

Date of Report: 07/09/2021**BURNED-AREA REPORT****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:** Inyo Creek Fire**B. Fire Number:** CA-INF-001391**C. State:** California**D. County:** Inyo**E. Region:** 05**F. Forest:** Inyo**G. District:** Mount Whitney Ranger District**H. Fire Incident Job Code:** P5N3HV21-0504**I. Date Fire Started:** June 18, 2021**J. Date Fire Contained:** July 8, 2021**K. Suppression Cost:** \$6,000,000**L. Fire Suppression Damages Repaired with Suppression Funds (estimates):**

- Fireline repaired (miles):** 2.04 miles Handline, 1.97 miles Dozer Line.
- Other (identify):** Various Safety Zones and Road Pullout's rehabbed.

M. Watershed Numbers:*Table 1: Acres Burned by Watershed*

HUC #	Watershed Name	Total Acres	Acres Burned	% of Watershed Burned
180901030206	Lone Pine Creek	20,784	628	3

N. Total Acres Burned:*Table 2: Total Acres Burned by Ownership*

OWNERSHIP	ACRES
NFS	628 (including 355 acres of Designated Wilderness Area)
OTHER FEDERAL (LIST AGENCY AND ACRES)	0
STATE	0

OWNERSHIP	ACRES
PRIVATE	0
TOTAL	628

- O. Vegetation Types:** Sage/bitterbrush, Pinyon and Jeffrey Pine, Water Birch and Willow in Riparian areas (mostly along Lone Pine and Inyo Creek).
- P. Dominant Soils:** 360 (CA732) - Rock Outcrop-Powment Complex: 305 Acres (48%) 124 (CA802) - Bairs Bouldery Loamy Coarse Sand: 125 Acres (18%) 129 (CA802) - Berent-Glenbrook-Nanamkin Families Association: 100 Acres (16%) 335 (CA802) - Ulymeyer Gravelly Loamy Coarse Sand: 113 Acres (18%)
- Q. Geologic Types:** Geologic Types (Top Five Geologic Map Units) Qgy - Younger Alluvial & Debris Flow Gravels: 235 Acres (37%) Ki - Independence Pluton: 106 Acres (17%) Qgo - Older Alluvial & Debris Flow Gravels: 79 Acres (13%) Qt - Talus, Regolith, & Colluvium: 78 Acres (12%) Klp - Granodiorite of Lone Pine Creek: 130 Acres (21%)
- 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	1.5
INTERMITTENT	1.5
EPHEMERAL	0.15
OTHER (DEFINE)	

S. Transportation System:

Trails: National Forest (miles): 1.78

Other (miles):

Roads: National Forest (miles): 1.04

Other (miles):

PART III - WATERSHED CONDITION

A. Burn Severity (acres):

Table 4: Burn Severity Acres by Ownership

Soil Burn Severity	NFS	Other Federal (List Agency)	State	Private	Total	% within the Fire Perimeter
Unburned	34				34	100
Low	395				395	100
Moderate	165				165	100
High	34				34	100
Total	628				628	100

B. Water-Repellent Soil (acres): 199

C. Soil Erosion Hazard Rating: Low: 187 (30%) Moderate: 242 (38%) High: 112 (18%) Very High: 87 (14%)

D. Erosion Potential: 0.3 tons per acre. **Sediment Potential:** 12 (Cubic Yards / Square Mile).

F. Estimated Vegetative Recovery Period (years): 3 to 5 years. Areas of moderate and high severity are likely to recover slower than low severity areas. There are few islands of unburned within the fire footprint so re-colonization from existing vegetation within the interior of the fire is likely to be slow. Conifers that burned may take an indefinite period to recover.

