General

Environmental Restoration

Contaminant Transport Work Related to Potential Post-Fire Flooding

Danny Katzman, Team Leader
Contaminant Transport Team

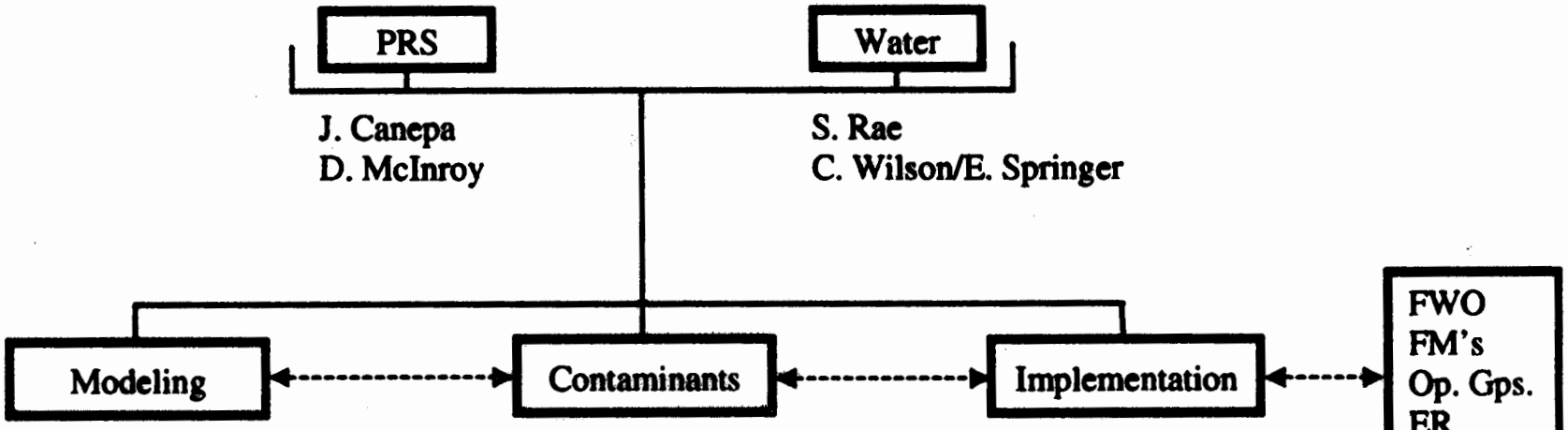
ER Colloquium

June 1, 2000

13383

LANL EMERGENCY REHABILITATION TEAM (ERT)

Potential Release Sites (PRS) and Water Teams



Modeling	Contaminants	Implementation
* E. Springer	* D. Katzman	* M. Alexander/D. McInroy
S. McLin	D. Rogers	T. Grieggs
D. Breshears	B. Turney	S. Veenis
N. Becker	S. Reneau	E. Hoth
D. Daymon	P. Fresquez	M. Harris
		B. Beers

* Team Leader

CONCEPTUAL MODEL FOR FLOOD EFFECTS

- Reduced infiltration rates on intensely burned slopes in the upper watersheds will likely generate high-magnitude floods in the canyons
- Valley-floor incision during floods could result in offsite transport of contaminated sediments and alluvial groundwater
- The highest priority canyons that contain contamination on LANL property and are most susceptible to flooding include:
  - ◊ Pajarito Watershed
  - ◊ Pueblo Canyon
  - ◊ Los Alamos

KEY ISSUES AND OBJECTIVES

- Provide options for selective removal of contaminated sediments from canyons
- If flood and contaminant transport mitigation efforts are not fully successful, what are the potential impacts to offsite locations
- The nearest offsite locations with highest potential to be impacted include:
  - ◊ San Ildefonso land along Los Alamos creek,
  - ◊ the Rio Grande/Cochiti Reservoir, and
  - ◊ Los Alamos County land in Pueblo Canyon.

KEY ISSUES AND OBJECTIVES (CONT.)

- Collection of appropriate water and sediment data following floods, and
- Detailed documentation of the affects and impacts of remobilized contaminants within LANL and offsite in order to assess potential human health and ecological risk

Cerro Grande BAER

Burned Area Emergency Rehabilitation

Steven Reneau
Canyons Focus Area

ER Colloquium - June 1, 2000

BAER Organization

Interagency Assessment Team

- US Forest Service
- National Park Service
- US Geological Survey
- Bureau of Land Management
- Bureau of Indian Affairs
- Natural Resources Conservation Service
- LANL

BAER Organization

Multi Agency Coordination (MAC) Team

- Federal Land Managers
  - USFS, NPS, BIA
- Los Alamos County
- DOE/LANL
- Santa Clara & San Ildefonso Pueblos

Logistics, Access

Communicates Stakeholder Priorities to Assessment Team

Disseminates Assessment Results

BAER Assessment

Rapid Assessment -- recon

Identify 1st-Order Problems

- Hydrologic/Geomorphic Changes in Watersheds
  - Flooding, Erosion, Sediment Transport
- Ecological Damage
  - Threatened and Endangered Species
- Damage to Archaeological Sites
- Suppression Impacts
  - Fire Breaks, etc.
- Damage to Roads, Trails

