Date of Report: 05/05/2020

BURNED-AREA REPORT
(Reference FSH 2509.13)

PART I - TYPE OF REQUEST

A. Type of Report

[ ] 1. Funding request for estimated emergency stabilization funds
[ ] 2. Accomplishment Report
[X] 3. No Treatment Recommendation

B. Type of Action

[ ] 1. Initial Request (Best estimate of funds needed to complete eligible stabilization measures)

[ ] 2. Interim Report #____.
[ ] Updating the initial funding request based on more accurate site data or design analysis
[ ] Status of accomplishments to date

[ ] 3. Final Report (Following completion of work)

PART II - BURNED-AREA DESCRIPTION

A. Fire Name: Brittle Fire

B. Fire Number: MI-HMF-210172

C. State: MI

D. County: Iosco

E. Region: 09

F. Forest: Huron-Manistee (04)

G. District: Huron-Shores (06)

H. Fire Incident Job Code: P9NZA30904

I. Date Fire Started: 04/23/2021

J. Date Fire Contained: 05/6/2021

K. Suppression Cost: $1,500,000

L. Fire Suppression Damages Repaired with Suppression Funds
1. **Fireline waterbarred (miles)**: unk
2. **Fireline seeded (miles)**: unk
3. **Other (identify)**: unk

M. Watershed Number: See Figure 1.

HUC12 Number	%
40801010102	62
40801010204	18
40801010203	15
40700070707	3
40700070708	1

N. Total Acres Burned: 5,781
[98%] NFS Acres [NA] Other Federal [NA] State [2%] Private

O. Vegetation Types: See Figure 2

Type	%
Jack pine	49
Red pine	37
Jack pine-oak	6
Open	3
Red pine-oak	2
Other Types with <1% Cover	4

P. Dominant Soils:

MUSYM	ELTP	%
209B	9	43
212B	12	28
210C	10	22
224B	24	4
262A	62	2
254A	54	1
222B	22	1
220E	20	<1
282	82	<1

Q. Geologic Types: Glacial Lake Plain (Lacustrine sand and gravel)

R. Miles of Stream Channels by Order or Class: 0.8 (headwater)

S. Transportation System

Trails: 15.8 **miles** (60% motorized) **Roads:** 28 **miles**

PART III - WATERSHED CONDITION

A. **Burn Severity (%)**: 59 **(low/unburned)** 28 **(moderate)** 13 **(high)**

B. **Water-Repellent Soil (acres)**: none observed

C. **Soil Erosion Hazard Rating (%)**: >99% **(low)** 0 **(moderate)** <1% **(high)**

D. **Erosion Potential**: 0.0 **tons/acre**

E. **Sediment Potential**: 0.0 **cubic yards / square mile**

PART IV - HYDROLOGIC DESIGN FACTORS

A. **Estimated Vegetative Recovery Period, (years)**: 1 year

B. **Design Chance of Success, (percent)**: NA

C. **Equivalent Design Recurrence Interval, (years)**: NA

D. **Design Storm Duration, (hours)**: NA

E. **Design Storm Magnitude, (inches)**: NA

F. **Design Flow, (cubic feet / second/ square mile)**: NA

G. **Estimated Reduction in Infiltration, (percent)**: Negligible

H. **Adjusted Design Flow, (cfs per square mile)**: NA

PART V - SUMMARY OF ANALYSIS

A. Describe Critical Values/Resources and Threats (narrative):

The Brittle Fire occurred in Iosco County Michigan and started on Friday, April 23, 2021 (Figure 1). The footprint of the fire occurs on a level glacial lake plain characterized by deep, infertile, sands with very high infiltration capacity (Figure 3). Much of the area is managed for Kirtland's warbler habitat and was forested with newly established to approximately 10 year old jack pine planted for nesting habitat (Figure 2). Other timber types were mostly older jack pine, red pine, or mixtures of the two species.

