



**Fountain Creek - Manitou Springs, CO  
Shryver Park Reach and Pond  
Restoration Project**

**Submitted by:  
The Fountain Creek Restoration Committee  
&  
The Pikes Peak Community Foundation**

**April 28, 2008**

# Colorado Watershed Protection Fund - Project Grant Application

## Fountain Creek Restoration – Shryver Park Reach Including Shryver Pond

**Project Sponsor:** Pikes Peak Community Foundation  
Fountain Creek Restoration Committee

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**Project:** Fountain Creek Restoration – Shryver Park Reach

**Location:** Shryver Park in Manitou Springs, El Paso County, CO  
Arkansas River - Fountain Creek Headwaters Watershed  
USGS HUC Watershed Code = 11020003  
Latitude 38°51'27.45"N / Longitude 104°53'52.80"W

**Grant Request:** \$50,000.00

### Project Summary

The Fountain Creek Restoration Project began in 2005 as a community based effort to raise awareness of the degraded conditions in Fountain Creek and to develop strategies to enhance the physical and esthetic values of the stream as it flows through the City of Manitou Springs. A citizens' action group, the Fountain Creek Restoration Committee (FCRC), has developed a Fountain Creek Restoration Projects Master Plan to identify and prioritize aquatic and riparian habitat restoration projects and improve water quality "from Arch to Arch" within the city limits. The Fountain Creek Restoration Projects Master Plan has been enthusiastically received by the community, and recently was endorsed by the Manitou Springs City Council through a resolution passed in March, 2008.

One of the critical projects identified in the Master Plan is Shryver Park Reach in Manitou Springs. A small impoundment, "Shryver Pond", is located in the Park, and receives flows from Fountain Creek. The pond is a unique urban fishing resource, and the stream provides additional fishing opportunities and wildlife habitat. The Park is located near the District 14 Middle and High Schools, and offers opportunities to residents of the community and all of El Paso County for educational and recreational activities. Shryver Pond currently suffers from low dissolved oxygen levels, elevated temperatures and poor water quality as a result of a poorly designed inlet structure on Fountain Creek. Excessive sediment build up in the inlet structure significantly reduces and at times completely restricts flows into the pond. The inlet structure needs to be redesigned and rebuilt to allow better regulation of inflow, improving the water quality and aquatic health of the pond. The pond has become eutrophic over time, and will require minor excavation of some of the accumulated detritus and debris.

Within Shryver Park, Fountain Creek is in generally degraded condition. The upstream half of the reach exhibits an entrenched channel with associated unstable stream banks contributing excessive sediment to the stream. The log drop structure installed to create a diversion for the pond is a significant migration barrier to the resident brown trout in the reach, and has resulted in an over-widening of the channel at the diversion point. Pool habitat and cover for trout are generally poor, due to inadequate scour of the existing pools and lack of streamside riparian vegetation. The restoration effort will include elimination of the fish migration barrier, bank stabilization using toe-slope stabilization techniques and riparian plantings, and construction of in-stream habitat features, including cross vanes, J-Hook rock vanes, and rock clusters to improve scour within newly created pool and pocket water habitats, increasing habitat complexity and cover for trout within the reach.

# Colorado Watershed Protection Fund - Project Grant Application

## Fountain Creek Restoration – Shryver Park Reach Including Shryver Pond

### **General Project Description:**

The City of Manitou Springs has contracted with Fin-Up Habitat Consultants, Inc. for development of a detailed aquatic assessment and restoration plan for the Shryver Park Reach and Pond, similar in scope to the assessment and restoration plan developed for the Soda Springs Project. The Shryver Park Plan is nearing completion, and a 404 permit application is being prepared for the project. The preliminary stream and pond inlet restoration plans and budget have been reviewed and approved by the FCRC, and are included as part of this application. A copy of the Soda Springs Plan has been included in the application as an example of the level of detail in pre-project assessment and planning the FCRC is undertaking for these projects. Upon completion and acceptance by the FCRC and City of Manitou Springs, the final Shryver Park Plan document will be forwarded to the Colorado Watershed Protection Fund.

