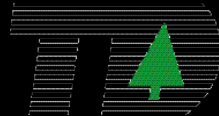


US FOREST SERVICE TECHNOLOGY AND DEVELOPMENT CENTER PROJECT UPDATE

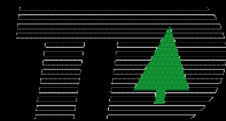
Robert Wetherell

Recreation/Safety/Uniforms Program Leader



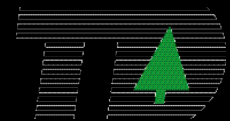
NATIONAL TECHNOLOGY AND DEVELOPMENT PROGRAM

- MTDC (Missoula, MT) and SDTDC (San Dimas, CA)
 - Support the Forest Service and cooperating agencies by creating tools and processes based on field submitted proposals
- What we do:
 - Survey commercial markets and test promising products
 - Design, build, and test prototype equipment
 - Cooperate with private industry to develop commercial sources for new products
 - Maintain construction drawings, specifications and standards
 - Produce and distribute publications, fabrication drawings and videos



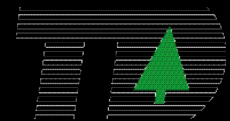
PROVIDE SUPPORT AND DEVELOPMENT

- Cooperative Forestry
- Engineering
- Explosives
- Facilities
- Forest Health Protection
- Fire
- Global Positioning Systems
- Hazardous Wastes
- Range
- Recreation
- Reforestation and Nurseries
- Residues
- Safety and Health
- Uniforms
- Watershed, Soil, and Air



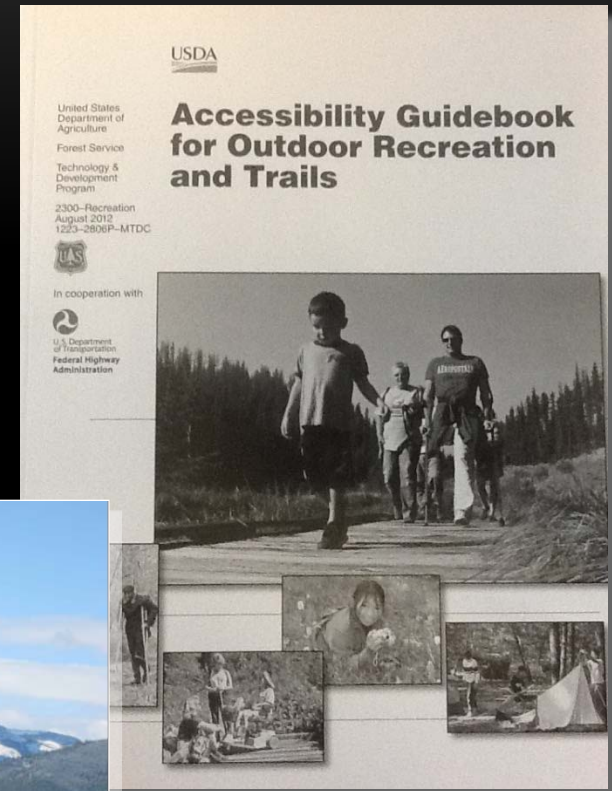
CURRENT RECREATION PROJECTS

- Explosives for Field Operations
- Trail Traffic Counter Technical Support
- Rigging for Backcountry Construction and Maintenance
- Restoration of OHV Damaged Landscapes
- USFS Standard Trail Drawings and Specifications
- ATV Trail Effects: Sediment Control (EPA Partnership)
- Visitor Use Management
- Update to the Accessibility Guidebook for Outdoor Recreation and Trails
- National/Regional Trail Workshop Series
- Chainsaw and Crosscut Saw Policy



