**Date of Report: November 9, 2022**

# BURNED-AREA REPORT

WOLF FANG FIRE 2022
SALMON-CHALLIS NATIONAL FOREST

*Wolf Fang Fire, August 17, 2022 (Photo from inciweb)*

## PART I - TYPE OF REQUEST

**A. Type of Report**

☐ 1. Funding request for estimated emergency stabilization funds
☒ 2. No Treatment Recommendation

**B. Type of Action**

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

☐ 2. Interim Request #___
☐ Updating the initial funding request based on more accurate site data or design analysis

## PART II - BURNED-AREA DESCRIPTION

**A. Fire Name:** Wolf Fang Fire

**B. Fire Number:** ID-SCF-022091

**C. State:** Idaho

**D. County:** Lemhi

**E. Region:** 4 (Intermountain)

**F. Forest:** Salmon-Challis NF

**G. District:** North Fork

**H. Fire Incident Job Code:**

**I. Date Fire Started:** July 13, 2022

**J. Date Fire Contained:** *est* November 5, 2022

**K. Suppression Cost:** $85,000

**L. Fire Suppression Damages Repaired with Suppression Funds (estimates):**

1. **Fireline repaired (miles):** No fireline constructed
2. **Other (identify):** N/A

**M. Watershed Numbers:**

*Table 1: Acres Burned by Watershed*

| HUC # | Watershed Name | Total Acres | Acres Burned | % of Watershed Burned |
|---|---|---|---|---|
| 170602061001 | Ship Island Creek-Middle Fork Salmon River | 20193 | 2556 | 13% |
| 170602060408 | Waterfall Creek | 13215 | 266 | 2% |

**N. Total Acres Burned:**

*Table 2: Total Acres Burned by Ownership*

| OWNERSHIP | ACRES |
|---|---|
| NFS | 2,822 |
| OTHER FEDERAL | 0 |
| STATE | 0 |
| PRIVATE | 0 |
| TOTAL | 2,822 |

**O. Vegetation Types:** Approximately 87% of the burned area consists of forested cover types, with the dominant tree species being Douglas Fir. Sparse forests exist on south aspects, while thicker forest cover exists on northern aspects. Approximately 13% of the burned area consists of open slopes consisting of bunchgrass, fescue, grass, forb, and barren cover types.

| Cover Types | Acres | Percent |
|---|---|---|
| Douglas-fir | 943 | 33.4% |
| Lodgepole Pine | 727 | 25.8% |
| Fescue/Conifer | 332 | 11.8% |
| Barren | 241 | 8.5% |
| Conifer/Fescue | 216 | 7.6% |
| Spruce/Fir | 165 | 5.9% |
| Fescue | 54.3 | 1.9% |
| Whitebark Pine | 51 | 1.8% |
| Bunchgrass/Fescue | 49 | 1.7% |
| Grass/Forb | 36 | 1.3% |
| Ponderosa Pine | 8 | 0.3% |
| **TOTAL** | **2,822** | |

**P. Dominant Soils:** Soils in the burned area are described based on Landtypes shown in the table below.

| Landtype Description | Landtype | Acres | Percent |
|---|---|---|---|
| Rocky ridge land | 113 | 1503 | 53.3% |
| cryoplanated mountain slopes- moderately deep loamy skeletal soils | 109g | 902 | 31.9% |
| Scoured cirque basin land- shallow sandy skeletal soils | 110x | 137 | 4.9% |
| Weakly dissected glacial trough land- deep skeletal sandy and loamy soils | 111a | 123 | 4.4% |
| Steep rocky headland-shallow sandy soils | 120d | 57 | 2.0% |
| Steep canyon lands- shallow and moderately deep sandy soils | 124 | 48 | 1.7% |
| Cirque basin land- deep sandy and loamy skeletal soils | 110 | 34 | 1.2% |
| OTHER Landtypes | 104 | 18 | 0.6% |
| **TOTAL** | | **2,822** | |

**Q. Geologic Types:** Geologic types in the burned area are defined by Landtype Geology.

| | | |
|---|---|---|
| Granitic Landtypes | 1816 acres | 64% |
| Mixed Landtypes | 1006 acres | 36% |

**R. Miles of Stream Channels by Order or Class:**

*Table 3: Miles of Stream Channels by Order or Class*

| STREAM TYPE | MILES OF STREAM |
|---|---|
| PERENNIAL | 4.5 |
| INTERMITTENT/EPHEMERAL | 2.4 |

**S. Transportation System:**

**Trails:** *National Forest (miles):* 0 miles *Other (miles):* N/A
**Roads:** *National Forest (miles):* 0 miles *Other (miles):* N/A