Table 1: Soil Burn Severity

Pour Point Watershed	Total Acres	Unburned Acres	Low Severity Acres	Moderate Severity Acres	High Severity Acres
Lone Pine Creek Below Campground	7949	7609 (96%)	202(2.5%)	113 (1.4%)	25 (0.31%)
Inyo Creek Below Campground	919	674 (73%)	179 (19%)	57 (6.2%)	9 (0.98%)
Lone Pine/Inyo Creek Confluence	8868	8275 (93%)	381 (4.3%)	170 (1.9%)	34 (0.38%)

Inyo Creek Fire BAER																	
**Design Flow for 5 year storm (South Lahontan/Colorado Desert Region)																	
Pour Point (PP) Analysis Watersheds	Drainage Acres	Drainage Area (mi ²)	Pre-Fire Peak Flow in cubic feet per second (cfs)				Soil Burn Severity (acres)				In Cubic Feet per Second (cfs)						
			Q2	Q5	Q10	Q25	Unburned	Low	Moderate	High	Pre fire Q5	Q from unburned	Q from low	Q from moderate	Q from High	Post fire Total Q5	Change in Q5 Flow
Lone Pine Creek Below Campground Watershed (PP1)	7949	12.42	39	120	221	410	7609	202	113	25	120	114.9	3.0	3.1	1.3	122	2%
Inyo Creek Below Campground Watershed (PP2)	919	1.44	3	10	20	39	674	179	57	9	10	7.4	2.0	1.2	0.4	11	10%
Lone Pine Creek/Inyo Creek Confluence Watershed (PP3)	8868	13.86	40	127	234	435	8275	389	170	34	127	118.5	5.6	4.5	1.7	130	3%
<p>From: Methods for Determining Magnitude and Frequency of Floods in California, Based on Data through Water Year 2006</p> <p>By Anthony J. Gotvald, Nancy A. Barth, Andrea G. Veilleux, and Charles Parrett; 2012</p> <p>*Change in flow is the increase in flow resulting from the reduction in soil infiltration after a fire based on a paper by Terry Henry.</p> <p>Acres of unburned and low soil burn severity are modeled at Q5, acres of moderate soil burn severity are modeled at Q10 and acres of high soil are modeled at Q25. A weighted average is then calculated to arrive at post fire Q5.</p> <p>**Spreadsheet prepared by Michael Wiese, US Forest Service</p> <p>*** Total post fire flow is the sum of the post-fire Q for the four main watersheds.</p>																	

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with moderate to high soil burn severity do not have hydrologic connectivity into Inyo Creek or Lone Pine Creek. In addition, if debris flows do occur there are no critical values at risk that debris flows could cause damage or injury.

PART V - SUMMARY OF ANALYSIS

Introduction/Background

The Inyo Creek Fire started on June 18, 2021, ignited by lightning activity in the mid-elevations of the Inyo Creek drainage on the flanks of Lone Pine Peak in the eastern escarpment of the Sierra Nevada Mountains and the John Muir Wilderness. The fire was isolated initially to a small area at 8500 feet elevation for about 24 hours when an abrupt down slope wind event occurred, pushing the fire towards the lower slopes and into Lone Pine Creek drainage, threatening Whitney Portal Recreation Area upstream and private residential areas downstream. The area is characterized by very steep, granitic peaks and ridges of the Sierra Nevada Mountains up to 14,500 feet elevation (Mount Whitney) and steep drainages. The fire was contained July 8, 2021.

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):

National Recreation Trail (NRT) 3501: The historic Mt. Whitney National Recreation Trail is 4.1 miles in length with approximately 1.78 miles within the burned perimeter. Of the 1.78 miles, approximately 1 mile runs through or is directly adjacent to moderate and high burn severity. There is a 0.25mi section of trail that runs mid-slope above Lone Pine Creek with some moderate and high burn severity above. Due to the burned vegetation and lack of soil stability this has an elevated risk of being damaged by rock fall and/or being buried with sediment from erosion. Sections of the NRT (FS 3501) within the fire area has possible geologic hazards present (fire destabilized rockfall and debris slide paths on steep slopes that cross the trail) that possibly could endanger Human Life and Safety of trail users. Six different rockslide areas were observed along this section of trail. The section of the Mt. Whitney NRT that is in this very high geologic hazard area has a very high potential to have increased rock fall activity because of the fire. There is a 1-mile section of trail that switchbacks up a relatively steep slope which received most of the moderate and high burn severity. Due to the destabilization caused by the burn severity, this section of trail has the potential to be damaged from flooding and excessive erosion.