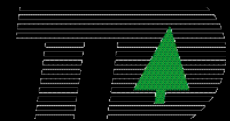
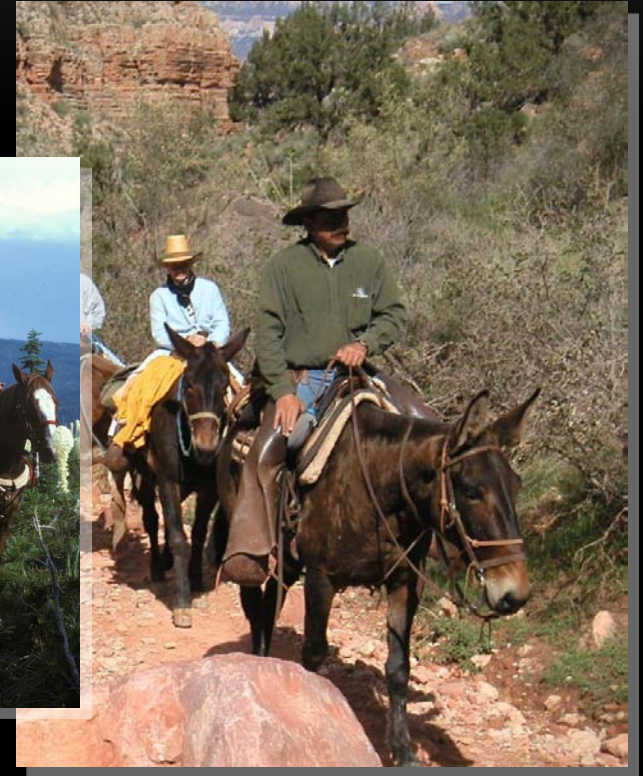
ACCESSIBILITY GUIDE TO OUTDOOR RECREATION TRAILS

- Document complete and awaiting Access Board distribution
- Companion pocket guide for FSTAG/FSORAG (FHWA)



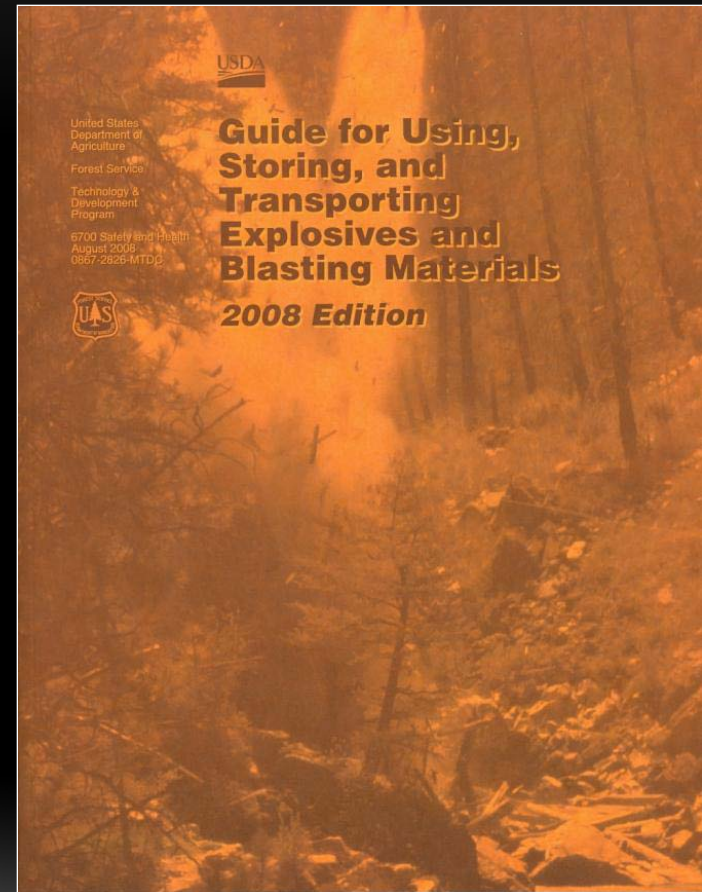
LEAVE NO TRACE STOCK USE

- DVD developed to deliver 12/ ½ hour lessons
- Front country and back country
- Personal instruction on location
- FHWA