Soil and Water

The fire was mostly low to moderate intensity (Figure 4) and the forest floor was not observed to be completely consumed at any location within the burned area (Figure 5). No occurrence of hydrophobic soils was observed.

Few aquatic resources exist within the burned area and were identified as shown in Figure 6. At point "A" the fire burned the upper 35 to 50 feet of an approximately 330 foot slope leading to Cooke Dam Pond on the Au Sable River (Figure 7). The fire was low intensity at this location and extensive surface cover from forest litter and dead woody vegetation remained after the fire with intact, unburned vegetation on the lower slope (Figure 8). Onsite observation suggested little potential for greater than background levels of soil erosion. This was supported by the fact that at least two post fire rain events resulted in no evidence of gully formation or overland flow in the area. Further, Disturbed WEPP analysis, which assumed low severity fire on the upper 197 feet of slope (the fire only occurred on the upper 35 to 50 feet of slope) predicted mean annual average of 0.013 t ac^{-1} soil erosion and no sediment leaving the profile (Appendix A). Accordingly, no BAER remediation is recommended at this location.

The stream channel at Location "B" was weekly formed and occurred in a low swale that was not adversely impacted by the fire. No stream channels were observed at Location C.

In summary, due to generally low intensity fire, level slopes, high soil permeability, and sufficient remaining cover on the forest floor, there are no emergency soil or water related concerns resulting from the fire.

Oil and Gas

No oil or gas activities occur within the burned area.

Federally listed species and their habitats

No federally listed species are known to occur within the fire area.

Heritage Resources

Nine heritage resources were identified within the Brittle Fire burned area. Low Fire Severity was observed at all site locations and no BAER heritage stabilization or monitoring is recommend.

B. Emergency Treatment Objectives (narrative): NA

C. Probability of Completing Treatment Prior to Damaging Storm or Event:

Land NA **Channel** NA **Roads/Trails** NA **Protection/Safety** NA

D. Probability of Treatment Success

	Years after Treatment		
	1	3	5
Land	NA	NA	NA
Channel	NA	NA	NA
Roads/Trails	NA	NA	NA
Protection/Safety	NA	NA	NA

E. Cost of No-Action (Including Loss): NA

F. Cost of Selected Alternative (Including Loss): NA

G. Skills Represented on Burned-Area Survey Team:

[X] Hydrology	**[X] Soils**	**[ ] Geology**	**[ ] Range**
[X] Forestry	**[ ] Wildlife**	**[ ] Fire Mgmt.**	**[ ] Engineering**
[ ] Contracting	**[X] Ecology**	**[ ] Botany**	**[X] Archaeology**
[ ] Fisheries	**[ ] Research**	**[ ] Landscape Arch**	**[ ] GIS**

Team Leader: Rich Corner

Email: richard.corner@usda.gov **Phone**: 231-342-3766 **FAX**: 231-775-5551

H. Treatment Narrative:
(Describe the emergency treatments, where and how they will be applied, and what they are intended to do. This information helps to determine qualifying treatments for the appropriate funding authorities. For seeding treatments, include species, application rates and species selection rationale.)

Land Treatments: NA

Channel Treatments: NA

Roads and Trail Treatments: NA

Protection/Safety Treatments: NA

I. Monitoring Narrative:

(Describe the monitoring needs, what treatments will be monitored, how they will be monitored, and when monitoring will occur. A detailed monitoring plan must be submitted as a separate document to the Regional BAER coordinator.)

