



**The  
Tread Lightly!  
Guide To  
Responsible**

# **Four Wheeling**

**With  
Minimum Impact  
Camping Tips**



## Tread Lightly! Guide to Responsible Four Wheeling

Owners of General Motor's HUMMER® vehicles are familiar with the company's legacy of environmental and off highway stewardship. When it comes to taking HUMMERs off highway, GM's intent is to do everything it can to help ensure its owners are safe and responsible drivers.

That's why all HUMMER owners have the opportunity to become members of the Tread Lightly! organization. We share a common goal of protecting the great outdoors through education, and support the five principles of the Tread Lightly! pledge.

In short, GM measures its environmental progress in three areas: products, plants and partnerships.

The HUMMER H1 we offer today is among the most recyclable vehicles manufactured. Furthermore, the HUMMER's agile off highway or back country capabilities help reduce its environmental impact when taken in the backcountry.

The AM General manufacturing facility in Mishawaka, Ind., that builds all civilian HUMMER H1s and military Humvees boasts an exemplary environmental record. Resource management activities initiated at the plant help ensure the processes and materials we use to build our vehicles minimize our environmental impact.

HUMMER's partnership with Tread Lightly! speaks for itself -- the HUMMER brand team is proud to support Tread Lightly! and our partnership to promote responsible and safe four-wheeling.

Michael DiGiovanni  
HUMMER Marketing Director

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# THE TREAD LIGHTLY! GUIDE TO RESPONSIBLE FOUR WHEELING

## INTRODUCTION

*We did not inherit the Earth from our parents,  
We are borrowing it from our children.  
-Indian Proverb*

For many of us, enjoyment of the outdoors has become a major form of recreation – "to get away from it all." Hunting, fishing, camping, trail riding, photography, canoeing, hiking, biking...you name it, have become very popular. One reason is because off-highway vehicles (OHVs) have made even remote areas of the country accessible.

The off-highway backcountry has brought out the Lewis and Clark in all of us – to explore and enjoy. But we also have a responsibility to our outdoor home, to keep it neat and orderly, just as we would our own homes, and to leave the great outdoors better than we found it for others to come.

Throughout the ***Tread Lightly! Guide to Responsible Four Wheeling***, we will help you prepare for the responsible enjoyment of the off-highway, outdoors experience, and to be a positive influence on nature, and those around you.

Now, off to the wonderful world of responsible four wheeling, the *Tread Lightly!* way.

## WHAT IS TREAD LIGHTLY!?

*Tread Lightly!* is an educational program dedicated to increasing awareness of how to enjoy the great outdoors while minimizing impacts. It emphasizes responsible use of off-highway vehicles, other forms of travel and low impact principles related to outdoor recreational activities. It is a long-term, information program to increase the public's awareness that special care of the outdoors must be exercised by recreationists if opportunities to recreate are to continue, with the quality of experience maintained and enhanced.

*Tread Lightly!* was launched in 1985 by the USDA Forest Service to help protect public and private lands. Shortly thereafter the program was adopted by the USDI Bureau of Land Management. To maximize its effectiveness, program responsibility was transferred to the private sector in 1990, making *Tread Lightly!* a not-for-profit organization.

Over the years the program has steadily added new dimensions to meet the needs of all types of outdoor enthusiasts. The program's message was expanded in 1997 to include the promotion of responsible water based recreational activities. These changes brought the USDI Bureau of Reclamation and USDOD Army Corps of Engineers on board as additional federal partners. Most recently the USDI National Park Service and U.S. Fish and Wildlife Service joined in partnering with *Tread Lightly!*.

*Tread Lightly!*, Inc. unites a broad spectrum of federal and state government agencies, manufacturers of recreational products, media, enthusiast groups and concerned individuals who share a common goal to care for natural resources. Protecting the great outdoors through education is *Tread Lightly!*'s mission. Ensuring future use of the land and water is its purpose.

*Tread Lightly!*'s message now reaches an international audience of outdoor recreationists. Through the services of *Tread Lightly!*, recreationists learn that opportunities to use the outdoors tomorrow depends on how they recreate today.

