

Glen Canyon National Recreation Area



Hazard Assessment, Analysis, and Control

Defiance House (42SA00598) Cyclic Maintenance

January 25, 2010



Glen Canyon National Recreation Area

Safety and Health

Core Values and Policy Statement

Core Value Items

- 1. No accident is acceptable.**
- 2. Working safely is an expectation and responsibility of each employee, supervisor, and contractor in Glen Canyon NRA.**
- 3. All employees will be observant for hazardous working conditions and dangerous behaviors.**
- 4. Hazards will be avoided and dangerous behaviors will be corrected and/or avoided.**
- 5. Any park employee has the obligation to stop work where anyone is in imminent danger of harm.**
- 6. Safety training and equipment will always be provided to ensure employees can perform their job safely and properly.**

Hazard Assessment Policy

At Glen Canyon National Recreation Area (NRA) we hold the safety and health of our employees, contractors, volunteers and the public to be a core value; as much as the value we place on protecting the natural and cultural resources entrusted to us and serving visitors. Consequently, it is important for all Glen Canyon NRA employees to remain focused on our personal responsibility for safety. All employees must adopt and follow the core value items and work in a manner such that everyone goes home safe and healthy at the end of the day.

It is the policy of Glen Canyon NRA to implement a systematic process for the identification and control of hazards.

At minimum, we will:

1. Perform a comprehensive hazard assessment for all activities, equipment, processes, and property under our control.
2. Review the comprehensive assessment to ensure its ongoing suitability for our operational needs.
3. Prior to the start of any job or activities which are new or unusual, we will perform a job hazard assessment (JHA).

Ranking Hazards by Risk (Consequences and Probability)

Once a hazard has been identified, hazard ranking provides a gauge to determine where to start prioritizing. As with most elements in a safety program, our priorities will be determined by addressing the worst first, although regulatory requirements may dictate priorities.

Hazard consequence category:

- I. Catastrophic - may cause death, injury, or company shutdown
- II. Critical - may cause severe injury, severe occupational illness or major property damage
- III. Marginal - may cause minor injury or minor occupational illness resulting in workday(s) lost, or minor property damage.
- IV. Negligible - probably would not affect personnel safety or health. Could result in a lost workday, and is still in violation of specific criteria.

Hazard Probability Category

- (a) Likely to occur immediately or within a short period of time when exposed to the hazard.
- (b) Probably will occur in time.
- (c) Possible to occur in time.
- (d) Unlikely to occur.

Implementation of the safety program will focus on hazards that fall in the 1(a), 1(b), 2(a) and 2(b) rating. As time permits, all potential hazards should have controls identified and implemented.

Hazard Identification & Assessment

Hazard Category	Task/Issue	Priority Rating
General Backcountry Operations	Packing	IV(c)
	Loading/Unloading packs and equipment into/out of vehicles	III(c)
	Hiking with a pack	III(c)
	Setting up camp and camping	IV(d)
	General	II(c)
	Accessing routes	II(c)
	Hiking on trails	II(c)
	Hiking of trails	II(c)
General Boat Operations	Maintenance	IV(d)
	Loading and unloading	III(c)
	Fueling the boat	I(c)
	Underway	I(c)
	Tying up to shore, dock use	III(c)
	Emergency Procedures	IV(d)
General Structure Preservation Treatments	Wall preparation	III(c)
	Repointing	III(c)
	Newlaying, Relaying, and Resetting	III(c)
	Remudding	III(c)
	Backfilling	III(c)

JOB HAZARD ANALYSIS

Date: January 25, 2010

- New JHA
- Revised JHA

Park Unit: Glen Canyon National Recreation Area

Division: Resources

Branch: Cultural Resources

Location: Backcountry

JOB TITLE: General Backcountry Operations

JHA Number:

Page 1 of 3

Job Performed By:

Analysis By:

Supervisor:

Approved By:

Required Standards, Guidelines, and General Notes:

Follow Backcountry Travel Procedures and Glen Canyon National Recreation Area Backcountry Operations Handbook. File a Backcountry Operations Plan

Required Personal Protective Equipment:

Tools and Equipment:

Sequence of Job Steps	Potential Hazards	Safe Action or Procedure
1. Packing	<ul style="list-style-type: none"> • Lacerations from sharp items • Exposure to harmful fumes from fuel 	<ol style="list-style-type: none"> 1. Knives and tools sheathed or closed 2. Fuel bottles filled in well ventilated area and caps secured tightly with serviceable gaskets as appropriate.
2. Loading/Unloading packs and equipment into/out of vehicles	<ul style="list-style-type: none"> • Injury from lifting improperly • Injury from falls due to unstable footing • Injury from falling/shifting load inside vehicle 	<ol style="list-style-type: none"> 1. Utilize proper lifting techniques with legs, not back. Team lift items over 80 pounds 2. Situational awareness while loading 3. Packs and equipment secured inside vehicle, use of cargo cages to separate non-essential equipment from passenger compartment
3. Hiking with a pack	<ul style="list-style-type: none"> • Injury from falls • Ankle/knee injury from poor footing • Blisters or "Canyon Toe" • Injury from falling rock • Strains of lower back from poor gear or poor packing techniques • Extreme fatigue 	<ol style="list-style-type: none"> 1. Situational awareness while on trails <ol style="list-style-type: none"> a. Wear sturdy well fitting footwear appropriate for conditions, activity, experience, and individual needs. 1. Monitor foot condition and treat developing injuries appropriately 2. Maintain situational awareness especially on crowded trails. 3. Use high quality packs with good suspension systems <ol style="list-style-type: none"> b. Packs are properly sized and fitted c. Packs are loaded efficiently with weight appropriate to hikers physical fitness level 4. Maintain high standards of physical fitness.

JHA - CONTINUATION SHEET

JHA Number:

Page 2 of 3

Sequence of Job Steps	Potential Hazards	Safe Action or Procedure
4. Setting up camp and camping	<ul style="list-style-type: none"> • Bites and stings from wildlife • Lacerations from sharp items • Burns from cooking and stoves • Gastrointestinal infections from contaminated water sources 	<ol style="list-style-type: none"> 1. Do not put your hands or feet where you can not see 2. Knives and tools sheathed when not in use <ol style="list-style-type: none"> a. Locate cooking area away from human congestion b. Use high quality stoves so personnel are not exposed to unreliable stoves or flare-ups. c. Use filters, iodine and other water treatment measures
5. General	<ul style="list-style-type: none"> • Loss of communications with Park Dispatch • Disorientation to position and route • Exposure to elements, both heat and cold 	<ol style="list-style-type: none"> 1. Set goal of 100% communications coverage for all areas through the constant pursuit of the most effective options available including the emerging satellite communications options as well as improved radio communications. <ol style="list-style-type: none"> d. Carry sufficient radio batteries; follow check-in and monitoring procedures. e. When two consecutive check-ins are missed, a search/rescue will be initiated f. File a trip itinerary prior to trip with park dispatch office. Include any alternate communications plan appropriate to patrol area where known radio coverage lapses exist. g. Dispatch will contact supervisor and appropriate district ranger if overdue party identified. 2. Maps <ol style="list-style-type: none"> a. Park provides maps and compasses and employees are fluent in their use. b. Route descriptions are cataloged and maintained, employees carry descriptions with them during patrols of unfamiliar routes.
6. Accessing routes.	<ul style="list-style-type: none"> • Cuts and abrasions due to thick vegetation. • Strains of lower back. • Injuries/sprains of ankles. • Muscle pulls, strains, joint, and tendon injuries. 	<ol style="list-style-type: none"> 1. Wear appropriate clothing for terrain to be traveled, i.e., long pants, long sleeve shirts, and leather gloves. 2. Carry gear and other supplies in an appropriate backpack designed for carrying heavy loads. 3. Wear a sturdy-hiking boot designed for carrying heavy loads. 4. Maintain a high level of fitness.

JHA - CONTINUATION SHEET

JHA Number:

Page 3 of 3

Sequence of Job Steps	Potential Hazards	Safe Action or Procedure
7. Hiking on Trails	<ul style="list-style-type: none"> • Sprains or strains of knees or ankles • Back injury from carrying packs and equipment • Falling rocks 	<ol style="list-style-type: none"> 1. Wear sturdy; well fitting footwear appropriate for conditions, activity and experience. 3. Packs are properly sized and fitted 4. Packs are loaded efficiently with weight appropriate to hikers physical fitness level 5. Maintain situational awareness especially on crowded trails.
8. Hiking off Trails	<ul style="list-style-type: none"> • Injury from falls • Ankle/knee injury from poor footing • Blisters or "Canyon Toe" • Injury from falling rock • Strains of lower back from poor gear or poor packing techniques • Extreme fatigue 	<ol style="list-style-type: none"> 1. Situational awareness while on trails, exercise sound decision making (good judgment) giving due consideration to available options. 2. Wear sturdy; well fitting footwear appropriate for conditions, activity and experience. 3. Monitor foot condition and treat developing injuries appropriately 4. Maintain situational awareness especially on crowded trails 5. Packs are properly sized and fitted 6. Packs are loaded efficiently with weight appropriate to hiker's physical fitness level.