People could get caught on the trail during a rock fall event and they could be at risk of getting hurt or losing their life from one of these rock falls.

Probability of Damage or Loss: **Possible**

Magnitude of Consequences: **Major**

Risk level: High

2. Property (P): National Recreation Trail (NRT) 3501: Sections of the NRT (FS 3501) within the fire area has possible geologic hazards present (fire destabilized rockfall and debris slide paths on steep slopes that cross

the trail) that possibly could endanger Human Life and Safety of trail users. The section of the Mt. Whitney NRT that is in this very high geologic hazard area has a very high potential to have increased rock fall activity because of the fire. There is a 0.75-mile section of trail that switchbacks up a relatively steep slope which received most of the moderate and high burn severity. Due to the destabilization caused by the burn severity, this section of trail has the potential to be damaged from flooding and excessive erosion. This can destabilize trail tread.

Probability of Damage or Loss: **Possible**

Magnitude of Consequences: **Major**

Risk level: High

FS road 15S03 culvert into Lone Pine Campground. The Inyo Creek channel partially burned upstream, increases of sediment are expected to the culverts. Approximately 7 % of the watershed burned at high and moderate severity resulting in a modeled increase of Q5 of 10%. If the culverts become blocked, bedload materials could overtop on the road and block traffic ingress and egress to and from the campground and could damage the road and culvert infrastructure.

Probability of Damage or Loss: **Possible**

Magnitude of Consequences: **Major**

Risk level: High

3. **Natural Resources (NR):**Hydrologic Function: N/A.

Water Quality for Municipal and Domestic Use: Temporary and moderate episodes of turbidity adversely effecting water quality from ash and fine sediment during heavy rain events, particularly during the first-year post-fire that may impact private properties downstream of the fire that utilize water in Lone Pine Creek for domestic uses.

Probability of damage or loss: **Possible**

Magnitude of Consequences: **Moderate**

Risk Level: Intermediate

Sierra Nevada bighorn sheep (SNBS) -the Mount Langley herd unit and critical habitat are within and adjacent to the Inyo Creek fire (see attached map). The Mount Langley herd unit is 26685 acres in total. The Inyo Creek fire burned approximately 4 acres of these 26685 acres (0.01%). Natural processes of the fire are expected to have improved SNBS winter range habitat by reducing Pinion and Jeffery pine encroachment of rocky terrain, therefore reducing predator avoidance areas. No Treatment is recommended.

Probability of damage or loss: **Possible**

Magnitude of Consequences: **Moderate**

Risk Level: Intermediate

4. **Cultural and Heritage Resources:**Critical values for Cultural Resources under a Burned Area Emergency Response assessment are defined as Cultural resources which are listed on or potentially eligible for the National Register of Historic Places (NRHP), Traditional Cultural Properties, or Indian Sacred Sites on National Forest System (NFS) lands (FSM 2353, June 2020). Cultural Resources are not expected to be impacted by post-fire processes. **No treatments are proposed.**

Probability of damage or loss: **Possible**

Magnitude of Consequences: **Moderate**

Risk Level: Intermediate

B. Emergency Treatment Objectives: FS National Recreation Trail 3501 – 1-year trail closure and closure signage at trail heads to protect life and safety of trail users from geologic hazards including potential rockfall, slope

and trail instability, and hazard warning signs at Lone Pine campground and trail heads to warn public of postfire hazards. Implement Trail storm proofing treatments to protect investment in infrastructure and limit post-fire watershed response. Road treatment (culvert maintenance on Inyo Creek) to protect FS Road 15S03 culvert structure and road and minimize culvert plugging that may overtop road and block vehicle ingress and egress into Lone Pine Creek Campground.

