

Our Services and Capabilities

ACE's professional staff possesses a wide variety of skills and expertise giving us the proven capability to conduct an equally wide array of multi-disciplinary projects.

Hydrologic Analysis

- ▶ Flood Frequency Analysis
- ▶ Low Flow Investigations
- ▶ Drainage Studies
- ▶ Rainfall/Runoff Modeling
- ▶ Watershed Modeling
- ▶ Flood Routing in Rivers and Reservoirs

Hydraulic Analysis

- ▶ Channel Flow and Floodplain Modeling (1D, 2D)
- ▶ Closed Conduit Modeling
- ▶ Reservoir Simulation
- ▶ Routing of Mud and Debris Flows
- ▶ Hydraulic Structures and Bridges (1D, 2D)
- ▶ Dambreak Modeling
- ▶ Simulation of Alluvial Fan Flooding

Design of Hydraulic Systems

- ▶ Diversions, Intakes and Head Gates
- ▶ Pump and Lift Stations
- ▶ Pressurized Water Distribution Systems
- ▶ Storm Drainage Systems
- ▶ Sediment and Detention Ponds
- ▶ Inverted Siphons
- ▶ Waste Water Collection Systems

River Restoration

- ▶ Aggradation/Degradation Analyses
- ▶ Geomorphic Design
- ▶ Wetland Design and Restoration
- ▶ Environmental Analysis & Permitting
- ▶ Streambank Protection/Enhancement
- ▶ Channel Stabilization and Floodplain Interaction



**Flooding of Spring Creek
Fort Collins, Colorado May 1999**

Our Services and Capabilities (Continued)

Sediment Transport Analysis

- ▶ Total Load Calculations
- ▶ Aggradation and Degradation in Rivers
- ▶ Scour Analyses
- ▶ Modeling of Watershed Sediment Runoff (SEDCAD, RUSLE)
- ▶ Annual Sediment Yield Determination
- ▶ Reservoir Sedimentation
- ▶ Sediment Transport Relationships

Geomorphic Investigations

- ▶ Channel Stability Assessment
- ▶ Planform and Profile Evaluation
- ▶ Assessment of River Response
- ▶ Stream Classification
- ▶ Analysis of Historic Channel Response

Design of Channel Maintenance and Stabilization Measures

- ▶ Biotechnical Slope Protection
- ▶ Bank Protection and Channel Armoring
- ▶ Assessment of Non-Structural Methods to Enhance River Systems
- ▶ Dikes, Groins and Levees
- ▶ Drop Structures and Grade Controls



**Poudre River Boat Chute/Drop Structure,
Fort Collins, Colorado**



**Spring Creek Channel restoration near
Lemay Avenue, Fort Collins, Colorado**

Water Quality Investigations

- ▶ Water Quality Impact Assessment
- ▶ Water Quality Monitoring
- ▶ Nonpoint Source Contamination
- ▶ Stormwater Management
- ▶ Geochemical Modeling
- ▶ Best Management Practices

Our Services and Capabilities (Continued)

Floodplain Studies

- ▶ Conditional Letter of Map Revision (CLOMR)
- ▶ Letter of Map Revision (LOMR)
- ▶ Hydraulic Analysis of Channel Modifications

Stormwater Drainage and Management

- ▶ Scoping and Coordination Meetings
- ▶ Hydrologic Analysis and Modeling
- ▶ Data Collection and Field Investigation
- ▶ Hydraulic Analysis and Modeling
- ▶ Mapping and Surveying
- ▶ Drainageway Planning and Alternative Development

Water Supply/Water Rights Engineering

- ▶ River Basin Planning
- ▶ Water Rights Analysis/Firm Yield Studies
- ▶ Demand Studies
- ▶ Augmentation Plan Development
- ▶ Hydrologic Assessments of Watersheds/Operational Studies

Irrigation Engineering Support

- ▶ Assessment of Hydraulic Structures
- ▶ Institutional and Economic Studies
- ▶ Design and Construction Management of Irrigation/Hydraulic Structures
- ▶ Design of Control Systems for Operation of Irrigation Facilities

Ground Water Engineering

- ▶ General Integrated Surface – Ground Water Investigations and Planning
- ▶ Coordination of Ground Water Drilling and Pump Testing Services
- ▶ Ground Water Modeling

Geographical Information Systems

- ▶ Data Collection
- ▶ Data Analysis
- ▶ Data Management
- ▶ Data Display

Mine Planning and Permitting

- ▶ Mine Planning and Pit Progression
- ▶ Substitute Water Supply Planning
- ▶ Post-Mining Environmental Enhancement
- ▶ Site Evaluation and Selection
- ▶ Resource Evaluation and Impact Analysis
- ▶ Potential for Post-Mining Development