JOB HAZARD ANALYSIS		Date: June 1, 2008	<input type="checkbox"/> New JHA <input checked="" type="checkbox"/> Revised JHA
Park Unit: Glen Canyon National Recreation Area	Division: Resources	Branch: Cultural Resources	Location: Lake Powell
JOB TITLE: General Boat Operations		JHA Number:	Page <u> 1 </u> of <u> 3 </u>
Job Performed By:	Analysis By: Dave Goodin	Supervisor:	Approved By:
Required Standards, Guidelines, and General Notes:	Glen Canyon National Recreation Area Boating Safety Program, U.S. Coast Guard Inland Navigation Rules, Department of the Interior motorboat Operator Certification Course		
Required Personal Protective Equipment:	U.S. Coast Guard approved personal flotation device, sound producing signal device, anchor and line, emergency flare kit, one class BC- NFPA certified fire extinguisher, non-slip footwear, hearing protection		
Tools and Equipment:			
Sequence of Job Steps	Potential Hazards	Safe Action or Procedure	
1. Maintenance	2. Condition of equipment	1. Boat motors must be maintained yearly. 2. The lower unit grease should be changed each year. 3. Props should be inspected for cracks. If damaged, the prop should be replaced prior to use. 4. Four Stroke motors should have the oil and oil filter changed. 5. Gas should be drained from the gas line for winter storage. 6. Spark plugs and gas filter should be replaced yearly if needed. 7. Make sure the drain plug is in the watercraft and properly attached prior to putting to watercraft in the water. 8. Do a visual inspection of the watercraft prior to use.	
3. Loading and unloading	• Injury	1. Use non-skid surface, if available, while loading and unloading watercraft. Enter slowly and keep a good low center of gravity while entering the watercraft. 2. Enter watercraft on operators command. 3. No smoking is allowed while in watercraft. No smoking while refueling the watercraft.	
4. Fueling the boat	• Fire from fueling	1. Secure boat to dock 2. Turn off master battery switch and close all hatch covers, doors, and compartments that could allow fuel vapors to enter 3. Refuel portable fuel tanks ashore 4. Maintain nozzle contact with the vessel's fill pipe to prevent static electric spark 5. Fuel nozzle must be attended at all times; don not overfill and wipe up spillage 6. Turn blower on for a minimum of five minutes to ventilate before starting engine	

JHA - CONTINUATION SHEET

JHA Number:

Page 2 of 3

Sequence of Job Steps	Potential Hazards	Safe Action or Procedure
<p>5. Underway</p>	<ul style="list-style-type: none"> • Capsizing • Person overboard • Rough water • Collision • Fire • Adverse weather 	<ol style="list-style-type: none"> 1. Operator must have passed the DOI Motorboat Operator Certification Course. 2. Be observant of other boat traffic and rocks while on the water. 3. Have a map of the lake and destination of trip on board. 4. Communication equipment of some type (radio, Cell phone, SAT phone or Marine radio) must be on the water craft while in use. 5. All personnel must wear an approved personal flotation device (PFD) while underway on the water at all times. It should be of proper size and US Coast Guard approved. 6. Use proper speed for conditions; make sure all cargo is secured in a fashion that will not blow out of watercraft. During periods of high winds avoid large open water areas, know personal and equipment limitations, and don't be afraid to sit out high winds; insure fuel supply is adequate. 7. Know how boat maneuvers; know boat stopping distance; don't make tight, high speed turns. 8. Have look-outs posted for rocks if needed; carry extra safety equipment (i.e., radio, tools, paddles, extra fuel, food, and clothing). 9. Warm clothing and rain gear is a good idea to carry along to help prevent hypothermia while on the water. 10. Avoid prolonged exposure to bare skin, cover skin or use sunscreen, wear sun glasses and/ or hat. 11. Make sure all tools and equipment not in use are properly protected while on board the watercraft and are clear of passengers and the fuel supply. 12. Balance of equipment and on the watercraft is extremely important to ensure a safe water experience. 13. Additional requirements for power boats include: sound producing signal device, anchor and line, emergency flare kit, one class BC- NFPA certified fire extinguisher.
<p>6. Tying up to shore, dock use</p>	<ul style="list-style-type: none"> • Damage to boat or motor • Lost boat 	<ol style="list-style-type: none"> 1. Keep lines and anchors properly stowed. Inspect prior to use and make sure they are properly attached to the watercraft. 2. Make sure the watercraft is securely anchored to shore and pulled up in a fashion that the watercraft will not sustain damage from waves, wind or adverse weather. 3. If docked on a dock make sure the watercraft is secured on the bow and stern of the watercraft. 4. Raise motor to prevent damage to the prop while anchored to the shore.