The message is simple. Preserve our environment! Make the commitment to follow *Tread Lightly!* principles as summarized in the *Tread Lightly!* Pledge:

- Travel and recreate with minimum impact
- Respect the environment and the rights of others
- Educate yourself, plan and prepare before you go
- Allow for future use of the outdoors, leave it better than you found it
- Discover the rewards of responsible recreation

## TRAVEL AND RECREATE WITH MINIMUM IMPACT

By understanding and practicing proper four wheeling techniques you will be reducing the impact you might otherwise have on the environment. The following are techniques to assist you in proper four wheeling, and to help you travel and recreate with minimum-impact.

## NEGOTIATING TERRAIN

Four wheeling is a wonderful way to see the outdoors and, if done properly, an environmentally appropriate way to experience the backcountry. Here are a few tips to help you negotiate the terrain and enjoy your four wheeling experience while protecting the environment.

- ▶ Put your vehicle in four wheel drive before reaching hills, obstacles, large rocks, soft spots, ravines, ruts and stream crossings. Generally low range transfer gear is best for most off-highway use.
- ▶ Because you will often be on an upward or downward surface, it's especially important to avoid sudden acceleration, sudden turns or sudden braking. Any of these actions could cause the vehicle's center of gravity to shift and destabilize the vehicle, leading to a collision or rollover.



### Hills

- ▶ Driving safely up, down or over hills requires excellent judgment and an understanding of what your vehicle can and cannot do. If you have any doubt about you or your vehicle's ability, don't drive up or down that hill; turn around and find another route. Re-tracking is a normal part of safe off-highway use.
- ▶ Travel straight up or down a hill or grade. Don't climb an angle, or cross the face of the hill below the top. You may slide sideways, or even roll your vehicle.
- ▶ Use a low gear in the transmission and transfer case.

## Obstacles

- ▶ Cross obstacles at an angle, one wheel at a time. This raises the clearance of the vehicle.
- ▶ Don't cross the obstacle straight on. You may get undercarriage damage at the rear since the rear overhang is generally greater and you may get high centered.

## Large Rocks

- ▶ Carefully put a tire on the rock. Proceed very slowly in low/low, with just enough throttle to maintain headway. This raises the vehicle, adding clearance to the undercarriage.
- ▶ Don't straddle the rock. This may leave you high-centered on the frame or differential, and damage the frame and/or driveline.
- ▶ Know where the low points on your vehicle are (the rock grabbers) the differentials, transmission, transfer case, etc.
- ▶ Know what size obstacles your vehicle can clear.
- ▶ Use a "spotter" in front of your vehicle to let you know what is going on underneath your vehicle.



## Soft Spots (mud, soft or loose soils, sand)

- ▶ Avoid mud if you can while remaining on the road or trail. If you can't, use low gearing and just enough throttle to maintain forward movement.
- ▶ Engage locking differential or hubs. If necessary, winch yourself through.

- ▶ Turn the steering wheel rapidly from side-to-side if you sense a loss of traction. This can help generate additional traction.
- ▶ Don't gun the engine. This will spin the tires and dig you DOWN, not forward, and could bury you to the frame. Smooth, easy power is better than too much power.

### Crossing Ravines

- ▶ Turn into ravines, large depressions or "whoop-t-dos" at about a 45-degree angle, left or right (turning into, not away from, the depression) and let the vehicle enter and leave one tire at a time.
- ▶ Go slowly, allowing the vehicle to stabilize itself.
- ▶ Don't enter straight into a depression. You may wedge yourself in front first or hang up the front and rear as you attempt to exit.
- ▶ Know your approach and departure angles.



### Dealing With Ruts, Gullies and Trail Washouts

- ▶ Straddle ruts, even if they are wider than your vehicle. This may mean running your tires on their sidewalls along the inside of the rut. This will keep your vehicle level.
- ▶ It is important to keep your vehicle level while maintaining control. Be patient and go slow to keep your vehicle balanced, front to back, and side to side.
- ▶ Don't try to go forward with your vehicle tilted to one side, because if the rut suddenly gets deeper, your vehicle may roll or slide on its side.
- ▶ If you feel the vehicle tilt, turn into the direction of the tilt, gently apply more power, and as it levels out, return your steering back to the direction you want to go.

