents work completed pursuant to the agreement, contract, or grant being billed against.   10/9/17	1,970.25	1,970.25
Thank you !			<b>Total</b> \$1,970.25

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# HAYDEN PASS FIRE SEPTEMBER 2017 COALITIONS & COLLABORATIVES, INC.

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**PREPARED FOR LAVWCD, CWCB (PO # POGG1 PDAA 201700000985)**

*PREPARED BY JASON MOORE*

1. Steve Morrissey, Fremont County OEM has generously loaned CoCo two Motorola radios. This will enable our cruise to be in contact with Emergency Management when working in flood-prone areas that have little to no cell phone service.
2. COCO staff (Carol Ekarius and Theresa Springer) met with Fremont County Commissioners, Fremont County OEM staff, and NRCS to discuss and review potential projects for completion with NRCS EWP funding.

**Recovery Team: Jason Moore and Theresa Springer**

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Coalitions & Collaboratives, Inc. (COCO)

PO Box 726

Lake George, CO 80827-0726


# Invoice

Closing Date	Invoice #
8/31/2017	2017-074

Bill To
Lower Arkansas Valley Water Conservancy D 801 Swink Avenue Rocky Ford, CO 81067

Date Mailed	09/14/2017
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Terms	Project
	Hayden Pass Fire

Quantity	Description	Rate	Amount
	ARWC Fire Recovery - Hayden Pass Fire July - Aug 2017 CWCB PO#: POGGI PDAA 201700000985  Match this period: \$14,443.85  I certify the above to be true and accurate to the best of my knowledge, that payment of which has not previously been invoiced or received, and that this represents work completed pursuant to the agreement, contract, or grant being billed against.   9/12/17	9,677.86	9,677.86
Thank you !		<b>Total</b>	\$9,677.86

# HAYDEN PASS FIRE JULY & AUG. 2017

## COALITION & COLLABORATIVES, INC.

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**PREPARED FOR LAVWCD, CWCB (PO # POGG1 PDAA 201700000985)**

*PREPARED BY JASON MOORE*

Work during this period

**1. CO-CO Hand Crew**

- a. 29 Log jams/debris removed from Hayden Creek on USFS above Cutty's Campground
- b. 4,530 feet of creek cleaning in Hayden USFS above Cutty's Campground

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**Recovery Team: Jason Moore and Theresa Springer** (Prepared by Jason Moore)



- c. 40 cubic yard of debris removed from Hayden Creek on USFS above Cutty's Campground
- d. 11.5 hours Chainsaw time
- e. 202 hours CO-CO hand crew time & 364 volunteer hours captured
- f. Chains, cables and come-along used to remove large logs from Hayden Creek
- g. 1800 sandbags filled and transported, and 3 Hesco cages installed for ~50 feet of flood barrier



## 2. Technical Assistance

- a. Fremont County OEM 1 hr site review, recommendations and planning
- b. Corps of Engineers 6 hrs site review and recommendations





Coalitions & Collaboratives, Inc. (COCO)

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# Invoice

Date	Invoice #
6/30/2017	2016-025

Bill To
Lower Arkansas Valley Water Conservancy D 801 Swink Avenue Rocky Ford, CO 81067

P.O. No.	Terms	Project

Quantity	Description	Rate	Amount
	ARWC Fire Recovery 16 May-30 Jun 2017 - Hayden Pass Fire  Match this period: \$ 7,820.50  I certify the above to be true and accurate to the best of my knowledge, that payment of which has not previously been invoiced or received, and that this represents work completed pursuant to the agreement, contract, or grant being billed against.   7/31/17	20,910.45	20,910.45
Thank you!		<b>Total</b>	\$20,910.45

# Hayden Pass Fire

May 16/ June 30, 2017

COALITIONS & COLLABORATIVES, INC.