Natural river restoration techniques developed by Wildland Hydrology (D. Rosgen), the US Forest Service, and the Colorado Division of Wildlife will be utilized to enhance and restore 700 feet of Fountain Creek, creating new holding areas and cover for trout within the project reach. Pool scour will be enhanced by adjusting boulders to optimize the river's capacity to move sediment. Enhancing pool scour should increase average pool depth and residual pool depth in the channel, providing additional cover and over-wintering capacity for trout, and are expected to be self-maintaining. Pool habitat will be increased by constructing boulder cross vanes to scour existing glide/run features in the channel. These cross vanes will also provide enhanced vertical stability in the stream channel. Pocket water cover will be increased within several of the riffles using small rock cluster vortex structures. 390 feet of stream bank will be stabilized using large wood and/or boulders embedded in the toe of the bank slope to create riparian benches at the bank-full elevation of the stream channel. Willows and sedge mats will be planted along these benches, creating a small riparian floodplain. Additional slope stabilization and re-vegetation will take place above the toe-slope structures, using landscaping timbers and other features to create benches that will capture sediment and run-off from the adjacent park areas. Stabilized slopes will be covered with biodegradable geo-textile fabric, and planted with native willow, sedge and upland grasses.

The Shryver Pond inlet reconstruction presents an interesting challenge, given that the diversion point along the stream is surrounded by various urban infrastructure and a utility crossing within the work site. A four foot diameter storm drain culvert has been installed directly over the pond inlet pipe, and is suspended approximately four feet over the stream channel. Additionally, a 12" water main is suspended underneath the bridge immediately below the project site. This high pressure water main crosses over the existing Shryver Pond inlet pipe underneath the south foundation of the bridge. Access to the creek for heavy equipment is limited to a single entry point immediately upstream of the diversion and the working "swing radius" for heavy equipment is severely limited at the site. Due to these considerations, specialized equipment and an experienced equipment contractor will be required for the work. A 15 metric ton "zero-tail" excavator, with a hydraulic thumb, will be necessary to complete the rough site preparation work, and to install the full channel boulder cross-vanes and J-hook vane for the project. If the work can be completed concurrently with the 2008 Soda Springs Park fisheries project, some savings in equipment mobilization costs may be achieved by using the same contractor for both projects. Much of the site preparation work will need to be done by hand labor, which may be provided by Trout Unlimited and Fountain Creek Restoration Committee (FCRC) volunteers.

Due to the high sediment load in Fountain Creek, and the difficulty the City of Manitou Springs has experienced in keeping the existing structure clear of sediment and debris, a low maintenance dual head-gate design will be used to allow for continuous scouring of sediment from the inlet head gate

# Colorado Watershed Protection Fund - Project Grant Application

## Fountain Creek Restoration – Shryver Park Reach Including Shryver Pond

structure. The new inlet works will consist of 73 feet of 12" corrugated HDPE plastic pipe, with a Waterman C-10 12" head-gate installed at the diversion point at the stream. A 24" NyloPlast catch basin with one inlet and two outlet stubs will be installed 20 feet downstream of the diversion point. The inlet and pond outlet stubs on the catch basin will be 1 foot above the bottom of the basin. A second outlet stub will be installed flush with the bottom of the catch basin and directed back into the stream channel. This outlet stub will also be capped by a Waterman C-10 head-gate. When water is not being moved into the pond, this bypass head gate will be opened, allowing for water to continually flush through the diversion point head-gate, reducing deposition of sediment at the gate. During flood flows, both head-gates may be closed in order to reduce suspended sediments and turbidity in Shryver Pond.

The existing wooden drop-structure that is creating a barrier in the channel will be replaced by two full channel boulder cross-vanes, constructed in a manner to mimic a pocket water associated cascading step-pool series in the stream channel, allowing for velocity shelter and cover for trout migrating upstream through the reach. The channel and water surface elevation at the diversion point will be maintained at the existing level, and sedimentation impacts downstream will be minimized by tying the boulder cross-vanes into the existing log drop structure, rather than removing the structure. The cross-vanes will be constructed to reduce the bank-full width of the channel from 24' to a width of 16', matching the stream channel upstream and downstream of the site. A small boulder J-Hook vane will be installed on the south bank of the stream immediately upstream of the diversion point, in order to eliminate sediment deposition in the stream channel at the head-gate, as well as providing additional cover and velocity shelter for resident trout.