NA

Part VI – Emergency Stabilization Treatments and Source of Funds **Interim #**

			NFS Lands				Other Lands			All
		Unit	# of		Other	# of	Fed	# of	Non Fed	Total
Line Items	Units	Cost	Units	BAER $	$	units	$	Units	$	$
A. Land Treatments										
				$0	$0		$0		$0	$0
				$0	$0		$0		$0	$0
				$0	$0		$0		$0	$0
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Land Treatments				$0	$0		$0		$0	$0
B. Channel Treatments										
				$0	$0		$0		$0	$0
				$0	$0		$0		$0	$0
				$0	$0		$0		$0	$0
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Channel Treat.				$0	$0		$0		$0	$0
C. Road and Trails										
				$0	$0		$0		$0	$0
				$0	$0		$0		$0	$0
				$0	$0		$0		$0	$0
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Road & Trails				$0	$0		$0		$0	$0
D. Protection/Safety										
				$0	$0		$0		$0	$0
				$0	$0		$0		$0	$0
				$0	$0		$0		$0	$0
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Structures				$0	$0		$0		$0	$0
E. BAER Evaluation										
				---			$0		$0	$0
Insert new items above this line!				---	$0		$0		$0	$0
Subtotal Evaluation				---	$0		$0		$0	$0
F. Monitoring										
				$0	$0		$0		$0	$0
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Monitoring				$0	$0		$0		$0	$0
G. Totals				$0	$0		**$0**		**$0**	**$0**
Previously approved										
Total for this request				**$0**						

