

Emergency Watershed Protection Program

An EWP Success Story

During a storm event November 11 – 13, 2000 approximately thirty (30) feet of bank along the Nushagak River was lost adjacent to a \$1.8 million sheet pile wall which was installed in 1999. The wall protects several homes, a church, fish processing plant and the city docks from a severely eroding bluff. In addition to the eroded bank, the upstream key of the sheet pile wall had material washed from behind it.

Temporary measures were authorized to check the erosion. Crushed car bodies and parts were used to armor the slope.

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SNAG POINT EMERGENCY WATERSHED PROTECTION

The sewer outfall pipeline for the City of Dillingham was also subject to damage. It was lying on top of the ground and was exposed on the shore during low tide. The outfall was addressed at the same time since it passed through and under the riprap.

Alaska NRCS Engineering staff and the NRCS Regional Design Team completed the design in 2001. The US Army Corps of Engineers also reviewed the proposal. Further consultation and permits were required with the US Fish and Wildlife Service and Alaska Department of Fish and Game due to critical anadromous fisheries. Bristol Environmental and Engineering Services Corporation completed the design for the new section of sewer outfall.



Prior conditions at the site showing the previous attempts to protect the slope including fabrics, debris, and car bodies.

This project had to tie smoothly into the existing sheet pile wall. Another sheet pile wall, PVC-coated gabions, stainless steel-mesh gabions, and riprap were considered as alternatives. The first three alternatives were discarded due to limitations of the abrasive, corrosive environment and their higher costs.

Maintenance was also more difficult. As a result, the final design specified riprap. Approximately 300 feet of riprap was placed and required over 3300 cubic yards of rock.

The riprap will prevent erosion from continuing upstream of the existing sheet pile wall, and will protect the sewer line. The design was based on predicted wave heights with an additional allowance for freeboard.

The City of Dillingham was responsible for replacing approximately 250 feet of the sewer outfall pipeline. It was buried significantly lower to protect the pipe.

Construction began by replacing the sewer outfall. The new section had to be spliced into the existing outfall. The existing outfall had to be plugged in order to prevent the water from flowing back up the pipe with tidal changes while connecting the sections. This required sending a diver down to seal the end.



A diver wades into the Nushagak River to plug the end of the sewer outfall.



Work continues through the night to replace the sewer outfall.

After the sewer outfall was in place, work began on the rock riprap. A geotextile was placed followed by nine (9) inches of bedding material and six (6) feet of primary and secondary rock riprap.

Minor variations from the design were required as construction progressed to fit changing field conditions. Ground elevations had changed slightly since the initial design. A moderate storm also occurred before the project was finished with approximately 12 feet of shoreline washed away upstream of the project area.



Construction sequence showing the completed slope, key trench, geotextile, and rock riprap

Laying the pipe had to be completed during the lowest of low tides. The tides occurred late and required a flexible work schedule, including working through the night.

Placement of the riprap was also dictated by the tides due to the toe that was constructed below mean sea level.

Tying the project into the eroded upstream bank.





Completed riprap slope protection. The disturbed area was seeded and willows were planted.

This necessitated adjustments to the project design in order to tie in smoothly with the new landscape. The project was able to withstand the storm with no further damage.

As a final step, the construction area was graded and seeded. Willows were also planted behind the riprap. Vehicular access was blocked to protect the seeding and willows.

The City of Dillingham will now take responsibility for the maintenance of the completed project.

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