Once completed the project is expected to provide the following specific improvements;

1. Greater sediment transport efficiency, as measured by increased maximum pool depth, residual pool depth and total volume within newly constructed pools within the reach.
2. 390 feet of eroding stream banks stabilized and revegetated (28% of the total stream banks in the reach).
3. 1/3 Acre of improved in-stream and stream bank riparian habitat along 700 feet of Fountain Creek, including 11 Cross-Vanes to create or enhance 14 pool habitats, 1 J-Hook Rock Vane to provide additional pool habitat and to project the pond inlet structure, and 24 rock clusters to provide pocket water holding and feeding areas and velocity shelter within the riffle habitats of the reach.
4. 1/4 Acre pond enhanced.
5. Improved educational and recreational opportunities within the park, leading to the designation of Shryver Pond as the only "Kids Fishing Pond" in El Paso County.

### **Applicant Qualifications:**

The Fountain Creek Restoration Project is a project of the Pikes Peak Community Foundation (PPCF). The foundation has a strong history of successfully implementing community supported projects. The PPCF is working hand in hand with the Fountain Creek Restoration Committee (FCRC) to implement the many facets of the Fountain Creek Restoration Project. The Fountain Creek Restoration Committee consists of a diverse set of partners that include governmental, private and non-profit organizations. Project partners include; the City of Manitou Springs, Trout Unlimited, The Colorado Division of Wildlife, Rocky Mountain Field Institute, Manitou Springs Chamber of Commerce, Manitou Springs Business Improvement District, Manitou Springs Economic Development Committee, Manitou Springs Park and Recreation Advisory Board, the Manitou Springs Open Space Advisory Council and numerous local businesses and private individuals. Fin-Up Habitat Consultants, Inc, a local professional river restoration and aquatic consulting company, provides

# Colorado Watershed Protection Fund - Project Grant Application

## Fountain Creek Restoration – Shryver Park Reach Including Shryver Pond

technical guidance for the FCRC free of charge, serving in a non-voting advisory capacity to the Committee. The City of Manitou Springs is supporting this project through cash funding and in-kind donations of materials and equipment. Trout Unlimited participates both as a key member of the Fountain Creek Restoration Committee, and a major funding source for this effort and other aquatic restoration projects in the region. The Division of Wildlife provides important guidance and direction to the FCRC on this and other associated projects. The Fountain Creek Restoration Committee holds monthly meetings at Manitou Springs City Hall, which are always open to the public. The FCRC recognizes the critical importance of community involvement in these efforts, and has sponsored two "Town Meetings" specifically to gather public input and concerns for the Master Plan and associated projects, and participated in numerous other community forums to ensure public support, participation and engagement in our efforts to restore Fountain Creek.

Shryver Park will be the second large restoration effort that PPCF and the FCRC have undertaken. The first project is the restoration of Fountain Creek just west of this project area in Soda Springs Park. The Soda Springs project is fully funded with a budget of \$65,900.00, including locally raised funds of \$17,500.00, and will begin in the fall of 2008. Our partners on this project include United States Senator Ken Salazar, the City of Manitou Springs, the Colorado Division of Wildlife, Trout Unlimited, The Rocky Mountain Field Institute, Pikes Peak Fly Fishers, and many local businesses and private citizens.

In addition to the Soda Springs Park Project funds, FCRC has secured \$3,000.00 to fund further stream restoration planning efforts in The Fields Park, located on the eastern edge of Manitou Springs, and \$8,200.00 in matching funds for the Shryver Park project, through the generous help and support of our partner organizations, the local business community and the public at large. An additional \$19,979.00 of in-kind donations such as construction materials, logistics and project management services have been committed by the City of Manitou Springs, Trout Unlimited and Fin-Up Habitat Consultants, Inc. Additional matching funds of \$9,400.00 are currently being sought, and are expected to be secured by the end of the calendar year.