- ▶ Don't spin your wheels. You may dig in, get hung up, slide or roll your vehicle.



### Crossing Streams

- ▶ Cross slowly, at a 90-degree angle to the stream, or at a slight angle to minimize stream bed damage. Crossing slowly also helps keep water out of the engine's air intake. Create a steady "bow wake" that will form an "air pocket" in and around the engine bay and away from tires if water is bumper height.
- ▶ Don't charge across the stream, creating spray and rooster tails. Think of stream crossing in boater's terms: make them "No Wake" areas.
- ▶ Don't drive up and down the stream bed. It disturbs fish and other aquatic habitat.
- ▶ Cross streams only at trail fording points. Check the water depth. If it is higher than your engine's air intake, don't cross. Water in the engine will stall it.
- ▶ Check your brakes after water crossings.

*HINT: Here's a quick depth guideline for stream fording: Hub depth or less: generally you should have no problems. Hub to bumper: Check air intake height and proceed slowly. Bumper to bottom of head lights: Use extreme caution, sudden dips in the stream bed could mean water in the air intake. At headlights or above: Do not attempt, generally at or above the air intake. Regardless, the best advice is to follow the guidelines in your owner's manual since all vehicles are different.*



## Turning Around

- ▶ Don't try to turn around on a narrow road or trail, unstable ground or steep hillside. You may slide off the road or trail or roll the vehicle. Back up until there is a safe area to turn around.
- ▶ Back straight down a hill or steep incline, using reverse and transfer case "low" range.
- ▶ Stay in gear, keeping your foot off the clutch and throttle. Apply the brake gently ("feathering the brake") to keep from locking up the wheels which may cause a skid.
- ▶ Keep your foot off the throttle. This allows engine compression to assist in braking.
- ▶ Keep all four tires rolling. This will help control your vehicle.

## Guiding

- ▶ Use a guide for safety whenever possible. They can see things that you can't, especially when backing. Only assign one person to guide. Guide from the uphill side of a vehicle or stay well downhill.

*HINT: When guiding, locate the lowest point on the vehicle and give instructions to avoid hitting. Give clear and concise instructions verbally and by using hand signals.*

## If You Stall

**Automatic Transmission:** Apply the foot and emergency brakes, then put the transmission in PARK. Start the engine, and with your foot still firmly on the brake, put the transmission in low or reverse. Release the emergency brake, then slowly release the foot brake until the vehicle begins to move. Then gently apply throttle.

**Manual Transmission:** Don't depress the clutch. Keep vehicle in gear and engage the starter. The combination of low range and first gear or reverse will allow the engine to fire and move at the same time. If you stall again, repeat. This procedure allows you to maintain full control. You won't damage the starter, and it preserves your clutch.

If you have a *late-model vehicle* with an *ignition lock-out*, do the following: Set the emergency brake. With your left foot, depress the clutch and with your right foot, depress the brake. Shift into first or reverse (the transfer case in low), and start the engine. Keep your foot on the brake, and gradually release the clutch until you feel it engage. Release the emergency brake and the foot brake until the vehicle begins to move. Then gently apply throttle to maintain forward momentum.



### Keep Your Distance

- ▶ Keep a safe distance between vehicles. Enter tough spots one vehicle at a time. A vehicle on the other side of the problem area may be able to help you by serving as a winch point or for towing.
- ▶ Wait for the vehicle in front of you to make it successfully to the top of a hill before proceeding. They may be unable to make it and will need to come back down.
- ▶ Keep the vehicle behind you in view to make sure they don't encounter any problems.
- ▶ Don't tailgate. The vehicle in front of you may stop suddenly, back up or even begin to slide backwards.

## Reconnoiter Ahead on Foot. When in doubt, get out!

- ▶ Know what's ahead of you. Even if you know the trail, stop frequently, get out and walk ahead and observe. Leave nothing for granted.
- ▶ Know what difficulties are ahead before you encounter them. Evaluate the alternatives and find the easiest, least dangerous and least damaging choice.
- ▶ Don't barge on regardless! Besides, getting out and walking ahead lets you enjoy the surroundings, and refreshes you for the challenges ahead.

