Upper Colorado River Watershed Group

Grand Environmental Services
Working with the Environment

DRAFT 20Nov22 #1

Supporting Document 1-1: Initial Post-Fire Mapping for East Troublesome Fire Project Area Along the North Fork Colorado River Near Grand Lake Colorado CDPHE#2022-3746

From Brief prepared for the Non-Point Source Group, CDPHE
Updated November 2022

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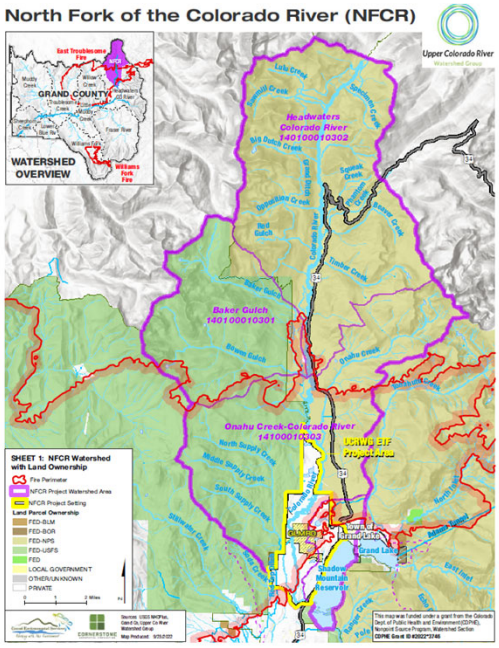
1) UCRWG Post-Fire Watershed Assessment – Initial Mapping of the North Fork Colorado River (NFCR) Project Area

- The Upper Colorado River Watershed Group (UCRWG) prepared this GIS-based map set to better understand and communicate project conditions immediately post-fire and set the stage for long-term monitoring and pilot restoration projects
- The UCRWG East Troublesome Fire (ETF) project area focuses on private and municipal lands at the lower (south) end of the NFCR
- These maps originally shared with NPS Group of CDPHE on September 26, 2000
- This work funded by
  - ❖ Nonpoint Source Program of CDPHE, Watershed Section Grant ID#2022*3746
  - ❖ Fire on the Mountain Foundation 2022



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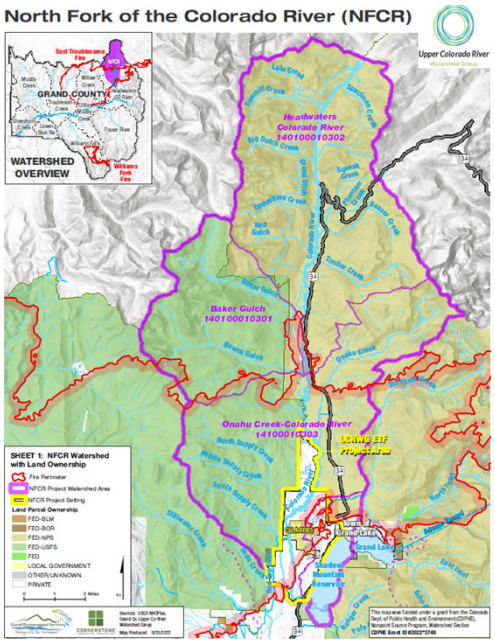
2) North Fork Colorado River (NFCR) with East Troublesome Fire (ETF) Path 21Oct20

- The East Troublesome Fire (ETF) burned from west to east:
  - From USFS National Forest System Lands
  - Across the lower North Fork Colorado River valley (NFCR, mostly private lands with a mix of agriculture and residential uses
  - To NPS Rocky Mountain National Park
- Remarkable survival of the town of Grand Lake can be attributed to more than a decade of pine beetle mitigation forestry enabling well-orchestrated, truly heroic fire fighting teams during the ETF event
- Fire perimeter from Grand County Assessor (LINK)