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

Land: 80%

Channel: N/A

Roads/Trails: 80%

Protection/Safety 90%

D. Probability of Treatment Success

Table 6: Probability of Treatment Success

	1 year after treatment	3 years after treatment	5 years after treatment
Land	90	90	100
Channel	N/A	N/A	N/A
Roads/Trails	90	90	100
Protection/Safety	90	90	100

E. Cost of No-Action (Including Loss): \$22,400, using VAR lite tool

F. Cost of Selected Alternative (Including Loss): \$18,400 expected benefit of treatment, \$22,415 implied minimum value of treatment. Using VAR lite tool Skills Represented on Burned-Area Survey Team:

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

Team Leader: Casey C. Shannon

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Forest BAER Coordinator: Todd J. Ellsworth

Email: todd.ellsworth@usda.gov

Phone(s): mobile: 760-920-5648

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

Skill	Team Member Name
<i>Team Lead(s)</i>	Casey C. Shannon
<i>Soils</i>	Michael Wiese, Casey C. Shannon
<i>Hydrology</i>	Michael Wiese, Casey C. Shannon
<i>Engineering</i>	
<i>GIS</i>	Michael Wiese
<i>Archaeology</i>	Jacqueline Beidl
<i>Weeds</i>	Blake Englehart
<i>Recreation</i>	
<i>Other</i>	Todd J. Ellsworth, Interagency Coordination Alan Gallegos, Geology

H. Treatment Narrative:**Land Treatments:** One infestation of perennial pepperweed (*Lepidium latifolium*) is in Lone Pine Campground immediately adjacent to the fire perimeter and fire suppression lines (dozer). This species is a high priority for treatment on the Inyo NF and this infestation has previously been treated (hand removal of inflorescences). Burned areas and dozer line would be surveyed for spread of pepperweed and other high priority

weeds. Any treatment would be consistent with existing decisions on the Inyo NF (e.g. Forest wide Invasive Plants Treatment Project, INF 2019). Small, isolated infestations will be eradicated by hand pulling. Fruiting individuals will be disposed of in garbage bags taken off site. Note: Staff involved with Implementation will use funding for regular hours along with Overtime hours because they were not fully funded by NSFE for FY 2021.

L1. Invasive weed early detection and rapid response: Threats related to suppression disturbances.

L1. Weed Surveys and Rapid Response Costs				
Item	Unit	Unit Cost	# of Units	Cost
1 GS-11 Botanist	Day	\$475	1.5	\$712
1 GS -9 Weed Technician	Day	\$350	1.5	\$525
Supplies	Each	\$50	1	\$50
Vehicle Mileage	Miles	\$.55	250	\$137
Total				\$1424

Road and Trail Treatments

Roads: FS Road 15s03 is an access road to FS owned Lone Pine Creek campground and is the only ingress and egress to and from the campground. The road crosses Inyo Creek channel where a double culvert (CMP) and headwall exists. Lack of past maintenance has partially filled the culvert openings and channel entry with sediment and cobble. Because the Inyo Creek channel partially burned upstream, increases of sediment are expected to the culverts. If the culverts become blocked, bedload materials could overtop on the road and block traffic ingress and egress to and from the campground and could damage the road and culvert infrastructure. Treatment is to remove excess sediment and debris from the culverts to improve flow and sediment bypass and minimize the potential of culvert blockage. This could be done by excavator but can be accomplished by hand labor crews since the site is relatively small. Note: Staff involved with Implementation will use funding for regular hours along with Overtime hours because they were not fully funded by NSFE for FY 2021.

R1. Lone Pine Creek Campground FS Road # 15S03 Culvert Maintenance.