## PART III - WATERSHED CONDITION

**A. Burn Severity (acres):**

BARC Model: The BAER Team used BARC (Burned Area Reflectance Classification) data derived from the Forest Service Remote Sensing Applications Center (RSAC) as a basis for analyzing burn intensity (vegetative scorch) and burn severity (fire impacts to the soil). BARC data were derived from a comparison of Landsat 9 OLI-2 satellite imagery on 9/19/2022 with pre-fire Landsat 8 OLI satellite imagery from 9/24/2021. The original classification thresholds of the BARC model are as follows:

Original BARC thresholds: Unburned/Undetectable 0-65, Low 66-112, Moderate 113-198, High 199+

Field sampling of burn severity (soil burn severity testing) was not conducted on the Wolf Fang Fire because of extreme difficulty in accessing the burned area and the lack of values at risk that would necessitate emergency treatments. Analysis of fire behavior and photographs suggests that the majority of the fire burned at low intensity, with slow growth occurring throughout the duration of most of the fire and a few areas of moderate and high intensity burn corresponding to wind-driven runs. This information suggests that burn intensity as shown on the BARC is fairly accurate. However, it is unknown how burn intensity as shown in the BARC data relates to burn severity impacts to the soil. For this assessment, we assume that burn severity is roughly equivalent to burn intensity, based on similar findings in other wildfires in the area.

*Table 4: Burn Severity Acres by Ownership*

| Soil Burn Severity | NFS | Other Federal | State | Private | Total | % within the Fire Perimeter |
|---|---|---|---|---|---|---|
| **Unburned** | 877 | 0 | 0 | 0 | 877 | 31.1% |
| **Low** | 1266 | 0 | 0 | 0 | 1266 | 44.9% |
| **Moderate** | 579 | 0 | 0 | 0 | 579 | 20.5% |
| **High** | 99 | 0 | 0 | 0 | 99 | 3.5% |
| **Total** | **2822** | **0** | **0** | **0** | **2822** | |

**B. Water-Repellent Soil (acres):** Approximately 100 acres. Water repellent soils are likely present in areas of high burn severity in certain cover types, as well as some areas of moderate burn severity where heavy ground fuels caused extended periods of smoldering.

**C. Soil Erosion Hazard Rating:** Landtype Association Erosion Hazard Ratings for the burned area are shown in the table below:

| LTA Erosion Hazard Rating | Acres | Percent |
|---|---|---|
| Low | 0 | 0% |
| Moderate | 902 | 32% |
| High | 1873 | 66% |
| Very High | 48 | 2% |
| **TOTAL** | **2,822** | |