EXPLOSIVES FOR FIELD OPERATIONS

- *Developing remote blasting machine*
- *Developing procedure and costing study for mass hazard tree falling (bug-kill trees along travel routes)*
- *Update to the National Blasting Guide FY 2013.*



TRAIL TRAFFIC COUNTER TECHNICAL SUPPORT

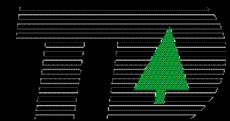
NATIONAL VISITOR USE MONITORING

- *Testing new, smaller electronic counters*
 - *Collect more data*
 - *Require specialized programming*
 - *Placement critical*
- *NVUM form conversion*
 - *Tablet driven application*
 - *Eliminate bubble forms*
 - *Field testing in progress*



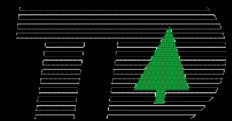
RIGGING FOR BACKCOUNTRY CONSTRUCTION AND MAINTENANCE

- *Long term project with final draft submitted*



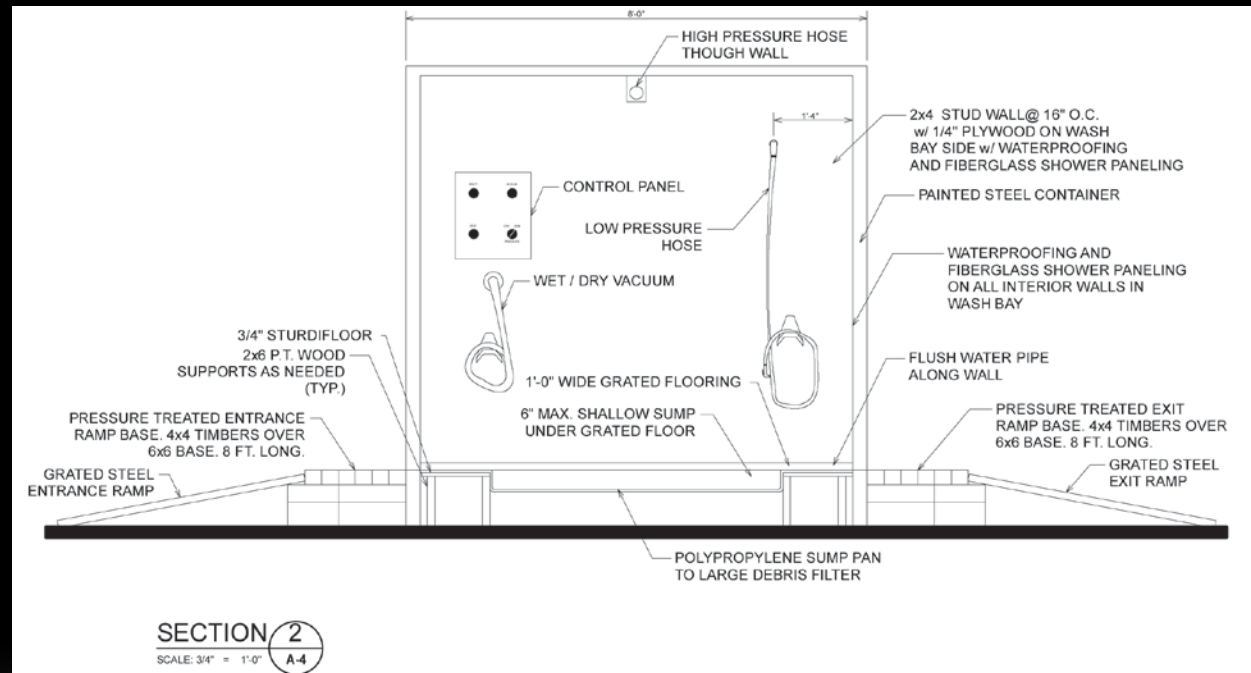
RESTORATION OF OHV DAMAGED LANDSCAPES

- *Out for print*



PORTABLE ATV WASHING STATION

- *Construction drawings being developed*



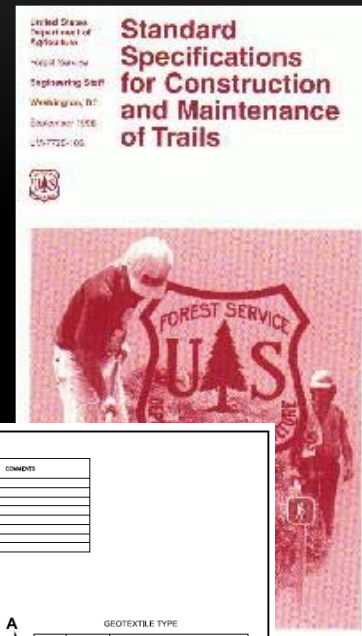
NATIONAL/REGIONAL TRAIL WORKSHOP SERIES

- *DRAFT Trail Guide that outlines the design, location, development and maintenance of all trails*
- *Training modules will be developed*
 - *implementation of travel management*
 - *development of motorized trails*



USFS STANDARD TRAIL DRAWINGS AND SPECIFICATIONS

- Final product delivered to WO February 2013
- FHWA



TYPICAL TRAIL CROSS SECTIONS

(A) FULL BENCH SECTION

(B) BALANCED SECTION

(C) FLAT SECTION

U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE
STANDARD TRAIL PLAN

