

Summary of Emergency High-Water Expenditures

As of September 28, 2016

<u>Declaration</u>	<u>Contractor</u>	<u>Description</u>	<u>Contracted</u>	<u>Expended</u>	<u>Remaining</u>
23-Jun-16	Nordic Village	Low River	80,000	78,879	closed
23-Jun-16	Dowl	Low River	5,000	4,980	20
30-Jun-16	Nordic Village	Low River	180,000	158,300	21,700
n/a	Dowl	Low River	5,000	-	5,000
21-Jul-16	Harris Sand and Gravel	Glacier Stream	1,180,130	1,135,050	45,080
21-Jul-16	Dowl	Glacier Stream	10,000	7,230	2,770

Alpine Woods dike construction



High water along groin #4 at the downstream end of the Lowe River dike system.



Groin #4 at low water. This section of dike was extended last summer and again this summer. Approximately 347' of new dike was constructed this year of the end of groin #4. It is approximately 13' wide at the top.



Looking upstream from the end of groin #4 during a high water event.



The same view as the previous photo during low water.



Looking at the end of groin #4 from the river bed.



A 19' wide by 52' long extension was constructed off the end of groin #1.



View from the river of the end of the groin #1 extension.



A 32' long rock spur dike was constructed off the end of Groin #1.



Groin #2 extension - The existing groin was extended out into the river. The new structure measures 18' wide at the top and 70' long.

A 37' long rock spur dike was constructed off the end of groin #2.



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Glacier Haul Road bank armoring



Before photo, looking towards bridge, of bank before construction..



After photo, looking towards bridge. The bank has been sloped and riprap has been placed in the foreground.



Looking back at the beginning of project, a section of the bank has been armored.



Looking upstream at the end of the project. Large rock actively being placed.



View from the river bed of the newly installed riprap on the sloped bank. Riprap work has been completed since this photo was taken.



View from the river bed of the newly armored slope near the beginning of the project.

Valdez Glacier Stream - Copper Ave emergency flood mitigation



New kicker dike constructed off the end of an existing revetment built by Public Works earlier this summer.



bridge

Kicker dike that
was constructed in
'15

New kicker dike
under construction



radio tower

Area of erosion to roadway.



Start of the project looking upstream from Copper Ave at location where kicker dike is to be constructed.



The new kicker dike has been constructed and is in the process of being armored.



Typical rock truck hauling in riprap.



The excavator bucket is 6' tall. The rocks that had to be used to construct the kicker were very large. The force and depth of the river was strong enough to wash anything smaller away.



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The large rocks were individually placed to create a base for smaller size riprap top it off and lock everything together.



The channel was deep enough to submerge huge pieces of riprap.



Even larger rocks were hauled in and placed at the end of the dike where the water has the greatest amount of force.



The same rock in the previous photo became over halfway submerged. The channel was much deeper than it appeared from shore and it continued to scour as the dike was being constructed.



What's left of Copper Avenue after the flooding on Tuesday night, early Wednesday morning.



Flood damaged roadway and the proximity of the river to the electrical utilities.



radio tower

bank erosion

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The water levels are currently down near the KCHU radio tower.



Looking upstream on Copper where the flood waters stripped away the topping material from the roadway. Note the proximity of the guy wire to the river bank.



Silt and fines distributed on Copper Avenue from the high water.

Looking upstream
on Copper at the
erosion damage.

new kicker dike

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Looking downstream at the new kicker dike from the end of the revetment constructed by Public Works earlier this summer.



The new kicker dike receiving riprap on the upstream side. The riprap is being placed at a 3:1 slope.



Looking upstream from near the end of the new kicker dike.

Mineral Creek erosion photos - Sept 20, 2016



Area of erosion to
the trail system.

Looking downstream towards the ocean. Blueberry Hill road is on the left of the photo.



Birds eye view of the eroded section of trail and rerouted section of trail away from the creek.



Looking upstream on Mineral creek towards the bridge.



Another angle of the eroded bank and trail.



eroded bank

Another angle of the eroded bank and trail.



The river is eroding its way behind the revetment.

This revetment has been scoured and is missing riprap.

bridge

Birds eye view of the upstream side of the bridge on the Cottonwood Subdivision side.



Active erosion

Area of scoured riprap.

Homestead Rd.

Looking downstream towards the bridge on the Cottonwood/Homestead side.



Blueberry Hill Rd.

Missing riprap,
active erosion. PW
placed riprap in this
area last week.

Scoured riprap

Looking downstream towards the bridge.



Blueberry Hill Rd.

Missing riprap that has since seen maintenance work by PW.