**D. Erosion Potential:** N/A

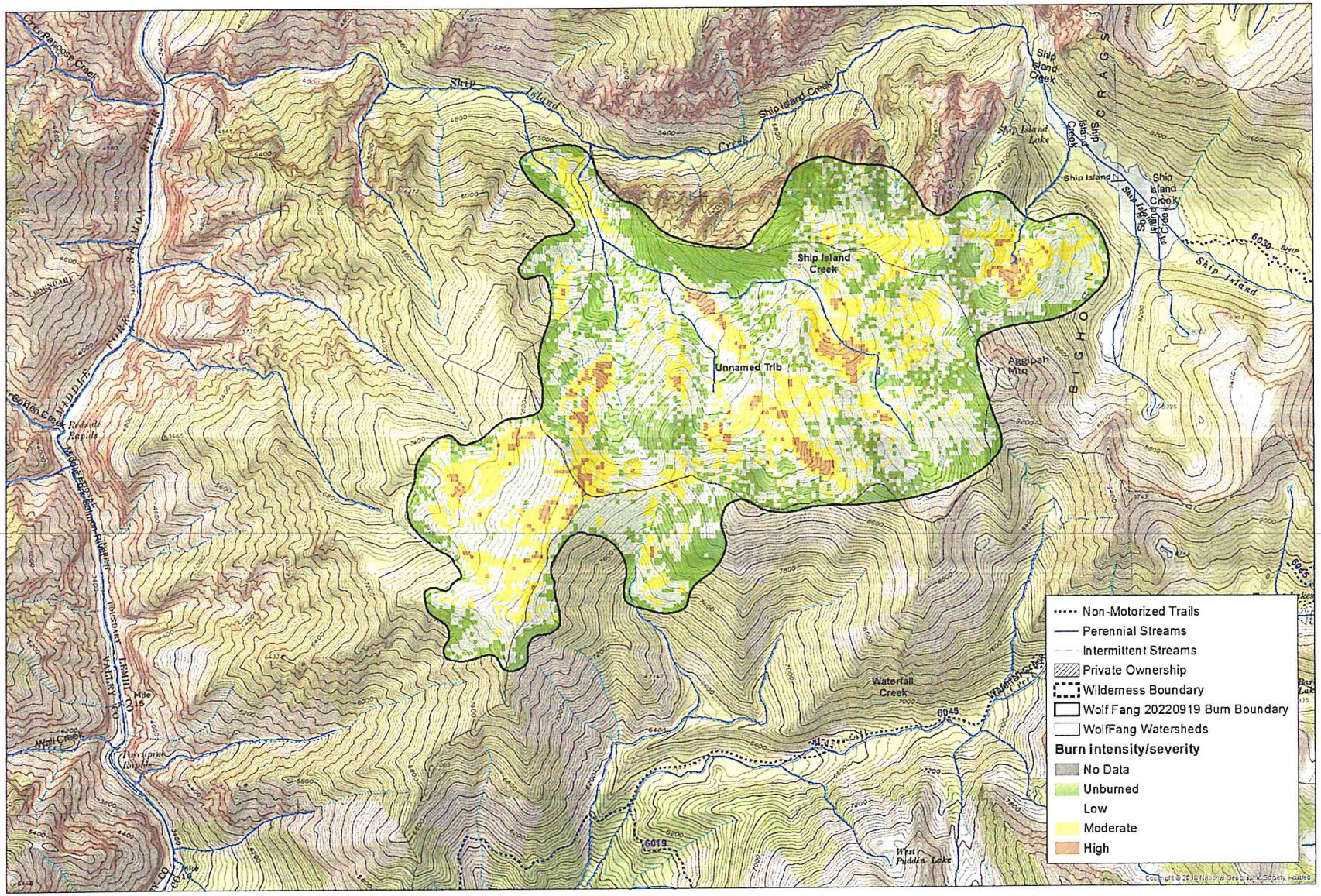
**E. Sediment Potential:** N/A

**F. Estimated Vegetative Recovery Period (years):** 1-3 (grasses), 2-5 (woody), 10-50 (conifers)

**G. Estimated Hydrologic Response (brief description):**

Approximately 75% of the burned area consists of unburned/undetectable or low severity burn. Minimal changes in terms of hydrologic processes are expected in these areas. Areas where the fire did burn at moderate and high severity are widely scattered throughout tributary drainages of Ship Island Creek. The potential for post-fire debris flow events is low to moderate if a short duration, high intensity rainstorm were to occur over this area, as a result of high and moderate burn severity on some of the upper slopes and the steep (>45%) slopes that are present throughout almost the entire burned area. Potential debris flow events are likely to be localized, and any influxes in sediment and/or streamflow would likely be attenuated in Ship Island Creek, resulting in low risk of downstream effects to values along the Middle Fork Salmon River.

| Watershed | Outside of burned area (acres/%) | Unburned (acres/%) | Low Severity (acres/%) | Moderate Severity (acres/%) | High Severity (acres/%) |
|---|---|---|---|---|---|
| Ship Island Creek (7840 acres) | 5692 | 708 | 937 | 424 | 80 |
| | 73% | 9% | 12% | 5% | 1% |
| Unnamed Trib to Ship Island Creek (1602 acres) | 49 | 480 | 701 | 305 | 67 |
| | 3% | 30% | 44% | 19% | 4% |
| Waterfall Creek (13,215 acres) | 12949 | 114 | 123 | 28 | 1 |
| | 98% | 1% | 1% | 0% | 0% |




**Burn Intensity/Severity Map for the Wolf Fang Fire, Salmon-Challis National Forest**

Map created 10/14/2022 by the Salmon-Challis National Forest Wolf Fang Fire BAER Team. BARC Data and Fire Perimeter from analysis of Landsat 9 satellite data, by USDA Forest Service, Geospatial Technology and Applications Center, BAER Imagery Support Program. BARC imagery date: 9/19/2022. This map shows burn intensity (vegetative scorch) derived from BARC data, Burn intensity not field verified. Burn severity was assumed to be roughly equivalent to burn intensity. Burn Boundary Acreages: 2,822 acres. Some additional fire growth has likely occurred since 9/19/2022.