JHA - CONTINUATION SHEET

JHA Number:

Page 3 of 3

Sequence of Job Steps	Potential Hazards	Safe Action or Procedure
7. Emergency Procedures	<ul style="list-style-type: none">• Illness or injury	<ol style="list-style-type: none">1. Notify Dispatch of an emergency via radio, cell phone (218.327.4175), or SAT phone.2. Treat the Injury as qualified to do so.3. Be prepared to give the following Patient Assessment information to dispatch:<ul style="list-style-type: none">• Location of injured party; type of Injury; severity of Injury; plan of extraction; closest boat landing or portage4. Notify your Supervisor as soon as possible about the Incident and fill out the proper paper work.

JOB HAZARD ANALYSIS		Date: January 25, 2010	<input checked="" type="checkbox"/> New JHA <input type="checkbox"/> Revised JHA
Park Unit: Glen Canyon National Recreation Area	Division: Resources	Branch: Cultural Resources	Location: Backcountry
JOB TITLE: General Structure Preservation Treatments		JHA Number:	Page <u> 1 </u> of <u> 2 </u>
Job Performed By:	Analysis By:	Supervisor:	Approved By:
Required Standards, Guidelines, and General Notes:	Glen Canyon National Recreation Area (NRA) Personal Protective Equipment Program, Glen Canyon (NRA) hazard Communication Plan		
Required Personal Protective Equipment:			
Tools and Equipment:			
Sequence of Job Steps	Potential Hazards	Safe Action or Procedure	
1. Wall Preparation	<ul style="list-style-type: none"> • Displacement of debris • Loose/falling rocks • Unstable walls • Unstable footing 	<ol style="list-style-type: none"> 1. Eye and face protection from flying particles and dust <ul style="list-style-type: none"> • Protective eyewear and dust mask 2. Head, torso, leg, and foot protection from falling or rolling rocks if necessary <ul style="list-style-type: none"> • Long-sleeved shirt, long pants, and leather boots 3. Hand protection 4. Situational awareness while working adjacent to wall surface 	
2. Repointing	<ul style="list-style-type: none"> • Loose/falling rocks • Unstable walls • Unstable footing • Chemical exposure 	<ol style="list-style-type: none"> 1. Eye and face protection from flying particles and dust <ul style="list-style-type: none"> • Protective eyewear and dust mask 2. Head, torso, leg, and foot protection from falling or rolling rocks if necessary <ul style="list-style-type: none"> • Long-sleeved shirt, long pants, and leather boots 3. Hand protection to avoid chemical exposure if amended mortars are used 4. Situational awareness while working adjacent to wall surface 	
3. Newlaying, Relaying, and Resetting Masonry	<ul style="list-style-type: none"> • Muscle pulls, strains, joint, and tendon injuries • Loose/falling rocks • Unstable walls • Unstable footing • Chemical exposure 	<ol style="list-style-type: none"> 1. Utilize proper lifting techniques with legs, not back. Team lift items over 80 pounds 2. Eye and face protection from flying particles and dust <ul style="list-style-type: none"> • Protective eyewear and dust mask 3. Head, torso, leg, and foot protection from falling or rolling rocks if necessary <ul style="list-style-type: none"> • Long-sleeved shirt, long pants, and leather boots 4. Hand protection to avoid chemical exposure if amended mortars are used 5. Situational awareness while working adjacent to wall surface 	

JHA - CONTINUATION SHEET

JHA Number:

Page 2 of 2

Sequence of Job Steps	Potential Hazards	Safe Action or Procedure
4. Remudding	<ul style="list-style-type: none"> • Loose/falling rocks • Unstable walls • Unstable footing • Chemical exposure 	<ol style="list-style-type: none"> 5. Eye and face protection from flying particles and dust <ul style="list-style-type: none"> • Protective eyewear and dust mask 6. Head, torso, leg, and foot protection from falling or rolling rocks if necessary <ul style="list-style-type: none"> • Long-sleeved shirt, long pants, and leather boots 7. Hand protection to avoid chemical exposure if amended mortars are used 8. Situational awareness while working adjacent to wall surface
5. Backfilling	<ul style="list-style-type: none"> • Muscle pulls, strains, joint, and tendon injuries • Displacement of debris • Loose/falling rocks • Unstable footing • 	<ol style="list-style-type: none"> 1. Utilize proper lifting techniques with legs, not back. Team lift items over 80 pounds 2. Eye and face protection from flying particles and dust <ul style="list-style-type: none"> • Protective eyewear and dust mask 2. Head, torso, leg, and foot protection from falling or rolling rocks if necessary <ul style="list-style-type: none"> • Long-sleeved shirt, long pants, and leather boots 3. Situational awareness while working adjacent to wall surface