PART VII - APPROVALS

1. Leslie [signature] 3/7/2021
Forest Supervisor (signature) Date

2. _____ _____
Regional Forester (signature) Date

FIGURES

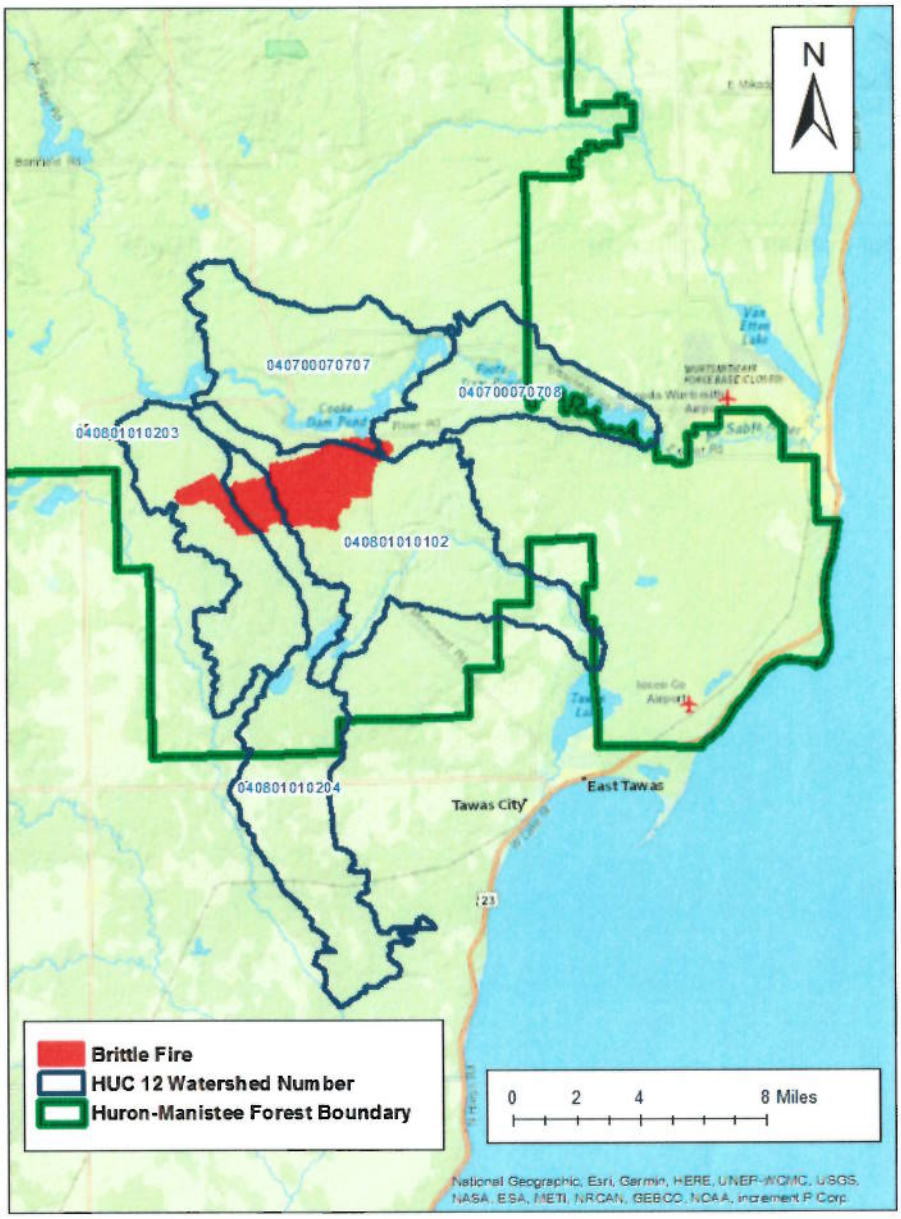

Figure 1: Brittle Fire location map and HUC 6 watersheds.

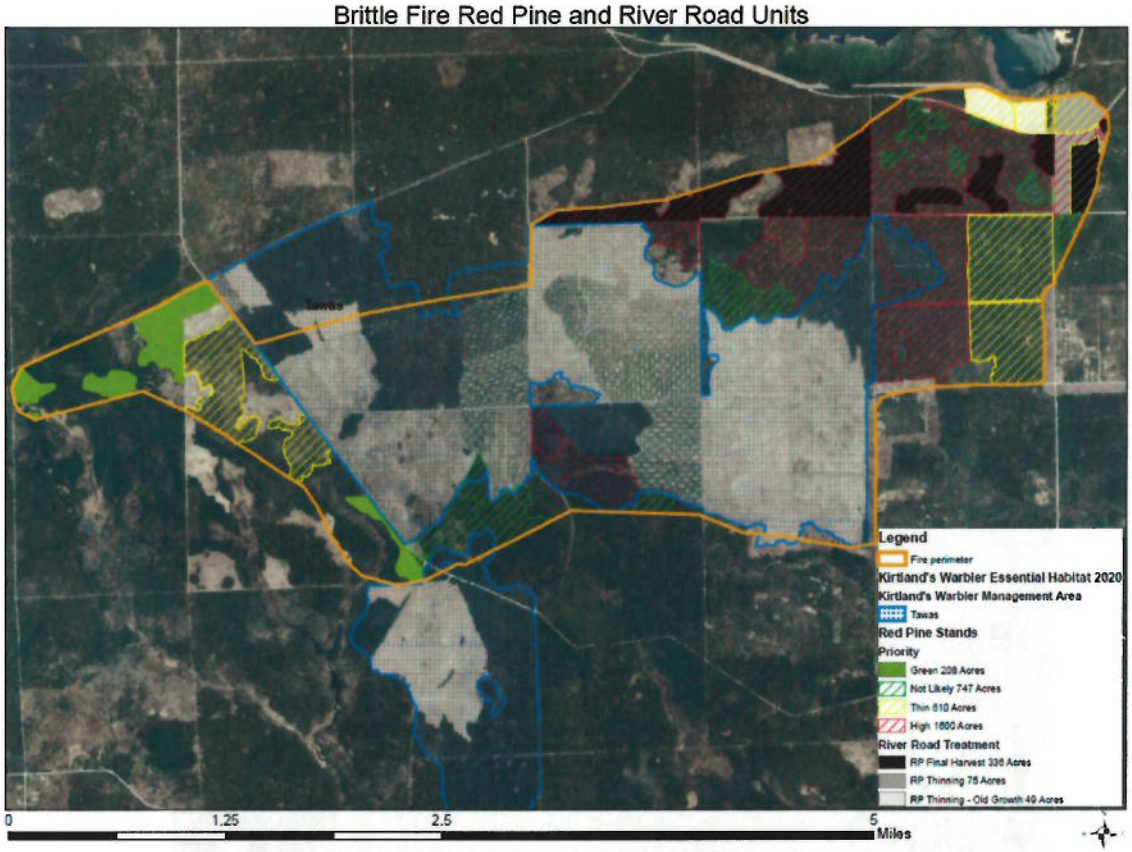

FIGURE 2: Brittle Fire "pre-burn" vegetation types. Open appearing areas are Kirtland Warbler habitat sites (youg jack pine).