TYPICAL TRAIL TREAD AND SHOULDER WIDTH

TYPICAL #	SECTION TYPE	TREAD FEET	TREAD INCHES	SHOULDER WIDTH UPRAIL DOWNRAIL	COMMENTS
101-1	T				

TREAD CROSS SLOPE

TYPICAL #	OUTSLOPE	INSLOPE	GRADING SECTION	COMMENTS
1	S	S	S	

DRAIN DIP SECTION

TYPICAL #	DRAIN OR SURFACE COURSE TYPE	DEPTH	ROCK FILLING	COMMENTS
101-1	ED	S		

U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE
STANDARD TRAIL PLAN

NOTES:

- DRAIN OPS WILL BE STOKED IN THE FIELD.
- ROCK SHOULDER SLOPE SHALL BE THE SAME AS THE CORRESPONDING FILL SLOPE.

GEOTEXTILE TYPE

TYPE	MATERIAL	COMMENTS
S1	NON-WOVEN	
S2	WOVEN	

SURFACE COURSE MATERIAL TYPE

TYPE	MATERIAL	LOCATION	COMMENTS
S1	FILL		
S2	AGGREGATE		

DRAIN DIP CONSTRUCTION DIMENSIONS

DRAIN TYPE	PROFILE SPACING	L1	L2	L3	D4	D5
ED1	6 TO 8					
ED2	5 TO 6					
ED3	7 TO 8					
ED4	8 TO 10					
ED5	10					

OTHER TYPE NOT RECOMMENDED
R = 1/2 OF TREAD

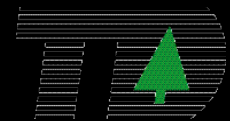
U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE
STANDARD TRAIL PLAN

DRAIN DIP

FORM NO. 927-DRAIN DIPS

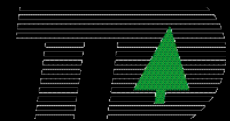
REVISION: XXXXXXXX

STANDARD: STD_927*(040)



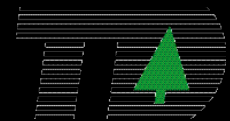
ATV TRAIL EFFECTS: SEDIMENT CONTROL

- *Partner-EPA*
- *Contractor assembling content for e-learning website*
 - *Teaching website*
 - *Minimize effects of sediment from trails*
 - *Multi-media*



TRAIL BRIDGE INSPECTION PUBLICATION

- *Seventy-five percent (75%) complete*
 - *Awaiting final policy revisions*
 - *Bridge Inspection Forms*
 - *FHWA*