BAER Implementation

USFS, NPS Land

- Identify and Implement Actions
  - Rehabilitation: seeding, erosion control, etc.
  - Mitigation of unavoidable impacts
    - Minimize impact to roads, infrastructure from floods

County, Pueblo, DOE Land

- Advise and Recommend Actions

Priority Watersheds

Pueblo Canyon

- Diamond Drive, Sewer Line, Contaminants

Los Alamos Canyon

- TA-2, Reservoir, Skating Rink, Contaminants

Pajarito Canyon (Twomile, Threemile Cyns)

- TA-18, White Rock

Santa Clara Canyon

- Pueblo concerns

Rendija + Guaje Canyon

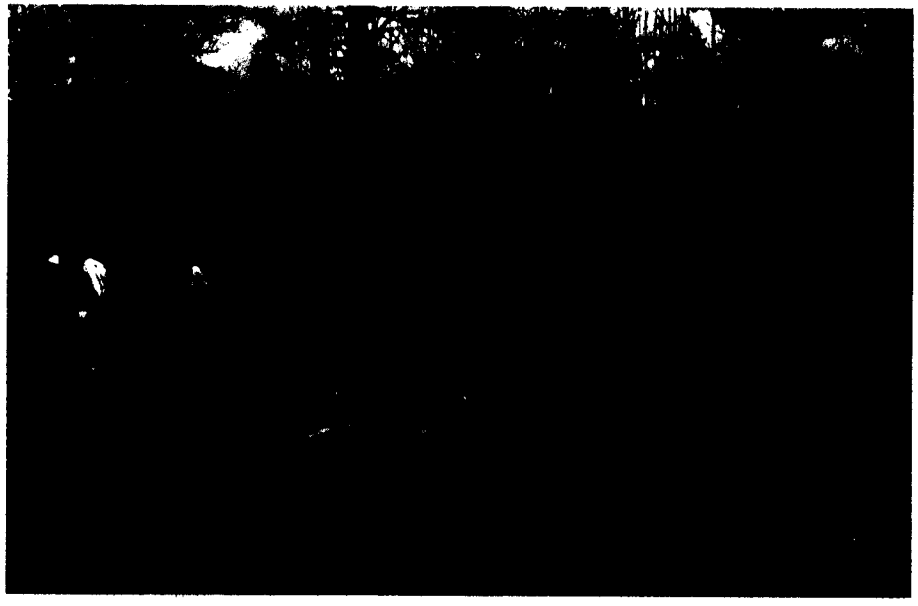
- Water Supply Wells, Pumping Stations

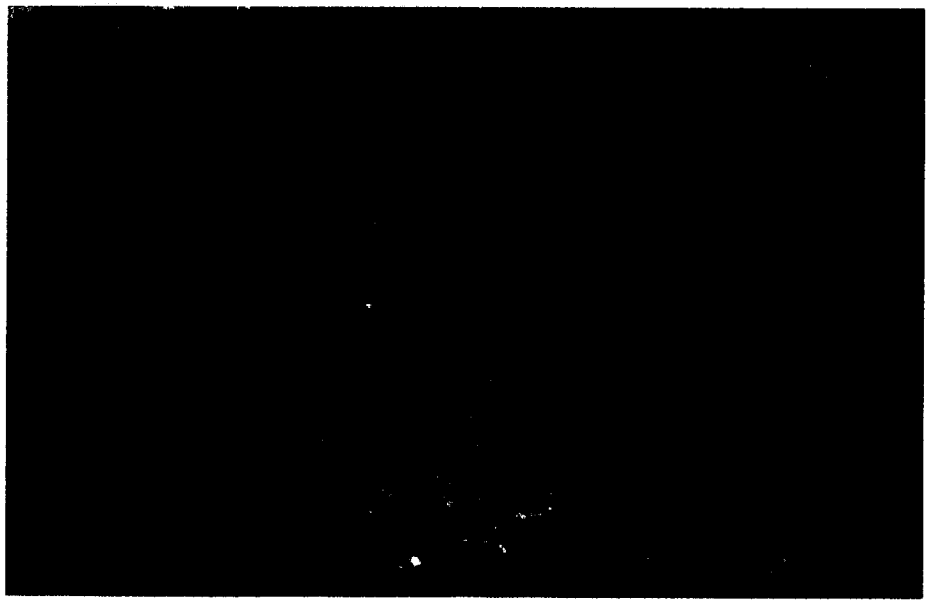
Severity of Burn

- Highest Impact: ~90% of headwaters burned
  - Pueblo, Rendija Canyons
- High Impact: ~30-70% with high severity burn
  - Twomile, Pajarito, Guaje, Water, Los Alamos Canyons
- Moderate Impact: <20% with high severity burn
  - Cañon de Valle, Santa Clara Canyon
- Minor Impact: small hydrologic change expected
  - Cañada del Buey, Mortandad, Potrillo, Sandia

