

DEEP CREEK RESTORATION PROJECT

Presented by:



THE PROJECT

- ▣ 2011 Flood Season – Largest Flows in Recent History – Significant Damage to Residential Homes and Public Infrastructure
- ▣ 2011 Presidential Disaster Declaration
- ▣ FEMA Assistance in the form of HMGP Funding Administered by the Montana DES
- ▣ Phased Project

PROBLEMS

- ▣ Large Runoff Year Combined with:
- ▣ Toston-Modlow Fire burned approximately 1/3 of the Deep Creek Watershed (early 2000s) that has contributed to significant sediment accumulations
- ▣ Residential Development Continues to infringe on the Deep Creek Floodplain
- ▣ Lack of Conservation Minded Land Use Practices
- ▣ Problematic Irrigation Diversions
- ▣ Undersized Public Infrastructure

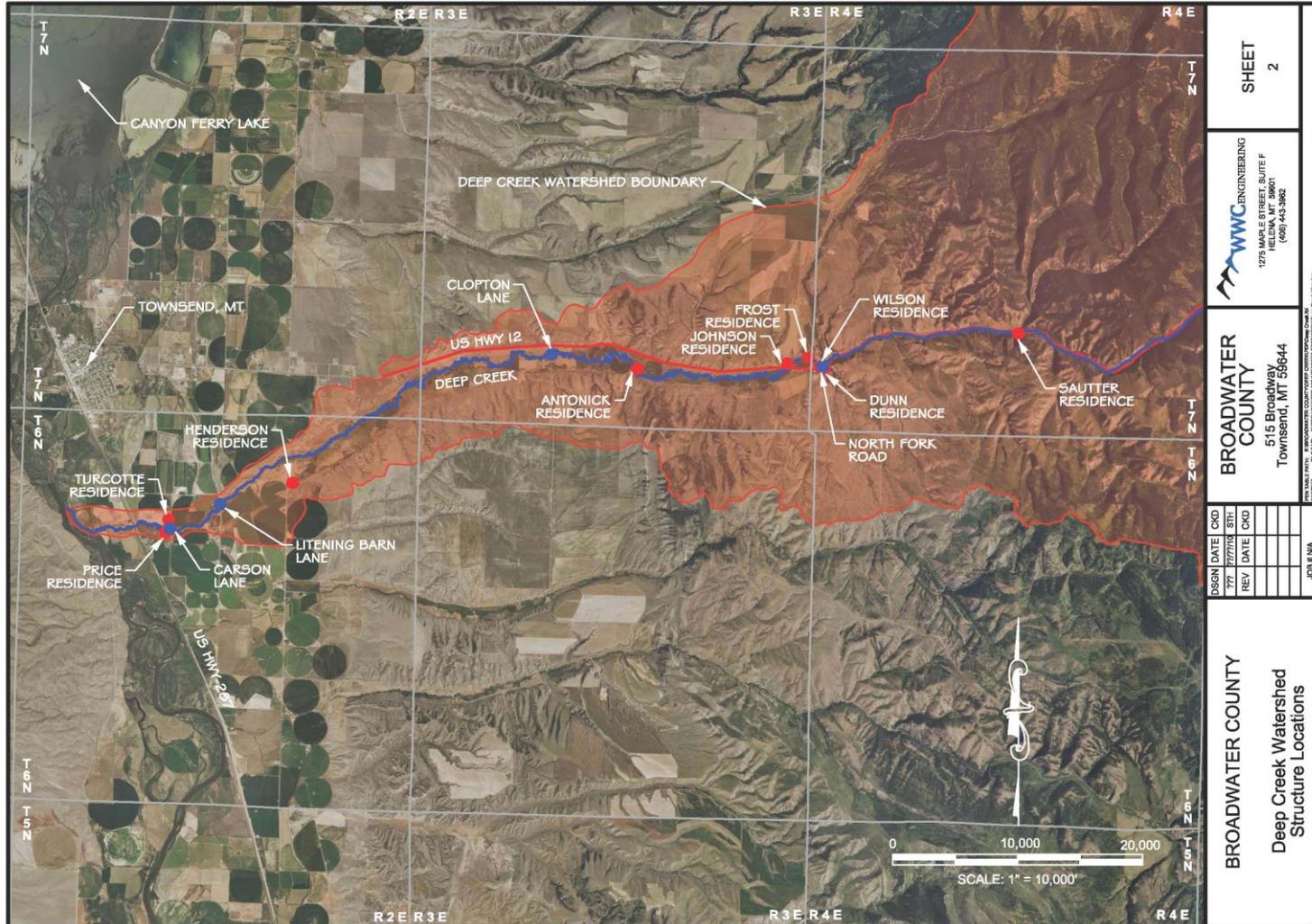
TOSTON-MODLOW FIRE IMPACTS



IMPACTS

- ▣ Significant sediment deposition resulting from a lack of vegetative cover from fire burned areas
- ▣ Higher than normal runoff
- ▣ Exacerbated flooding impacts
- ▣ Damage to personal property and public infrastructure