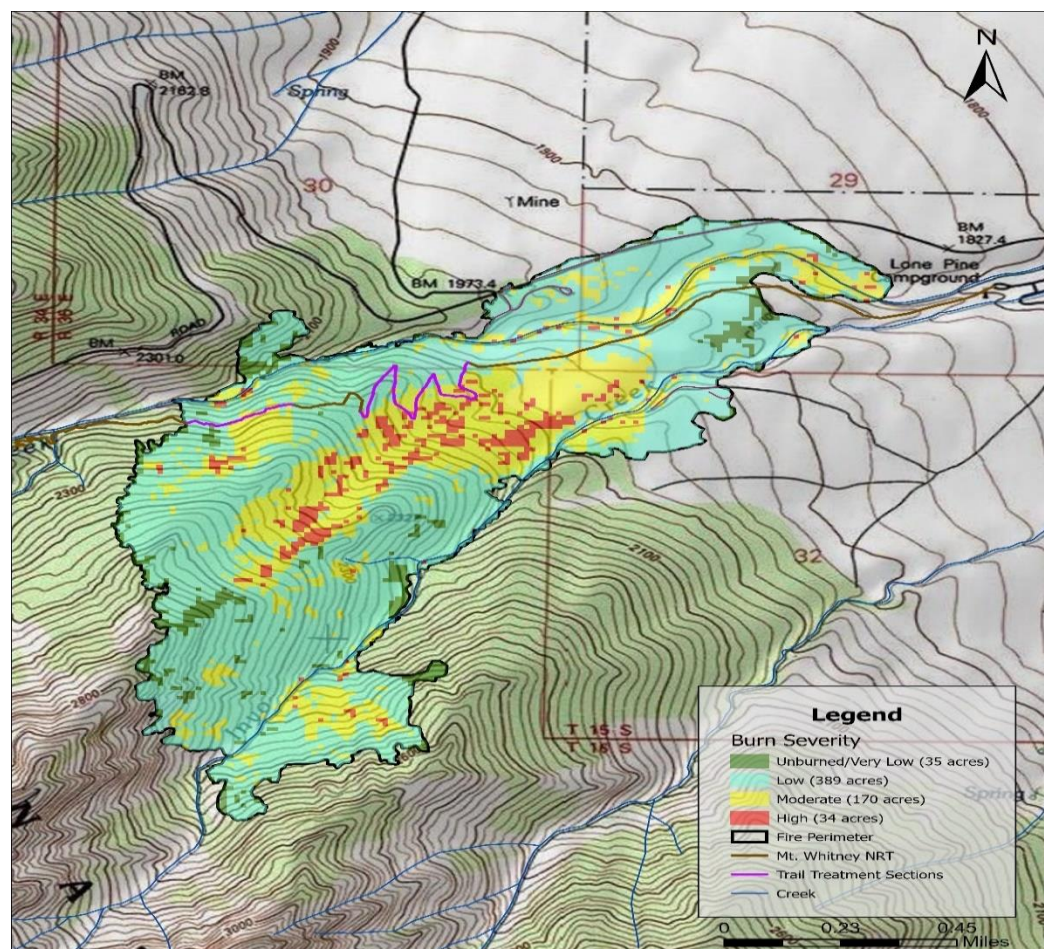
R1. Road Treatments – Campground Access Road Culvert Maintenance					
Item	Unit	Unit Cost	# of Units	Cost	
Force Account - Labor	Day	\$400	3	\$1200	
Vehicle Mileage	Miles	\$.55	150	\$82	
Total				\$1282	

Trails: Trail (non-motorized trails) treatment work will include the installation of drainage features (out sloping, rolling grade dips, water bars) and snagging trees as appropriate for worker safety. This work is necessary to protect the trail asset by diverting anticipated increases in surface runoff off the trail. The trail work will be conducted by contract or Cost Agreement crews (ACE, CCC or other) and administered and supervised by Forest Service personnel. After field assessments, it was determined a 1-mile section of the National Recreation Trail (NRT) # 3501 (trail classes 3 and 4) within the fire area needs trail storm proofing and stabilization treatments and a one year closure by Forest Order to protect the public from post-fire rockfall hazards and trail instability. The NRT trail is a trail of significance because of its designation and is connected to the heavily visited Mount Whitney Trail. Treatment sections are within or in proximity to areas of high and moderate burn severity on steep slopes where watershed response is expected to be high that could create damage to the trail tread and structures.