### **Organizational Capability:**

The Pike Peak Community Foundation is the umbrella organization under which the Fountain Creek Restoration Projects are managed. Under the financial oversight of the Pikes Peak Community Foundation, The Fountain Creek Restoration Committee (FCRC) manages all aspects of the planning and restoration work associated with the projects outlined under the Master Plan. The FCRC is 100% volunteer staffed. The FCRC has a diverse membership that consists of representatives from local government, local businesses, conservation organizations such as Trout Unlimited, and the Colorado Division of Wildlife. Several of the FCRC members have expertise in the legal profession as well as program and project management at Fortune 500 companies. This diverse blend of talent, broad base of experience and expertise combined with the fundraising capacity and support of the Pikes Peak Community Foundation position the FCRC for success.

The FCRC has already planned, fully funded, and have begun to execute on the Soda Springs Park restoration project; the first of many projects outlined in the Fountain Creek Master Plan. The Shryver Park Reach will be the second large project and will be implemented with the same level of professionalism, community involvement and fiscal responsibility demonstrated by our previous efforts. Volunteer labor and in-kind donations will be utilized to as great an extent as possible for this project, providing a sense of community ownership in the work, as well as providing significant cost savings in implementation. More information on the Pikes Peak Community Foundation and the Fountain Creek Restoration Committee can be found at the Following websites:

# Colorado Watershed Protection Fund - Project Grant Application

## Fountain Creek Restoration – Shryver Park Reach Including Shryver Pond

Pikes Peak Community Foundation -  
Fountain Creek Restoration Committee -

[www.ppcf.org](http://www.ppcf.org)  
[www.restorefountaincreek.org](http://www.restorefountaincreek.org)

### **Effectiveness of Proposal:**

The Shryver Park Reach Project will result in the restoration of a unique urban aquatic resource for recreational and education use. The project will significantly improve water quality and habitat in Shryver Pond, Fountain Creek and the associated riparian areas. The narrowing of the stream channel at the ponds inlet diversion point, with a resulting improvement of sediment transport through the stream and the removal of a significant barrier to migration of trout within Fountain Creek will also improve in-stream habitat. Bank stabilization and the building of in-stream habitat will enhance cover for trout and over-wintering capacity within the reach, helping to ensure the long term viability of the project. The project will also result in improved urban educational, fishing and wildlife viewing experiences for youth and other residents of El Paso County as well as increasing the number of opportunities for interpretation and environmental education along in the Fountain Creek Watershed. Upon completion of the pond enhancements, the Colorado Division of Wildlife has proposed to the FCRC to designate Shryver Pond as a "Kid's Fishing Pond". El Paso County is currently the only Front Range county without this kind of community resource, and a restored Shryver Pond and Fountain Creek would be an excellent location, given the close proximity of a newly restored stream fishing opportunity for adults wanting to recreate in the park. The FCRC fully supports this concept, and is working with the City of Manitou Springs and the Manitou Springs Park and Recreation Advisory Board to develop a strategy to implement this idea.

The schedule and budget for the Shryver Park Reach Project have been well planned and can be successfully executed with the current resources available to the FCRC. The detailed plan included in this packet and the associated budget in the application has been fully vetted by the FCRC, the project team and the selected habitat consultants and contractors that will perform the work. This project will complement a similar project in Soda Springs Park which has been described above and is the second of many projects scoped in the FCRC master plan. Upon approval of this grant request, this project could begin concurrently with the Soda Springs Project in the Fall of 2008 and be completed in a 2-3-week time period. Detailed project management plans and schedules will be developed as part of the execution phase of this project. Budgetary information is detailed below.

### **Evaluation and Monitoring Plan:**

Project implementation will be governed by a detailed project plan such as the plan developed for the Soda Springs Project (See Attachment). Each task is assigned to a responsible person and is tracked by the project leader(s) against multiple deliverables including budget, due date and general status level. Goals and objectives are also monitored as part of this project plan of record. This plan is reviewed monthly at the FCRC committee meetings as the project is being developed and implemented. The plan is reviewed daily during the execution of the plan. Exceptions to the plan are managed by the project leader(s). All documentation is maintained by the project leader or his/her designee. Project reporting is done in accordance with applicable conditions related to funding sources, governmental agencies or other controlling entities. It is the responsibility of the project manager to meet all project reporting requirements as stated above. Additional reporting or promotion of the project may be done by other committee members in cases such as community outreach or education purposed that are not governed by the specific reporting requirements dictated as part of the overall project.

