Executive Summary

This report examines the need for construction of flood risk management measures along the upper reaches of Salmon Creek near Seward, Alaska and determines the feasibility of Federal participation in the potential improvements.

Flood-related problems on this stretch of stream derive from the alluvial nature of the area in which streams meander through a wide footprint, often selecting relic channels during high flow events, flooding structures and depositing material. Currently, Seward Bear Creek Flood Service Area, a subsidiary of the Kenai Peninsula Borough, is charged with conducting flood-fighting activities along this and other area streams. During high flow events, bulldozers push river-run material into a temporary berm to act as a channel training structure, confining flows from Salmon Creek to its main channel.

This study evaluated a number of alternatives based on economic, engineering, environmental, and other factors. Alternative L3 maximizes the net National Economic Development benefits and has been selected as the National Economic Development Plan. The non-Federal partner (Kenai Peninsula Borough) supports this plan, which is carried forward as the Recommended Plan. The Recommended Plan provides an armored revetment, approximately 1,500 feet in length, which will provide flood risk management to the area. Construction will require the upgrade of 3,225 feet of mud trail to accommodate equipment. Minor recreation features will be included to facilitate the public's enjoyment of the area after construction has been completed.

The Recommended Plan has a construction cost of approximately $3.28 million (2015 price levels). The annual investment cost of the project, including the cost of operation and maintenance, is $139,000 with annual National Economic Development benefits of $436,000. The project's benefits to cost ratio is 3.14 with net annual benefits of $297,000.

The local sponsor, Kenai Peninsula Borough, will be required to pay the non-Federal share of 35 percent of the costs assigned to flood risk management features of the project as specified by the Flood Control Act of 1948, as amended, and also will be required to pay 50 percent of the costs assigned to recreation features of the project as specified by The Flood Control Act of 1944, as amended. The estimated non-Federal share of construction is $1.16 million, which includes $1.13 million for flood risk management measures and $22,000 for recreation features. The non-Federal partner will also be responsible for operation and maintenance of the project. The Federal share of the project is $2.16 million, which includes $2.14 million for flood risk management measures and $22,000 for recreation features.

Pertinent Data

Recommended Plan			
Revetment		**Other Features**	
Length	1,500 feet	Access Road Length	3,225 feet
Crest Width	12 feet	Access Road Width	12-24 feet
Core Material	4,030 cubic yards	Access Road Gravel Quantity	17,200 cubic yards
Filter Stone	2,040 cubic yards		
Armor Stone	7,310 cubic yards	Parking Area	6,000 square feet
		Parking Area Dimensions	200'x 30'
		Parking Area Quantity	670 cubic yards
		Multi-Use Gravel Trail Length	1,500 feet
		Multi-Use Gravel Trail Width	8 feet
		Multi-Use Gravel Trail Quantity	1,245 cubic yards

Item	**Amount**
Total Certified Design and Construction Costs	$3,281,000
Annual Operation and Maintenance	$9,850
Total Annual National Economic Development Cost (50 years, 3.375%)	$139,000
Annual Benefits	$451,000
Average Net Annual Benefits	**$297,000**
Benefit to Cost Ratio	**3.14**

Note: Totals may not sum due to rounding.

Conversion Table for SI (Metric) Units		
Multiply	By	To Obtain
Cubic Yards (cy)	0.7646	Cubic Meters
Acre (ac)	0.4049	Hectare
Feet	0.3048	Meters
Feet Per Second	0.3048	Meters Per Second
Inches	2.5400	Centimeters
Knots (international)	0.5144	Meters Per Second
Miles (U.S. Statute)	1.6093	Kilometers
Miles (Nautical)	1.8520	Kilometers
Miles Per Hour	1.6093	Kilometers Per Hour
Pounds (mass) (lb)	0.4536	Kilograms

*To obtain Celsius (C) temperature readings from Fahrenheit (F) readings, use the following formula: C = (5/9)(F-32)