Prior to implementation of treatments, trail watershed specialists will perform specific trail surveys on identified trails to identify and map treatment locations note safety concerns. The result of the survey will dictate detailed storm proofing treatment recommendations. A Heritage specialist will conduct a survey of the trail treatment section to ensure cultural resources will not be impacted by trail stabilization work and document historic aspects of the trail, since the trail was constructed in the 1930's. The trail had a higher level of construction design

standards used such as rock retaining walls and drainage features, etc. Trail closure signs will be placed a trail head entry points and along with hazard warning signs. The trail will be monitored post-implementation after winter rain season to determine effectiveness and maintenance needs and if additional treatments are necessary.

See **Map 1** for specific trail treatment locations identified, below.



Map 1. Trail sections identified for treatments in magenta. Approximately 1 mile.

T1. Trail Storm-Proofing: Trail stormproofing involves cleaning or armoring of existing drainage structures to help ensure trail drainage performs optimally. This work will be accomplished through contractor equipment and labor. In addition, this treatment includes pre-implementation layout and heritage surveys.

T1. Trail Treatments: Trail Storm-Proofing				
Item	Unit	Unit Cost	# of Units	Cost
FS System Non-Motorized Trail # 3501 National Recreation Trail (NRT) Lone Pine Campground to Whitney Portal Pacific Crest Trail, - Storm proofing - Trail stabilization treatments with contract labor crew, including contract administration.	Miles	\$5000	1	\$5000
Cultural Resources Specialist field survey and documentation.	Day	\$550	4	\$2,200

Watershed Specialist on the ground trail treatment layout, mapping, and documentation	Day	\$500	4	\$2,000
Total				\$9200

Protection/Safety Treatments:**P1. Trails: Human Life and Safety Protection – Closure and Hazard Warning Signage:**

The NRT # 3501 will be closed to the public for one year by Forest order because of elevated rock fall and trail instability concerns. To ensure safety for Forest visitors and protection to Forest resources during the natural recovery period, trail closure and BAER hazard warning signs will be placed at 3 trailhead entry points and 1 at the Lone Pine Creek campground information board that is located adjacent to the fire area. Forest staff will complete sign ordering and installations in the field. Note: Staff involved with Implementation will use funding for regular hours along with Overtime hours because they were not fully funded by NSFE for FY 2021.

P1. Human Life and Safety Protection: Trail Closure and Warning Signage				
Item	Unit	Unit Cost	# of Units	Cost
Sign Installation Labor- Forest Staff	Day	\$400	2	\$800
Custom Trail closure and hazard warning signs (12"x 18") metal	Each	\$120	7	\$840
Posts and hardware for installation	Each	\$40	3	\$120
Vehicle Mileage	Miles	\$.55	300	\$165
Total				\$1925

IN.1 Interagency Coordination:

Interagency coordination started during the fire and continued throughout the BAER Assessment. Continuing this coordination by providing the BAER Assessment Report, specialist reports and attending meetings is anticipated. Funding is requested for agency coordination, and Implementation team lead, to ensure continued coordination with cooperating agencies, prompt implementation, and tracking of BAER treatments, and installation of burn area warning signs. The facilitation may include phone calls, meetings, and field trips to the affected areas. Note: Staff involved with Implementation will use funding for regular hours along with Overtime hours because they were not fully funded by NSFE for FY 2021

IN 1. Interagency Coordination				
Item	Unit	Unit Cost	# of Units	Cost
1 GS-12 BAER coordinator	Day	\$500	2	\$1,000
Total Cost				\$1,000

H. Monitoring Narrative:

M1. Trail Closure, Treatment Effectiveness Monitoring: Monitoring the effectiveness of the other BAER treatments (as described above) will be used to determine if additional treatments are needed and to ensure temporary 1-year trail closure effectiveness. Note: Staff involved with Implementation will use funding for regular hours along with Overtime hours because they were not fully funded by NSFE for FY 2021

M1. Trail Closure and Treatment Effectiveness Monitoring				
Item	Unit	Unit Cost	# of Units	Cost

1 GS-9 Hydrologist	Day	\$350	2	\$700
1 GS -11 Recreation Officer	Day	\$400	1	\$400
Total Cost				\$1100

[illegible]

1. _____
Forest Supervisor Date