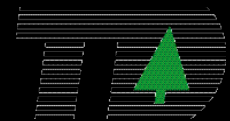
INNOVATIVE TRAIL DESIGNS AND CONSTRUCTION TECHNIQUES

- *Several Tech Tips developed*

- DRAFT: Innovative Design for a Short-Span Timber All-Terrain Vehicle Trail Bridge
- DRAFT: Innovative Foundations for Boardwalks and Viewing Platforms
- DRAFT: Accessible Trail Surfaced With Resin-Based Pavement: A Case Study
- Rolling Dips for Trails

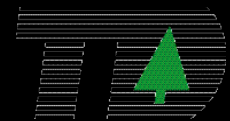
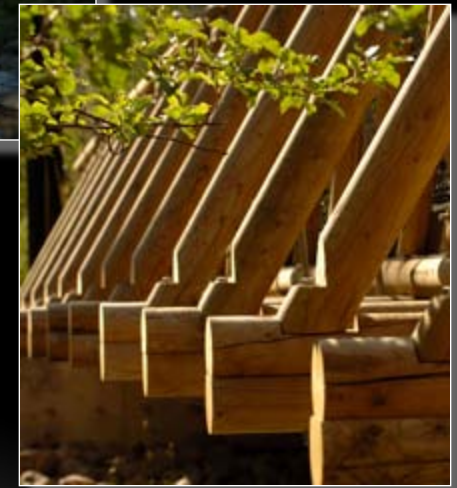
- *More coming*

- *FHWA*



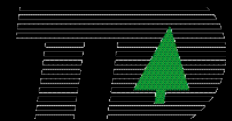
TRAIL BRIDGE DESIGN PUBLICATION

- *50% complete awaiting policy revisions*
- *FHWA*



TREATED WOOD SUBSTITUTES FOR BRIDGES

- *Project incorporated in the Trail Bridge Design Publication –Materials chapter*




POCKET SAFETY GUIDE FOR DAMS AND IMPOUNDMENTS

- Completed January 2012
- Audience-Technicians and lay people

USDA USFS FEMA NDSP

United States Department of Agriculture
Forest Service
Technology & Development Program
7300-Facilities
January 2012
1273-2805P-MTDC
FEMA P-911

Pocket Safety Guide for Dams and Impoundments



Possible Dam Failures

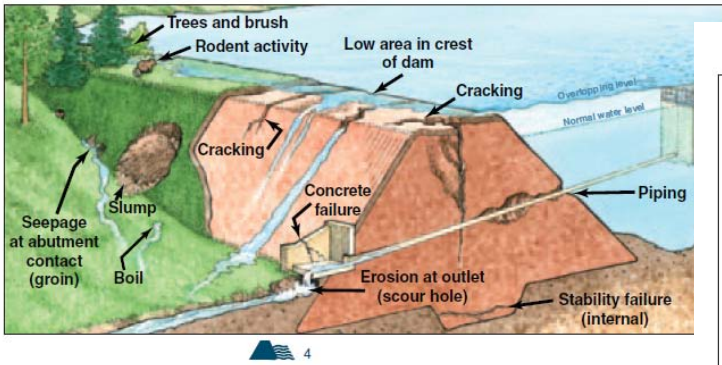


Figure 2—Some causes of dam failures.

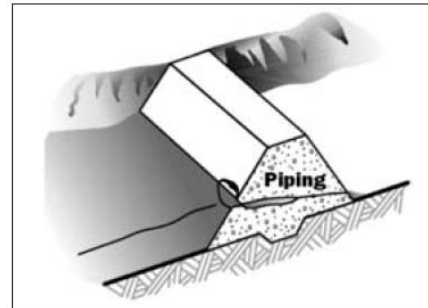


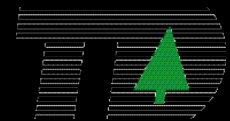
Figure 5—Sinkholes.



Figure 6—Whirlpool action is an indication of advanced piping.



8



QUESTIONS?

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406.329.3935

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