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**PREPARED FOR LAVWCD, CWCB (PO # POGG1 PDAA 201700000985)**

## **Sandbag wall**

Background: this home sites near the creek with a deck that touches the creek. It is a circa 60's non tied down mobile home. The goal is to keep it from washing down stream. The 2016 flooding left a 4 foot water mark on the home. The landowner built a dirt berm, with all the debris that had washed down. The berm is confining the creek. Co-Co planned the sandbag

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wall and started it. We gave the landowner 2 sets of hesco type cages to protect the corner of the home and not the deck.

What and How:

568 sandbags filled. Volunteers filled and place 154 large sandbags which are the footer row. Followed by 335 wall bags. The project is not finished. It will be up to the owner to finish.

Crew put in 60 total hours on the project.

## **Creek cleaning**

Cutty's resort

Background: This is a private campground that has on average 700 campers per weekend. The impetus for this project is life safety. There are two large log jams upstream of the campground. The objective was to remove shrubs and trees that would catch logs and cause damming. This was a new type of project for C0-C0 crews.

Approximately 5,400 feet of creek were cleared on the campground side of Hayden Creek.

Volunteer time totaled 234 hours. Crew time with volunteers totaled 131.5 hours with 15 hours of saw time and 4 hours of donated heavy equipment time.

## **Emergency creek clean up**

Little cottonwood creek.

On June 7th a fast storm hit the big Cottonwood and Bitter/Butter drainages. Trees became uprooted in the storm and fell over or threatened to fall over. 5 homes were affected by this storm. Crews cut the most hazardous trees on June 7th and then returned for a day of cutting on June 8th.

Contracted to have a hazard bridge removed.

## **Recovery team report**

The end of May saw clearer weather with water levels receding in the two Hayden Pass pour points. June was not so nice. There were several quick hard downpours that caused problems

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along Big Cottonwood, Bitter/Butter and Hayden Creek crossing at Mile Marker 3 on County road 6.

The project at Mile Marker 3 was temporarily scrapped. This project had two parts. One was to install gabion basket trash racks on Trash Gulch. The project was laid out, contractor did a site visit, then the land owner declined to have work done on his property. No reason was cited. The second part was a low water crossing on the county road. Once again the contractor did a site visit, the county road and bridge created the design. The project is to keep the culvert but create a low water crossing south of the culvert where trash gulch and Hayden creek both cross the road. Hayden creeks culvert overflows onto the road. We agreed to lower and harden the road. During the site visit it became clear that a grouted rip rap wall must be installed on the down slope side of the crossing. The landowner on that side signed a LTE upon hearing the project. The budget for the project initially provided by County Road & Bridge was \$30,000; however the actual cost estimate from contractors was much greater at \$77,000. The low water crossing is twice as long as others the county had installed in the past, and no other crossing had needed the grouted rip rap wall. This project is being reevaluated, county participation will be required.

Four members of the Army Corp of Engineers came out to assess and help plan projects in Hayden Pass (including two hydrologists with post-fire experience and two engineers):

- 1.) Stream cleaning from Cutty's Campground (hosts 700 people right along Hayden Creek on summer weekends)—they agreed this was an important project and liked the expected outcome. They suggested we do the same work upstream into forest service lands. Funding is limited, we agreed to do a week's worth of work with COCO crew. We worked with the forest service to create a plan for work on the forest above Cutty's. There are two big log jams on forest service property that everyone agreed needed to be removed. We declined to use COCO staff to remove the log jams due to safety, but we will use a contractor to clean it out.

- 2.) Next the CORP looked at the flooding that occurred on Big Cottonwood. All damage was sustained on private property and private roads. On this part of the site visit, two NRCS engineers and area manager also joined us, as well as Fremont County's floodplain manager. The private property owners were also present. The COCO crew had already been working on removing foot bridges and trees that were likely to become torpedoes in flooding.



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3.) A plan was created for Bitter/Butter that everyone agreed upon, with the exception of the floodplain manager. He wants a no-rise cert. There are no houses in this area. NRCS agreed to supply the cert but at a later date. The CORP also sent a design for the road.

4.) Along the homes, at the confluence of Bitter/Butter and Cottonwood, the team once again agreed that lowering the floodplain on the opposite side of the drainage from the homes, and moving a berm a landowner built closer to the home was the best course of action.