## WINCHING

A properly selected and mounted winch can be an invaluable tool and can help reduce the potential for environmental damage on any four wheeling adventure. The winch can be used to remove fallen trees and rocks on the road or trail, help pull out vehicles or even right an overturned vehicle.

### Choosing the Right Winch

- ▶ As a general rule, choose a winch that is 1 1/2 times GVWR (not empty).
- ▶ For small vehicles, a 6,000 lb.-rated winch is generally adequate.
- ▶ For larger vehicles, an 8,000 or 9,000 lb.-rated winch is recommended.
- ▶ For heavy-duty four wheeling with heavily loaded vehicles or full-size pickups, a 10,000 - 12,000 lb.-rated winch is recommended.
- ▶ Obtain or assemble a winch accessories kit with heavy-duty leather gloves, wide tree strap, clevis and pulley. These are available from most winch manufacturers. (A pulley block effectively doubles the winch capacity.)

### Winch Hints

- ▶ **Direct Pull:** After properly attaching the cable, engage the winch, put the vehicle in low range/1st gear and slowly apply power, following the directions of the spotter. Never overdrive the winch. Let the winch pull you out.
- ▶ **Winching a Stuck Vehicle:** Attach the winch hook to the tow hook or the frame (NEVER to the bumper). Engage the winch to the frame mounted attachment point. Never wrap the cable to itself because it may damage the cable. Never attempt to drive the vehicle while winching;

only assist the winch by driving if in a bind or hung up on tires due to rocks or embankment. Always drape a blanket over the middle of the winch cable to keep it from flying back at you if it comes loose or breaks.

- ▶ **Pulling Stuck Vehicles or Removing Obstacles:** Attach the tree strap to a large tree. If you are attaching your winch cable to a rock, use a chain to wrap around the rock or the nylon strap may chaff and cut. Attach towing cable or chain as low as possible. If a large tree or rock is not available, use an in-ground anchor or bury your spare tire as an anchor. Use a pulley block if necessary to multiply the pulling power. Let the winch pull you out; never drive the winch.
- ▶ **Righting an Overturned Vehicle:** Attach the tow strap (or if not available, the winch cable) to overturned vehicle's far side frame member (farthest from winching vehicle). Wrap strap/cable starting toward the winch vehicle, down the side, under the overturned vehicle, up the far side and across the overturned vehicle's underside. Protect the strap or cable from sharp objects on the overturned vehicle's body and undercarriage. This multiplies the winching power and gives greater control. Attach to the winching cable. Engage the winch and let the winch do the work. Be sure to have a spotter located in a safe position away from the overturned vehicle to direct the winching vehicles driver. Keep vehicle from slamming down when rolling back on to tires, use other vehicle for resistance using a strap or winch to let it down smoothly.



## DRIVING TIPS

- ▶ Be a "feather foot." Go easy on the throttle and brakes to keep you in control and out of trouble.