0 0.5 1 2 Miles N

## PART V - SUMMARY OF ANALYSIS

### Introduction/Background

The Wolf Fang Fire started on July 13, 2022 as a result of lightning. The entire burned area is within the Frank Church River of No Return Wilderness. The fire burned in steep, rugged terrain. Because of the inaccessibility of the terrain and snag hazards, the fire was monitored, but no fire suppression activities occurred. This fire was typical of Wilderness fires in this area, with limited fire activity. Isolated smoldering continued until late Fall.

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

*Table 5: Critical Value Matrix*

| Probability of Damage or Loss | Magnitude of Consequences | | |
|---|---|---|---|
| | Major | Moderate | Minor |
| | RISK | | |
| Very Likely | Very High | Very High | Low |
| Likely | Very High | High | Low |
| Possible | High | Intermediate | Low |
| Unlikely | Intermediate | Low | Very Low |

#### 1. Human Life and Safety (HLS):

**BAER Value**: Human life and safety on or in close proximity to burned NFS lands
**What is at Risk**: Human life and safety
**Probability**: Possible
**Consequences**: Major
**Risk**: High
**Comments**: The burned area is largely inaccessible, with no trails accessing the area. Those who do visit this extremely rugged and remote area may be exposed to various post-fire hazards in the short term (1 to 3 years) including rockfall, root holes, and flood/debris flow hazards during storm events. These hazards will diminish after the first few years, but deadfall will likely be a persistent hazard in this area as a result of the fire for the next 10+ years. Risks along the Middle Fork Salmon River as a result of the fire are low, although increased streamflows during storm events could potentially occur in Ship Island Creek.

#### 2. Property (P):

**BAER Value:** Buildings, water systems, utility systems, road and trail prisms, dams, wells, or other significant investments on or in close proximity to burned NFS lands
**What is at Risk:** Trails
**Probability:** Unlikely
**Consequences:** Moderate
**Risk:** Low
**Comments:** No trails exist within or adjacent to the burned area. The Waterfall Creek Trail (#6045) follows Waterfall Creek, with mostly low severity burn on the upper slopes of this drainage. The risk to this trail is low.

#### 3. Natural Resources (NR):

**BAER Value:** Soil productivity and hydrologic function on burned NFS lands
**What is at Risk:** Soil erosion and stream channel function
**Probability:** Likely
**Consequences:** Minor
**Risk:** Low
**Comments:** Increased soil erosion will likely occur, particularly in areas of high burn severity and steep slopes. Ground cover will likely recover quickly (1-3 years) in low and moderate severity

burned area, and over a period of 3 to 5 years in high severity burned areas, and longer on steep slopes burned at high severity. Post-fire flooding and/or debris flows are possible, with the potential to deposit large amounts of mud, gravel, rocks, and trees into larger drainages such as Ship Island Creek. These potential impacts would likely have little effect on the Middle Fork Salmon River, other than increased turbidity and sediment loads. Because debris flows are part of the natural balance in this system and have created many of the morphologic features in this area, this will not alter the overall balance of this high fire frequency system in terms of hydrologic function.

**BAER Value:** Critical habitat or suitable occupied habitat for federally listed threatened or endangered terrestrial, aquatic animal or plant species on or in close proximity to buned NFS lands
**What is at Risk:** Chinook, Steelhead, and Bull Trout Habitat
**Probability:** Unlikely
**Consequences:** Minor
**Risk:** Low
**Comments:** There are no ESA-listed fish or critical habitat documented within the burn area boundary. Downstream from tributary drainages within the burn area, Ship Island Creek is occupied Designated Critical Habitat for ESA-listed bull trout. Juvenile *Oncorhynchus mykiss* have also been documented in the lower ½ mile of Ship Island Creek near its confluence with the Middle Fork Salmon River, which could indicate the stream provides rearing habitat for juvenile steelhead. The fire appears to have mimicked natural fire patterns that would have historically occurred in this area and are critical to developing and maintaining quality fish habitat and fish populations by introducing woody material and spawning gravel to the stream systems through increased erosion and debris flow events. Potential debris flow events are likely to be localized, and any influxes in sediment and/or streamflow would likely be attenuated in Ship Island Creek, since its riparian area was entirely unburned. There is a very low risk of downstream effects to fish populations in the Middle Fork Salmon River.

**BAER Value:** Native or naturalized communities on NFS lands where invasive species or noxious weeds are absent or present only in minor amounts
**What is at Risk:** Spread of invasive species
**Probability:** Likely
**Consequences:** Moderate to High
**Risk:** High
**Comments:** The burned area is susceptible to colonization by invasive species. The species known to be present in the area have the potential to disrupt native plant community reestablishment in areas otherwise uninfested by noxious weeds.