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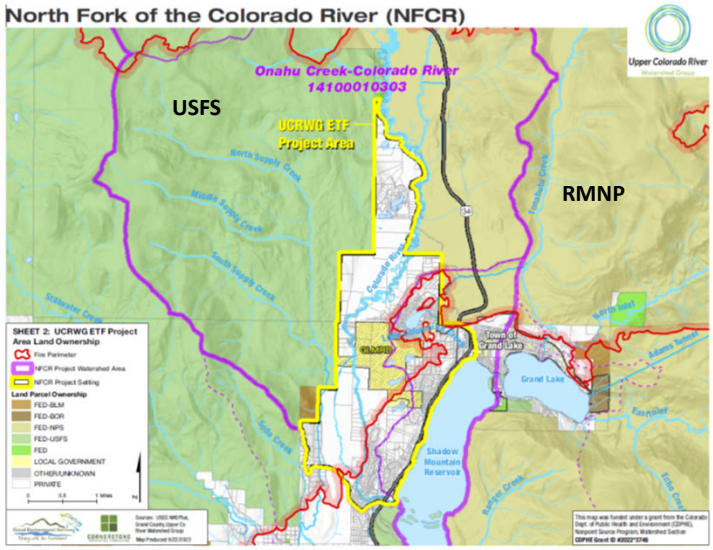
3) UCRWG ETF Project Area

- The UCRWG ETF Project area focuses on private and municipal lands between federal lands on west (National Forest Lands) and east (Rocky Mountain National Park)
- Efforts incorporate lessons learned by the Northern Colorado Water Conservancy District working with USFS on National Forest System lands, also Rocky Mtn National Park (RMNP) directives to allow natural processes to unfold



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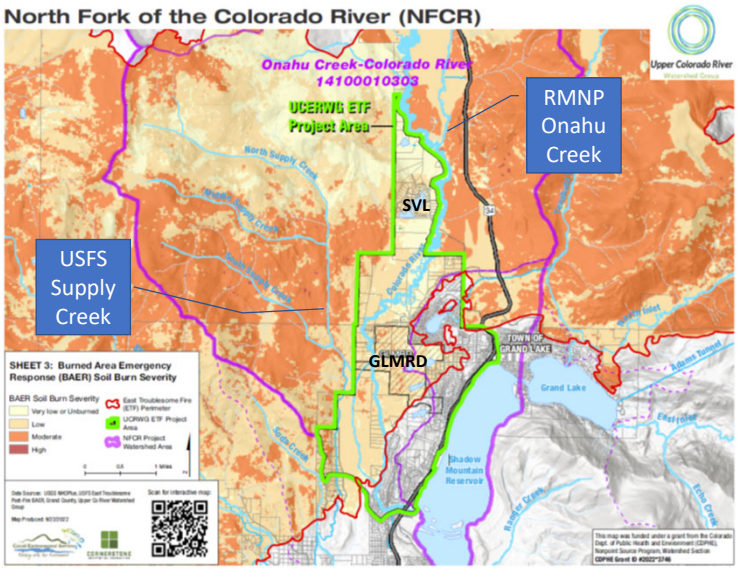
4) UCRWG ETF Project Area with BAER Soil Burn Severity (SBS)

- US Forest Service (USFS) post-fire rapid assessment Burned Area Emergency Response (BAER) is reported as "soil burn severity" (SBS), essentially how deeply were soils burned during the fire and a surrogate for local lands' ability to support natural recovery processes (LINK TO USFS BAER REFERENCES)
- Most of the UCRWG ETF project area experienced very low to low SBS impacts, with notable moderate SBS in hilly terrain near Sun Valley Lake (SLV) and the Grand Lake Metro Recreation District (GLMRD)
- Upstream from the project area are large patches of higher SBS impacts on USFS National Forest System lands in the Supply Creek drainage on RMNP in the Onahu Creek drainage, both delivering increased flows and sediment loads to the NFCR



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5) Soil Burn Severity Indicators*

Soil Burn Severity	Low SBS	Moderate SBS	High SBS
Ground Cover	<50% consumed	50-80% consumed	>80% consumed
Ash	Ground surface black with recognizable fine fuels	Thin layer of black to gray ash with recognizable fine fuels below	1-3inch layer of powdery gray or white ash
Soil Structure	Structure unchanged	Structure slightly or not altered, some consumption of organic surface layer	Structure reduced or destroyed, consumption of organic mater in top 2 inches
Roots	Roots intact and unchanged	Fine roots near surface charred or scorched, large roots intact	Many or most fine roots consumed or charred, some charring on large roots
Soil Water Repellency	No fire-induced repellency	Weak to medium repellency at or just below surface	Strong repellency at surface or deeper

*From Field Guide for Mapping Post-Fire Soil Burn Severity, by Parsons et al., USDA Forest Service Rock Mountain Research Station General Technical Report RMRS-GTR-243