- ▶ Keep your thumbs on top of the steering wheel, hands positioned at ten and two o'clock. If you hit an obstacle, the tire may be deflected and snap the steering wheel suddenly. If the thumbs are hooked over the steering wheel spokes, you may wind up with a severely sprained or broken thumb. While this happens more often with manual steering, it can happen with power steering.
- ▶ Lower the tire pressure to where you see a bulge in your tire, generally not lower than 20 pounds. This will give you better traction and provide for a smoother ride by increasing the footprint of the tire. However, increasing the sidewall bulge makes it vulnerable to snags, rocks or sharp roots. Do not exceed 10-15 miles per hour with the lowered air pressure. Remember to air back up before you resume driving at higher speeds. (Keep tire pressure high on ice or thin mud.) Tire pressure that's too low may also break the seal of the tire to the wheel rim.
- ▶ Know where the differential is; this is the lowest point on your vehicle. It could be on the right, left or in the middle. This will help you know where to place your tires to avoid hitting it.
- ▶ Use the left foot braking technique. Modulating the brake and throttle with both feet helps maintain control, even on a vehicle with a manual transmission. Light pressure on the brakes helps reduce tire slippage before wheel spin occurs. At the same time, an even throttle feed keeps a uniform application of power to the wheels. Going back and forth from the throttle to the brake interrupts the flow of power and can upset the vehicle's balance, causing loss of momentum.
- ▶ Beware of the vehicle's passenger side; know the parameters of tire placement.
- ▶ Look ahead of your vehicle about 30 yards to pick your trail and align your vehicle for the best route.
- ▶ Don't ride the brakes and clutch. Riding the brakes can overheat them and the brake fluid, leading to fade or failure when you need brakes. Tap the brakes to maintain steering control and avoid lock-up, skidding or sliding. Riding the clutch may cause the throwout bearing and spring to wear, and the friction surface to overheat. Keeping the power going to the wheels helps maintain control. Disengage the clutch only at the last instant when coming to a full stop.

*HINT: Borrow a page from the racing world. With your front wheel pointed straight ahead, install a piece of white tape around the steering wheel at the 12:00 o'clock position. This will tell you when your wheels are pointed straight, and how much steering input you are giving the front wheels, eliminating the guesswork.*

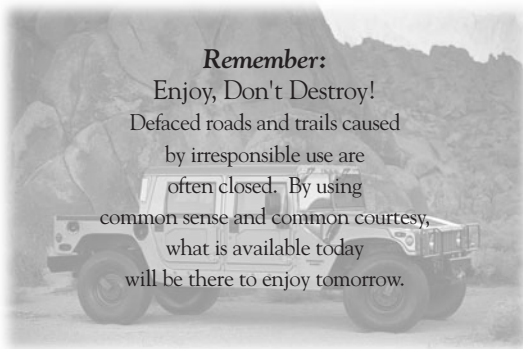


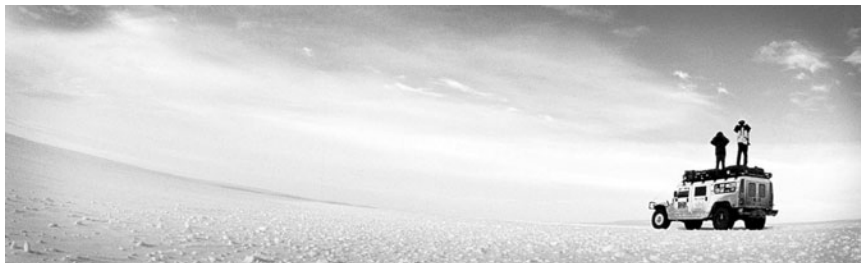
## Minimum Impact Camping

An "overnighter" or an extended trip will require proper preparation (see page 16 for preparation tips). Here are some helpful tips to assist you in picking campsites and camping with minimum-impact to the environment:

- ▶ Use existing campsites whenever possible. Choose sites with durable surfaces such as sand, gravel, slickrock or dry grassy groundcover.
- ▶ Set up your tent and cooking areas in places where vegetation cover has already been lost, to minimize further disturbance. Remember, good campsites are found, not made.
- ▶ When camping in a remote area, select a camp site approximately 200 feet off the trail with boulders or vegetation to screen you from others.
- ▶ Also, camp 200 feet from water to avoid contaminating the water resources.
- ▶ Avoid camping at or near historical, archeological, or paleontological sites or in areas of sensitive or critical wildlife habitats. Travel and camp away from other campsites. Respect the desire of others for solitude.

Meeting *Tread Lightly!* principles is easy. Speed and power aren't necessary. Preparation, common sense, courtesy and respect for the environment are all that's required.





## RESPECT THE ENVIRONMENT AND THE RIGHTS OF OTHERS

By respecting the land and water resources, wildlife and the rights of others you ensure, that not only will you be able to continue to go four wheeling, but that others will be able to enjoy the great outdoors as well.