4. **Cultural and Heritage Resources:**

**BAER Value:** Cultural resources on NFS lands which are listed on or potentially eligible for the National Register of Historic Places
**What is at Risk:** Historic Properties
**Probability:** Unlikely
**Consequences:** Moderate
**Risk:** Low
**Comments**: No historic properties were identified within or adjacent to the burned area that would potentially be impacted by post-fire flood events.

**B. Emergency Treatment Objectives:**
N/A

**C. Probability of Completing Treatment Prior to Damaging Storm or Event:**
**Land**: N/A
**Channel:** N/A
**Roads/Trails:** N/A
**Protection/Safety:** N/A

## D. Probability of Treatment Success

*Table 6: Probability of Treatment Success*

| | 1 year after treatment | 3 years after treatment | 5 years after treatment |
|---|---|---|---|
| **Land** | N/A | N/A | N/A |
| **Channel** | N/A | N/A | N/A |
| **Roads/Trails** | N/A | N/A | N/A |
| **Protection/Safety** | N/A | N/A | N/A |

**E. Cost of No-Action (Including Loss):** N/A

**F. Cost of Selected Alternative (Including Loss):** N/A

**G. Skills Represented on Burned-Area Survey Team:**

☒ Soils ☒ Hydrology ☐ Engineering ☒ GIS ☐ Archaeology
☒ Weeds ☐ Recreation ☒ Fisheries ☐ Wildlife
☐ Other:

**Team Leader:** David Deschaine
**Email:** david.deschaine@usda.gov **Phone(s):** (208)756-5171

**Forest BAER Coordinator:** David Deschaine
**Email:** david.deschaine@usda.gov **Phone(s):** (208)756-5171

**Team Members:** *Table 7: BAER Team Members by Skill*

| Skill | Team Member Name |
|---|---|
| *Team Lead(s)* | Dave Deschaine |
| *Soils* | Deanna Stever |
| *Hydrology* | Bill MacFarlane |
| *Engineering* | |
| *GIS* | Bill MacFarlane |
| *Archaeology* | |
| *Weeds* | Diane Schuldt |
| *Recreation* | |
| *Fisheries* | Keats Conley |

## H. Treatment Narrative:

**Land Treatments:** No BAER treatments proposed at this time.

**Channel Treatments:** No BAER treatments proposed at this time.

**Roads and Trail Treatments:** No BAER treatments proposed at this time.

**Protection/Safety Treatments:** No BAER treatments proposed at this time.

## I. Monitoring Narrative:

N/A – No BAER treatments proposed at this time.

## PART VI – EMERGENCY STABILIZATION TREATMENTS AND SOURCE OF FUNDS

| | | | 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 |
| *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 |
| *Insert new items above this line!* | | | | $0 | $0 | | | $0 | | $0 | $0 |
| *Subtotal Channel Treatments* | | | | $0 | $0 | | | $0 | | $0 | $0 |
| C. Road and Trails | | | | | | | | | | | |
| | | | | $0 | $0 | | | $0 | | $0 | $0 |
| | | | | $0 | $0 | | | $0 | | $0 | $0 |
| *Insert new items above this line!* | | | | $0 | $0 | | | $0 | | $0 | $0 |
| *Subtotal Road and Trails* | | | | $0 | $0 | | | $0 | | $0 | $0 |
| D. Protection/Safety | | | | | | | | | | | |
| | | | | $0 | $0 | | | $0 | | $0 | $0 |
| | | | | $0 | $0 | | | $0 | | $0 | $0 |
| *Insert new items above this line!* | | | | $0 | $0 | | | $0 | | $0 | $0 |
| *Subtotal Protection/Safety* | | | | $0 | $0 | | | $0 | | $0 | $0 |
| E. BAER Evaluation | | | | | | | | | | | |
| Initial Assessment | Report | | 1 | --- | $200 | | | $0 | | $0 | $200 |
| | | | | $0 | $0 | | | $0 | | $0 | $0 |
| *Insert new items above this line!* | | | | --- | $0 | | | $0 | | $0 | $0 |
| *Subtotal Evaluation* | | | | $0 | $200 | | | $0 | | $0 | $200 |
| F. Monitoring | | | | | | | | | | | |
| | | | | $0 | $0 | | | $0 | | $0 | $0 |
| | | | | $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 | $200 | | | **$0** | | **$0** | **$200** |
| Previously approved | | | | | | | | | | | |
| Total for this request | | | | **$0** | | | | | | | |

## PART VII - APPROVALS

1. Charles A. Mark — 11/29/22

Forest Supervisor — Date