FLOOD IMPACTED AREAS



 WWC ENGINEERING 1275 MAPLE STREET, SUITE F HELENA, MT 59601 (406) 443-3602		SHEET	
		2	
BROADWATER COUNTY 515 Broadway Townsend, MT 59644		JOB # N/A	
DSGN DATE 7/7	CHD 7/7	REV DATE 7/7	CHD 7/7
BROADWATER COUNTY Deep Creek Watershed Structure Locations			

HOW DID WE GET HERE?



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THE PROCESS

▣ Phase 1 -- Assessment

- Based on human need, infrastructure protection and sediment/erosion stabilization
- Evaluate soil, water and land conditions that will improve stream condition
- Evaluate current and cumulative land practices over time to understand their effect on the ecosystem
- Determine where natural processes or features need to be restored to improve landowner safety, provide fish habitat and wildlife corridors, and enhance water quality
- Determine Cause and Effect

THE PROCESS

- ▣ Phase 2 -- Construction
 - Human Need
 - ▣ Evaluate property loss and provide mitigation
 - ▣ Develop holistic approach to sediment and erosion management
 - Infrastructure Protection
 - ▣ Road, Bridge and Culvert Impacts
 - Sediment & Erosion Control
 - ▣ Land & Erosion Management Practices
 - ▣ Water Quality Impacts
 - Engineering and Implementation

EVOLUTION

- ▣ Project Started With:
 - 9 Residential Structure Mitigation Projects
 - 3 County Road Stream Crossing Mitigation Projects
 - US Hwy 13 Mitigation in the Canyon

- ▣ Project Ended Up With:
 - 2 Residential Structure Mitigation Projects
 - 1 Stream Restoration Project that provides for mitigation of 4 Structures, and
 - 3 County Road Stream Crossing Mitigation Projects

TIMELINE

- ▣ Applied for FEMA Funding 2012
- ▣ Awarded October 2013
- ▣ Phase 1 Completion Required by October 2014
- ▣ Technical Acceptance November 2015
- ▣ Environmental Impacts April 2016
- ▣ Anticipated Construction Award May 2016
- ▣ Required Completion 3 years following Construction Award

PROJECT PARTNERS

- ▣ Broadwater County;
- ▣ Broadwater County Conservation District;
- ▣ Montana Disaster & Emergency Services;
- ▣ USDA Natural Resources Conservation Service;
- ▣ US Forest Service;
- ▣ US Army Corps of Engineers;
- ▣ Montana Department of Natural Resources & Conservation;
- ▣ Montana Department of Environmental Quality;
- ▣ Montana Department of Commerce;
- ▣ Montana Fish, Wildlife & Parks;
- ▣ Montana Department of Transportation; and
- ▣ Deep Creek Landowner Advisory Group.

WHAT WE HAVE SO FAR

- ▣ Evaluation of 2011 Flooding Impacts – Cause and Effect
- ▣ HEC-HMS Hydrology Model
- ▣ HEC-RAS Hydraulics Model
- ▣ CMZ Study for Deep Creek
- ▣ TMDL Studies (Ongoing)
- ▣ Geotechnical Evaluation of Structural Improvements
- ▣ Recommendations for 2 Residential Structure Mitigation Project
- ▣ Recommendations for 2 County Road Culvert to Bridge Replacements and 1 Bridge Repair
- ▣ Replacement of the North Fork Bridge
- ▣ Improvements to US Hwy 12 through the Canyon
- ▣ Recommendations for stream improvements to mitigate the flood hazard to 4 Residential Structures
- ▣ Recommendations for Stream Corridor Setbacks

WHERE WE ARE GOING

- ▣ Replace Litening Barn Lane and Carson Lane Culvert Crossings with Bridges
- ▣ Repair Clopton Lane Bridge
- ▣ Implement Antonick Groundwater Mitigation
- ▣ Implement Sautter Bank Stabilization
- ▣ Implement Reach 15 Mitigation