Figure 3: Level glacial lake plain characteritic of the Brittle Fire burn area.

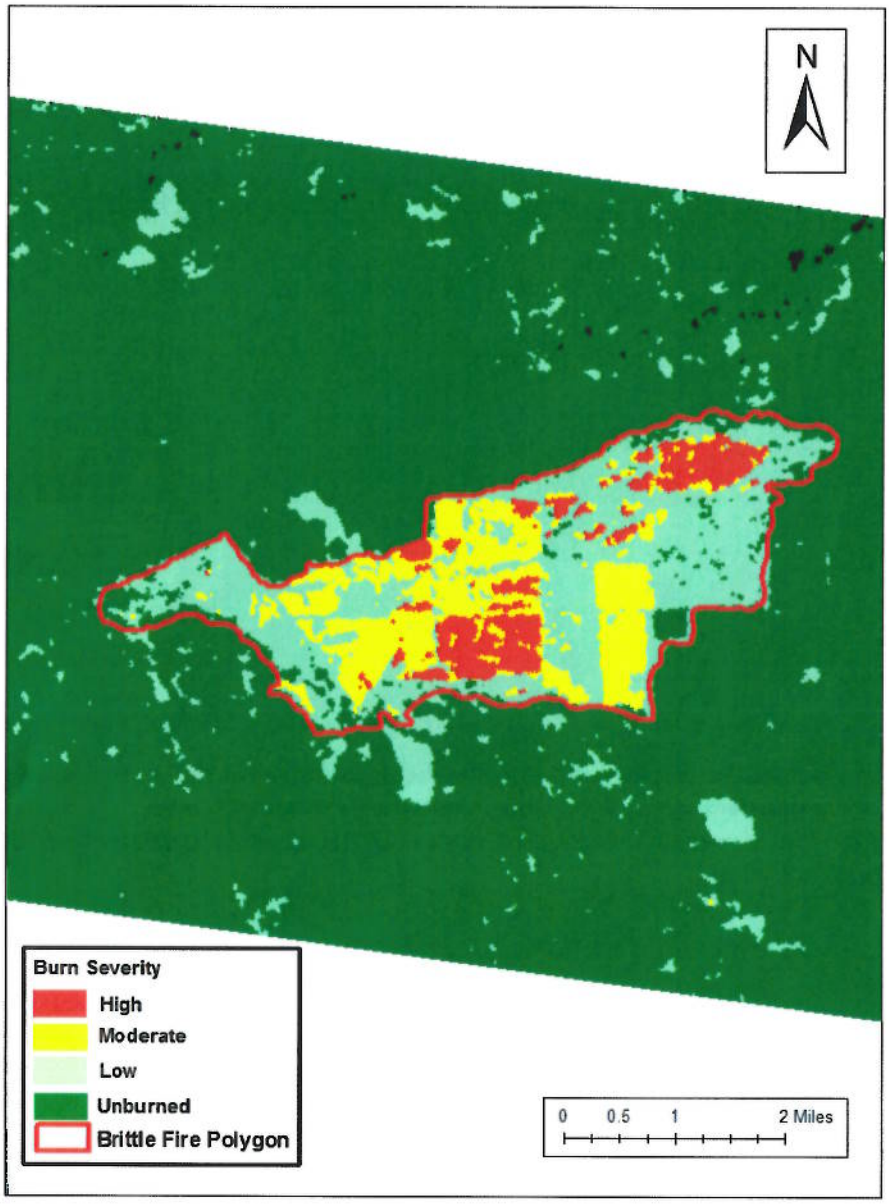

Figure 4: Burn Severity ("BARC") map of Brittle Fire. Map likely overestimates areas of high burn severity (no such areas were observed during field reconnisance).