### Rules and Common Courtesy on the Road or Trail

Be considerate of others on the road or trail or camping in the area. Be cheerful and pleasant. A friendly "Hi!" goes a long way to building a positive image and relationships with other trail users. Be a goodwill ambassador for OHV drivers.

- ▶ Drive only where permitted; stay on the trail or road. Don't make your own short cuts, switchbacks or trails.
- ▶ If you encounter a gate on public land, leave it as you found it unless posted otherwise.
- ▶ Respect private land. Many landowners will allow you to cross their land, but only if you ask permission.
- ▶ Keep the noise and dust down. Others will appreciate it.
- ▶ Yield the right of way to bikes, horses and hikers. When encountering pack animals, stop and ask the handler how to proceed. Do not make sudden movements or noises which may startle the animals. Move to the edge of the road or trail and stop. If possible, shut the engine off. Be courteous and helpful.
- ▶ If you brought it in, bring it back out. Don't litter on the trail. Do more than your share. If you see litter or repairable damage on the road or trail, pick it up or fix it as best you can. Bring plenty of garbage bags; don't leave anything behind.

- ▶ Yield the right of way for drivers on the uphill grade or overtaking you.
- ▶ Don't be a trail hog. Respect others, regardless of their means of transportation, everyone deserves to enjoy the outdoors.

## EDUCATE YOURSELF, PLAN AND PREPARE BEFORE YOU GO

Before heading out on your next backcountry adventure, a little preparation and education can make your life easier, safer and at the same time protect the environment. Planning for the unexpected as well as the expected can help maximize your time in the backcountry and minimize your problems. Plan your trip well in advance - 30 days isn't too early.

### STEP BY STEP

#### Preparation

Preparing checklists for your vehicle, emergency and personal items is important. Refer to pages 18 to 21 for the *Tread Lightly!* Vehicle and Safety Equipment Checklists. A properly tuned and serviced vehicle will get you there and back. The following are additional tips to assist you in your planning and organizing.

- ▶ Obtain a travel map of the area you wish to explore. After selecting a destination, determine which areas are open for your use. Select the safest route for your ability and determine what special rules and regulations may be in effect for that area for your safety and to protect the environment. Contact the land management agency responsible for managing the area. They have specific information on road and trail conditions, temporary or seasonal closures, special permits or low-impact driving practices that apply to off-highway vehicle use. If the area you wish to reach is on private property, contact the land owner(s) to obtain their permission. Ask about restrictions.
- ▶ Contact the land manager to see if there are certain times or specific areas to avoid: times when wildlife are particularly sensitive to disturbance (e.g. nesting or birthing seasons) or when soils are wet and prone to rutting; areas that are particularly sensitive to disturbance because of rare or endangered plants and animals, critical wildlife habitat, or fragile soil or vegetation types; and problem areas that are extremely crowded or where environmental impacts are severe.
- ▶ Check the long-term weather forecast for the location you will be visiting. A storm that you aren't prepared for can be a miserable experience at best, and an outright disaster at worst.

- ▶ Make a realistic plan and stick to it. Let everyone know where you will be, even on a day trip. Have an itinerary of your overall trip and leave a copy with family or friends at home in the event an emergency occurs.
- ▶ Check to see if the state requires special licensing or safety certification for the driver(s). Is any special equipment required?
- ▶ Do a 'dry run' before you go to be sure everything fits, and that you haven't forgotten anything. Note what you have missed, and what you may need as you are in route (food, fuel, water, emergency tools and supplies).
- ▶ Balance your load. Place heavy items that won't be needed in an emergency from the rear axle forward for better traction.
- ▶ Get your vehicle serviced or repaired if needed before the trip.



### Safety on the Road or Trail

Safety on the road or trail is critical. Knowing your limitations, your vehicle's limitations, the limitations of the soil or rock surface you're traveling on, and using common sense will ensure your well being.

- ▶ Travel with a group of two or more vehicles to enable you to return safely if you have mechanical problems, an accident or illness.
- ▶ Use of a C.B. radio or cellular phone can be very helpful on the trip. Keeping in touch with others in your party is essential, and can alert them if you are having a problem. Should an emergency develop, the C.B. emergency channel or cellular phone can get help to you.
- ▶ Buckle up! Seat belts are **MANDATORY!** They help keep you in place on rough terrain. Accidents can happen, even to the best four wheel drivers.