Looking downstream towards the bridge.



Homestead road.

scoured riprap

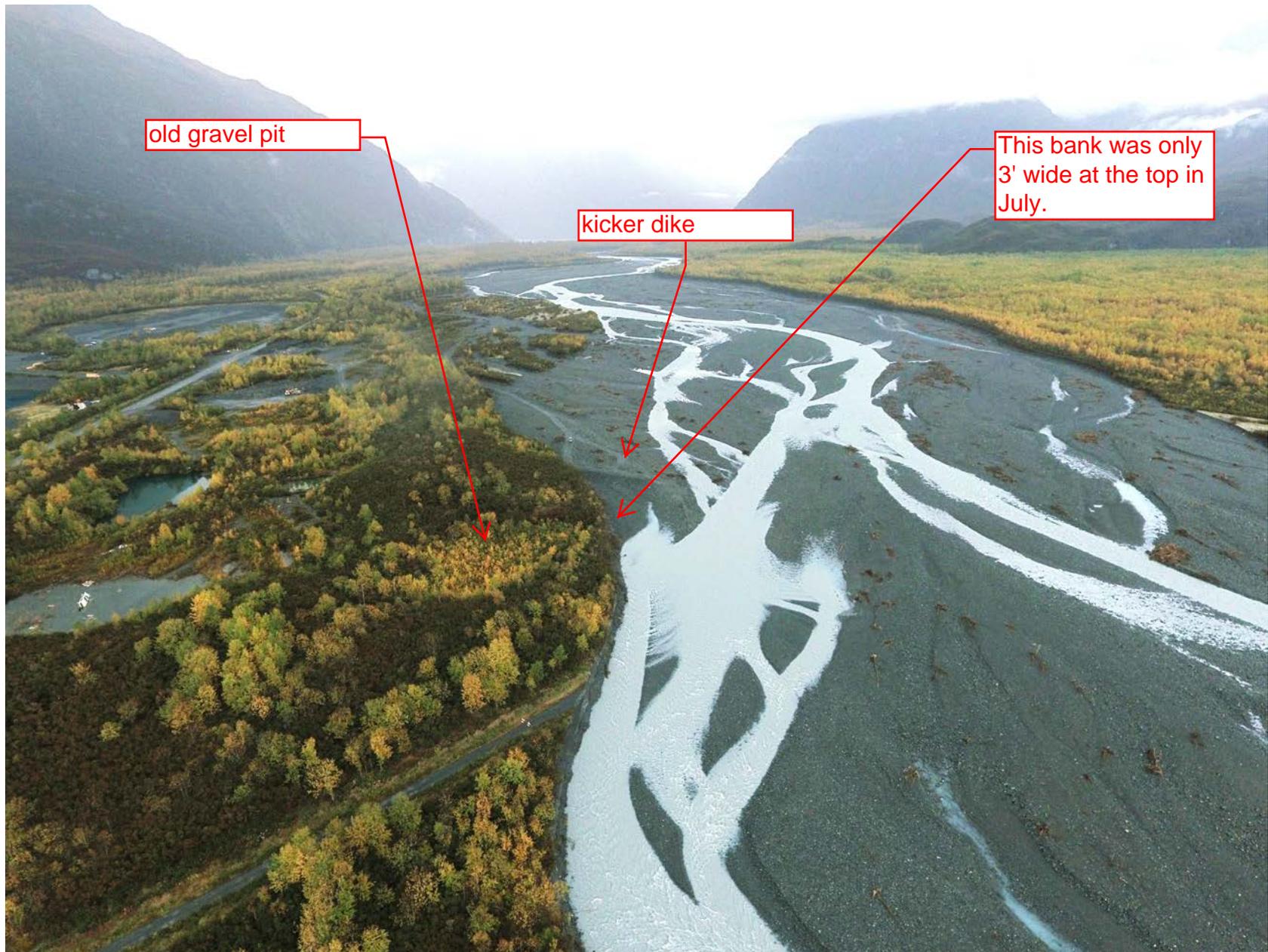
Looking downstream towards bridge.



erosion damage

Birds eye view of the damaged area upstream of the bridge on the Blueberry Hill road side.

Glacier stream - upstream from the landfill Sept 20, 2016



old gravel pit

kicker dike

This bank was only 3' wide at the top in July.

Looking upstream towards the glacier lake.



HS&G pit

old gravel pit excavations

The river has eroded this bank by over 20' this summer.

This thin, eroded bank separates the river from the old gravel pit.

kicker dike constructed by PW this summer.

Looking west towards the airport.



landfill

kicker dike

old gravel pit