# Colorado Watershed Protection Fund - Project Grant Application

## Fountain Creek Restoration – Shryver Park Reach Including Shryver Pond

Pre-project baseline habitat (Winters & Gallagher, USDA-FS 1997) and stream channel morphology data have been collected by the FCRC, and will be used to evaluate the effectiveness of the treatments used in the project area. The US Army Corps of Engineers HEC-HMS model (URS, Fountain Creek Watershed Study, 2006) has been utilized to calculate baseline hydrology for the project. Site specific (meso-habitat unit) stream channel hydrology in the project area was developed by establishing multiple channel cross-sections and a longitudinal profile of the channel within the reach. WinXSPro v3.0 (RMS-GTR-147, USDA Forest Service, Stream Systems Technology Center, Jan. 2005) was used to model site specific hydrology. Permanent channel cross-sections and photo-points will also ensure that effectiveness monitoring can be conducted following the project. Post-project monitoring will be the responsibility of the FCRC, and will include re-surveying the cross-sections and the longitudinal profile of the channel after the first bank-full or greater event following the initial installation of the project. Pool scour effectiveness will be monitored by periodically collecting physical pool habitat metrics, including maximum depth, residual pool depth, and pool sediment deposition (V\* Pool methodology). Success of stream bank stabilization and slope revegetation efforts will be evaluated through the use of photo-point repetition over time. Post-project monitoring is expected to occur at intervals of one year following completion of the project, and five years following the project.

### **Budget:**

A detailed project budget has been developed for the Shryver Park Reach and Shryver Pond Restoration Project, and is included as an attachment at the end of this application. The total cost of the project is estimated to be \$87,590.00. A grant from the Colorado Watershed Protection Fund would cover 57% of the total project budget for the Shryver Park Reach and Pond Dredging and Inlet work. In-kind donations of consultant time, project labor, boulders and other materials and equipment have been secured, and will account for 27% of the remaining budget. The Fountain Creek Restoration Committee has secured \$8,200.00 of the remaining funds to be raised, and anticipate raising the remaining funds by the end of this summer. The FCRC is actively seeking private foundation support for the project, as well as planning additional fund-raising events throughout the summer to secure the remaining funds.

### **Attachments:**

1. Fountain Creek Restoration Projects Master Plan
2. Shryver Park Reach Plans and Specifications
3. Shryver Park Reach Budget
4. Shryver Park Reach Maps
5. Shryver Park Reach Photos
6. Fountain Creek Restoration Committee Officer Resumes
7. Letters of Support
8. Soda Springs Documents (Project Plan, Aquatic Assessment)

Colorado Watershed Protection Fund - Project Grant Application  
Fountain Creek Restoration – Shryver Park Reach Including Shryver Pond

Attachment 1

Fountain Creek Restoration Projects Master Plan

Colorado Watershed Protection Fund - Project Grant Application  
Fountain Creek Restoration – Shryver Park Reach Including Shryver Pond

Attachment 2

Shryver Park Reach Plans and Specifications

Colorado Watershed Protection Fund - Project Grant Application  
Fountain Creek Restoration – Shryver Park Reach Including Shryver Pond

Attachment 3

Shryver Park Reach Budget

Colorado Watershed Protection Fund - Project Grant Application  
Fountain Creek Restoration – Shryver Park Reach Including Shryver Pond

Attachment 4

Shryver Park Reach Maps

Colorado Watershed Protection Fund - Project Grant Application  
Fountain Creek Restoration – Shryver Park Reach Including Shryver Pond

Attachment 5

Shryver Park Reach Photos

Colorado Watershed Protection Fund - Project Grant Application  
Fountain Creek Restoration – Shryver Park Reach Including Shryver Pond

Attachment 6

Fountain Creek Restoration Committee  
Officer Resumes

Colorado Watershed Protection Fund - Project Grant Application  
Fountain Creek Restoration – Shryver Park Reach Including Shryver Pond

Attachment 7

Letters of Support

Colorado Watershed Protection Fund - Project Grant Application  
Fountain Creek Restoration – Shryver Park Reach Including Shryver Pond

Attachment 8

Soda Springs Park Reach Planning Documents