- ▶ Don't drink and drive! Four wheel driving requires every bit of skill and judgment you can command. Drugs and alcohol can lead you and your companions into a dangerous situation. If you are on medication which carries a vehicle/machinery operation warning, let someone else drive.
- ▶ Don't overextend daylight hours. Plan your riding schedule to allow being back at the base, campsite or designated meeting place at a predetermined hour.
- ▶ Maintain a reasonable distance between you and your fellow OHV drivers. "Tailgating" can lead to serious injury to you, your vehicle and others.
- ▶ A multiple use road or trail is not a race course. Emulating racers you see on television or at sanctioned events can be exciting, but remember, these events are typically held on closed courses and sites monitored for safety. Aside from the potential for creating environmental damage, reckless driving endangers you and others sharing the road or trail.
- ▶ Use common sense. Know your limitations. If you have doubts about a section of road or trail and your skill level, look at the maps and see if you can find a less challenging route, or turn the wheel over to someone with a higher skill level.



### **Minimum Impact Camping**

- ▶ Plan meals before you leave. Repackage food into reusable containers or plastic bags. This will reduce the amount of waste that must be packed out.
- ▶ Select lightweight equipment such as backpack stoves and collapsible water containers. These are easy to pack, take less space, save weight and help reduce impact on the environment.
- ▶ Consider selecting tents and camping gear with earth-tone colors that will blend into the surroundings.

## ALLOW FOR FUTURE USE OF THE OUTDOORS, LEAVE IT BETTER THAN YOU FOUND IT

With the number of OHV operators rapidly growing every year, the repeated and often unintentional misuse by OHVs can quickly create environmental damage. By using common sense and taking a few precautions, OHV operators can assure that the backcountry they frequent will remain available and in good condition for future use.

- ▶ Always stay on designated roads and trails or other areas open for use (e.g. sand dunes).
- ▶ Avoid "spooking" livestock (horses, mules, cattle, sheep, llamas) you encounter. Slow down and keep your voices low. Range animals should be treated as you would an unknown dog – proceed with caution.
- ▶ Sensitive wildlife habitat (e.g. wetlands, streams, meadows, fields) should be avoided. Crashing through undergrowth, or across meadows can destroy nesting sites and other sensitive habitat. Stay on designated trails and roads.
- ▶ Ride in the middle of the trail to minimize widening it.
- ▶ Avoid side slipping, which can start a rut, ultimately leading to erosion.
- ▶ Cross streams at fording points only. Driving up and down a stream bed disturbs fish and other aquatic habitats and can damage your vehicle.
- ▶ Wilderness areas are managed to maintain their primitive character and to provide opportunities for solitude. These designated areas are solely for non-mechanized travel – by foot and horseback. Sorry, no OHVs or bicycles.

## DISCOVER THE REWARDS OF RESPONSIBLE RECREATION

- ▶ Four wheeling provides the opportunity to get away from it all and builds family traditions.
- ▶ Remember - if you abuse it, you'll probably lose it! Careless operation of your off-highway vehicle can cause damage and may result in closing of areas to four wheel enthusiasts.
- ▶ Respect the environment and other trail users. By using common sense and common courtesy, what is available today will be here to enjoy tomorrow.

## THE TREAD LIGHTLY! VEHICLE CHECK LIST

Planning for any backcountry journey requires proper preparation. Whether it's a week or a day trip, your vehicle needs to be in top condition. Here's a checklist of critical vehicle components to help assure a safe and trouble-free trip.

### Cooling System

- Check for leaks, cracked or bulging upper and lower radiator hoses and heater hoses.
- Check radiator for leaks.
- Check radiator antifreeze level and condition. Replace or top off to proper level.
- Check the thermostat and radiator cap for proper operation.