Rapid Surface Runoff

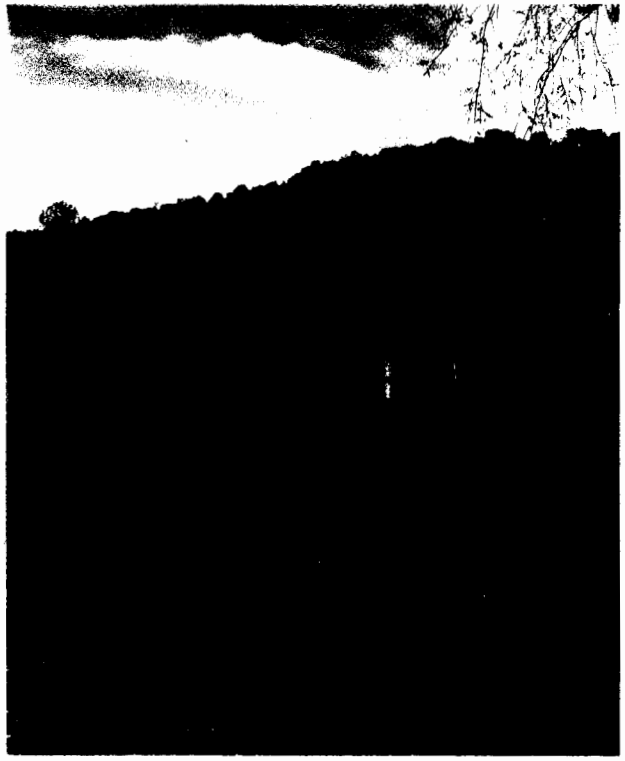
- ***Photos of rilled slopes after Dome Fire***

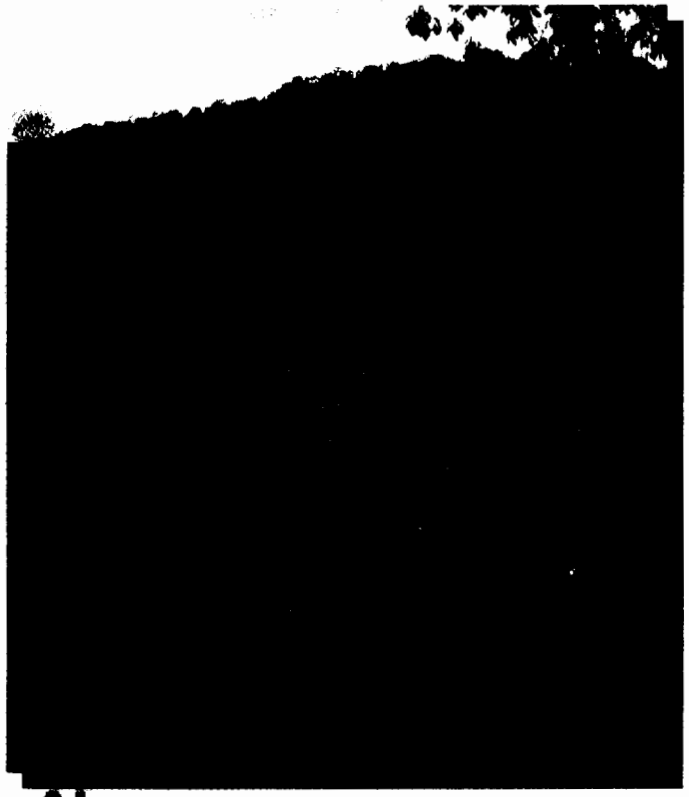




Frequent Small Floods

- ***Photos of Cañada del Buey at State Road 4, White Rock: dry channel and June 1999 flood***





Effect of Flooding on Los Alamos???

- Most streams impeded by roads & culverts
  - Discharge limited by culvert size *unless* road overtopped and/or road fill fails
  - Large impoundments will moderate flow & trap coarse sediment
    - Pueblo Canyon @ Diamond Drive
    - Pajarito Canyon @ NM 501
    - Water Canyon @ NM 501
  - Minimal obstruction to flow in some canyons
    - Twomile Canyon @ NM 501
    - South Fork Pajarito Canyon @ NM 501
      - Expected flood-producing areas for TA-18

Flooding in Los Alamos Canyon

- TA-41, TA-2, County Skating Rink at Risk
- Cs-137 close to channel, easily remobilized
- Los Alamos Reservoir will affect floods
  - Draining and dredging to increase capacity
  - Reinforcement of dam to prevent failure (?)
- Unusual measures suggested
  - Trans-basin diversion to Sandia Canyon ?

June 1996 Capulin Canyon Flood

- *Photos of Capulin Canyon after 1996 floods*

June 1996 Capulin Canyon Flood

- ***Photos of Capulin Canyon after 1996 floods***