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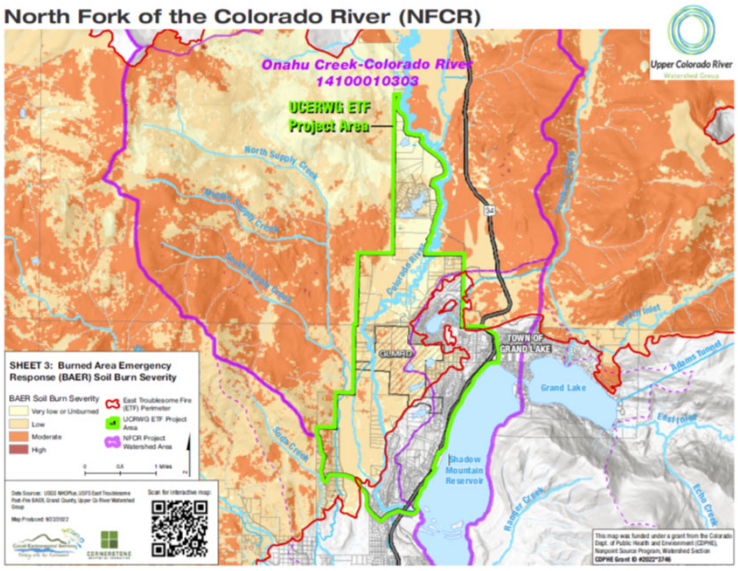
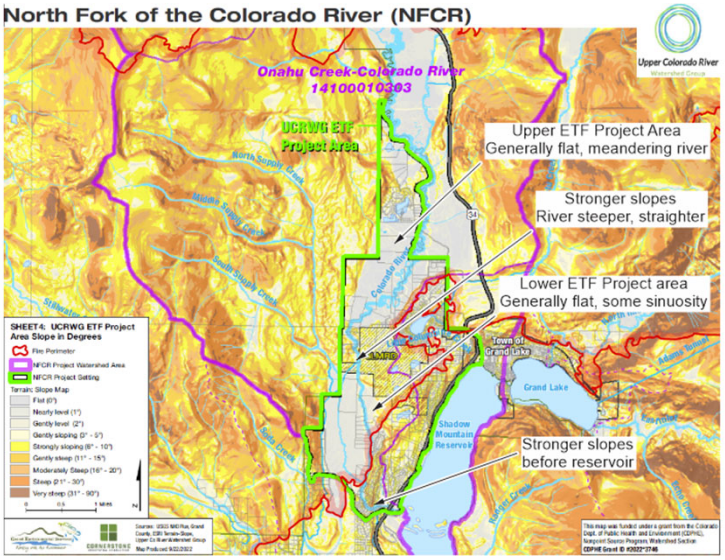
6) UCRWG ETF Project Area with BAER Soil Burn Severity (SBS)

- It should be noted that trees, shrubs, and most structures will burn in even low-SBS fires
- That said, natural recovery processes are already seen in many low-lying areas with plant communities that include sod-forming grass-wildflowers as well as plants like willow, aspen, rose, and cottonwood that have broad root systems



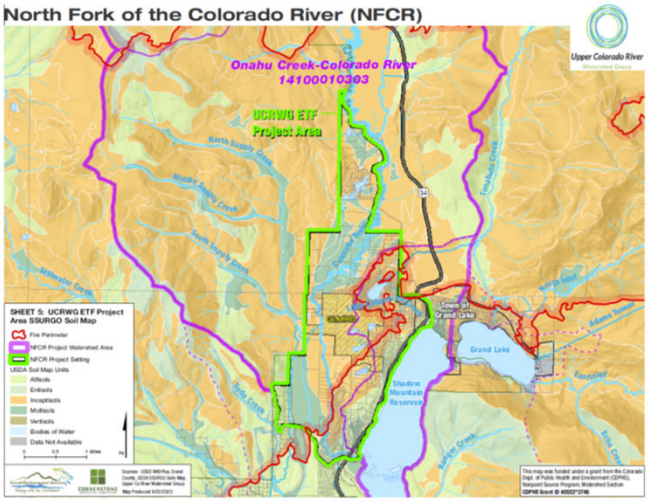
7) Slopes In and Around the Project Area Influenced SBS