Figure 5: Forest floor debris was not consumed by the low intensity Brittle Fire. Soils retain a high degree of infiltration capacity and no overland flow was observed or is expected.

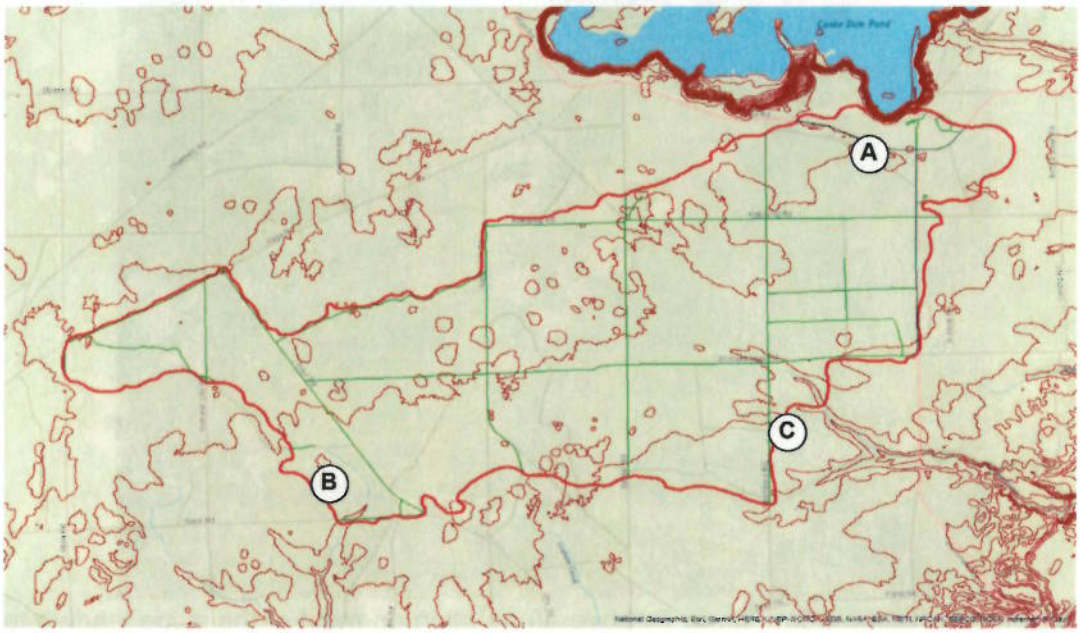

Figure 6. Aquatic resources within and adjacent to the Brittle Fire (red polygon); see text for further explanation.