- The NFCR valley floor in the UCRWG ETF project area, with notable areas of hilly terrain in the Sun Valley Lake and GLMRD areas
- Flatter areas coincide with lower SBS impacts
- Hilly areas show higher SBS impacts
- Compare with Figure 6 above
- This map originally shared as Sheet 4: UCRWG ETF Project Area Slope in Degrees
- Slope mapping from REFERENCE/LINK



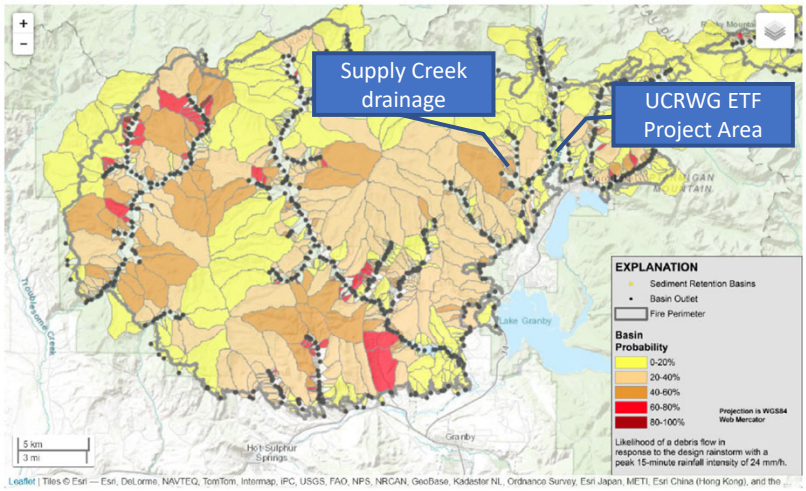
8) Soils In and Around the Project Area Influenced SBS and Subsequent Recovery

- Flat, low-lying areas are generally underlain by molisols – long-lived, deep, grassland soils mostly utilized as hayfields. These areas are recovering relatively quickly as deep sod grew back through burned surface layers
- Adjacent slopes are generally underlain by entisols or inceptisols – thin soils in what were forests, minimal vertical soil structure with low organic content. These areas are slower to recover but are showing aspen shoots and conifer seedlings
- Compare with Figure 6 above
- Map originally shared as Sheet 5: UCRWG ETF Project Area SSURGO Soil Map
- Soils from SSURGO (REFERENCE/LINK)



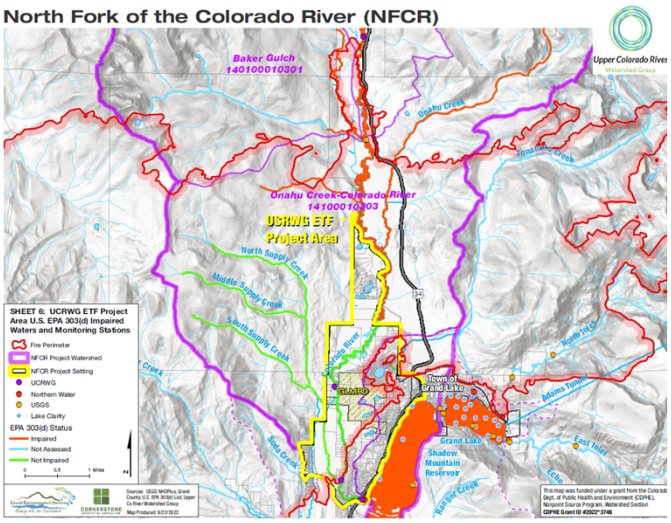
9) USGS Post-Fire Hazard Assessment for Debris Flows

- Debris flow risks is considered relatively low in the UCRWG ETF project area but upstream basins range up to 80% probability
- Published as Emergency Assessment of Post-Fire Debris-Flow Hazards (REFERENCE/LINK USGS.Gov)



10) USEPA 303(d) Listed Impaired Waters and Monitoring Stations

- Shadow Mountain Reservoir is listed not meeting water quality standards for drinking water and cold water fisheries
- The NFCR in the middle and upper parts of the UCRWG ETF project area and primary tributary Supply Creek drainage are listed as "not impaired" but both reaches were heavily burned in the ETF
- Farther upstream along the NFCR is listed as impaired for _____
- Source data www.epa.mywaterway.gov (LINK) + monitoring stations _____
- Originally shared in Sept 2022 at Sheet 6: UCRWG ETF Project Area U.S. EPA 303(d) Impaired Waters and Monitoring Stations



Links and References

- Should we have references cited section here?