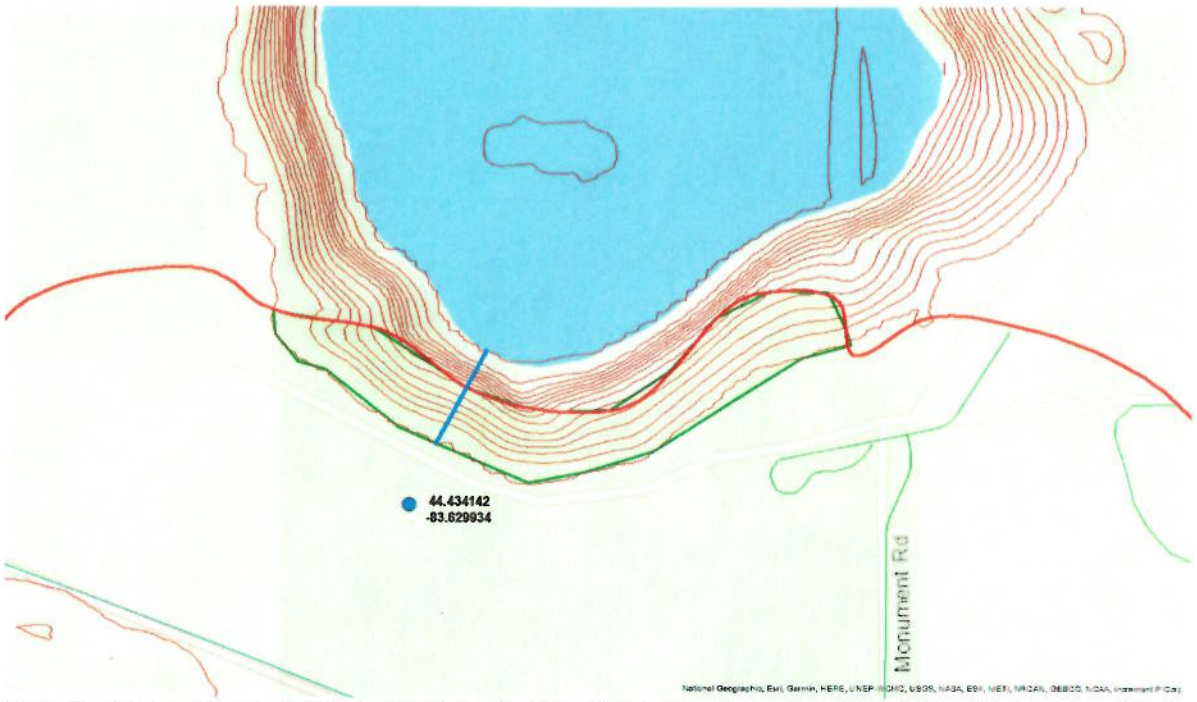

Figure 7. Close up of slope leading to Cooke Dam Pond on the Au Sable River (site "A" from Figure 6 above). Green shaded area is zone of potential soil erosion and blue line shows transect for WEPP analysis (see Appendix A).

Figure 8: Photo of slope from Figure 7 above. Vegetation on most of the slope leading to the Au Sable River was not burned in the fire.

APPENDIX A: WEPP ANALYSIS OF SLOPE TO COOKE DAM POND
(Refer to Figures 7 and 8)

Disturbed WEPP Results

User inputs

Location	ALPENA WB CITY MI				
Soil texture	sandy loam				
Element	Treatment	Gradient (%)	Length (ft)	Cover (%)	Rock (%)
Upper	low severity fire	30 30	197	85	0
Lower	thin or young forest	83 40	134	100	0
Description					

Mean annual averages for 10 years

			Total in 10 years	
26.88	in.	precipitation from	1301	storms
0.00	in.	runoff from rainfall from	25	events
0.00	in.	runoff from snowmelt or winter rainstorm from	0	events
0.013	t ac^{-1}	upland erosion rate (0.003 kg m^{-2})		
0.000	t ac^{-1}	sediment leaving profile (0.013 kg m^{-1} width)		

Return period analysis based on 10 years of climate

Return Period	Precipitation (in.)	Runoff (in.)	Erosion (t ac^{-1})	Sediment (t ac^{-1})
10 year	34.16	0.00	0.05	0.0056
5 year	33.29	0.00	0.03	0.0000
2 year	27.49	0.00	0.00	0.0000
1 year	19.96	0.00	0.00	0.0000
Average	26.88	0.00	0.01	0.0000

Probabilities of occurrence first year following disturbance based on 10 years of climate

Probability there is runoff	0 %	
Probability there is erosion	40 %	
Probability there is sediment delivery	10 %	

Return to Input Screen

[slope | soil | vegetation | weather | response || WEPP results]

Disturbed WEPP 2.0 Results v. 2014.04.14 based on **WEPP version 2010.100** , CLIGEN * version 4.31 *
http://forest.moscowfsl.wsu.edu/fswepp
07:54 am Wednesday May 5, 2021 Pacific Time
Disturbed WEPP Run ID wepp-87531