### Suspension

- Check suspension, steering bushing. Replace cracked, worn or damaged bushings.
- Check steering linkage and box for looseness. Tighten or replace weak components.
- Lubricate steering linkage and suspension components requiring lubrication.
- Check for soft or leaking shocks.
- Springs should be properly seated. Check for weak, sagging or cracked springs.
- Check spring shackles for wear, proper location, tightness. Located to proper position, tighten if necessary. Replace worn shackles.
- Check alignment. Realign all four wheels if necessary.
- Check wheel bearing. Replace bearing if worn. Tighten properly. Repack with grease.

### Engine

- Clean engine and check for oil leaks. Repair or replace gaskets or seals.
- Change oil and filter if needed.
- Change dirty air filter.
- Clean carburetor or fuel injectors. Check idle, adjust. On carburetor engines, check float for proper operation, height, and adjust to correct setting.
- Check throttle return springs. Replace weak springs.
- Check fuel pump for proper fuel pressure.
- Check fuel pump, lines, tank, carburetor/injection system for leaks.
- Check spark plugs. Replace or reset to correct gap.
- Check plug wires, coil, distributor cap, rotor, points, ignition timing. Replace worn or damaged parts. Adjust timing.
- Check PCV valve.
- Check for vacuum leaks. Repair or replace faulty hoses.
- Check accessory belts, alternator, water pump, power steering pump, air conditioner. Tighten or replace if worn or frayed.

### Brakes

- Check drums and/or rotors. Have turned or replaced if outside of tolerances.
- Check pads and/or shoes.
- Check brake fluid levels. Bring to proper levels.
- Check for cracked or checked brake line hoses, line conditions, fluid leaks. Replace worn, leaking or excessively rusty components.
- Bleed brakes.

## **Driveline**

- Check for leaks in transmission, transfer case, differentials.
- Check fluid levels in transmission, transfer case, differentials.
- Check universal joints and CV joints. Lubricate if necessary.
- Check all skid plates. Tighten loose bolts. If critical areas aren't protected, install plates.
- Check wheel bearing. Tighten properly. Repack if necessary.

## **Exhaust System**

- Examine condition of muffler and tailpipes. Replace if excessively rusty, leaking or noisy.
- Check hangers; the muffler and exhaust pipes should be well above the lower level of the frame. If broken or appears weak, replace. Tighten loose hangers.
- Check protective shield beneath catalytic converter. Replace if loose, broken or missing. The catalytic converter gets very hot, and without protection can set dry grass on fire. Also ensure that no grass or other vegetation has collected on the plate. Consider skid plate protection for both converter and muffler.

## **Wheels/Tires**

- Check wheels for damage, especially along the rim. Straighten if possible or replace.
- Check tire pressure. Repair leaks. Inflate tires to proper level. Check balance of wheel/tire.
- Replace excessively worn tires.
- Use valve caps.
- Check condition of spare wheels and tires. It's a good idea to have more than one, just in case.

## **Electrical System**

- Check battery condition. Clean terminals, seal with dielectric grease. Have voltage and amperage capacity of battery checked. If low, replace the battery.
- Check output of alternator.
- Examine wiring. Check for worn or melted insulation, shorts, blown fuses. Check condition of plugs and terminals. Make sure ground straps, terminals are clean, and the proper ground is being maintained. Repair or replace. Spray entire electrical system with a waterproofing material.
- Check headlights, auxiliary lights. Aim the lights properly, and be certain each is functioning properly.
- Check taillights and turn signals. Replace failed bulbs.

## **Other**

- Check wiper blades. Fill windshield washer reservoir.
- Check power steering pump and lines for leaks. Check fluid level.
- Remove anything on the winch or its support accessories which may cut or gouge into trees, the ground or limit ground clearance.

***Having your vehicle in top operating condition will help avoid problems on the trail and will help protect the environment.***

## THE TREAD LIGHTLY! SAFETY EQUIPMENT CHECK LIST

Even on a day trip, you should prepare for the unexpected. You may get stuck in an inaccessible location and be forced to stay overnight. Being prepared will keep you safe and sound!

Visit an Army/Navy surplus store or an outdoors supply store. They can be a treasure chest of compact, lightweight survival gear. There are also a number of mail-order outlets and web-sites that supply many of the same items that could be life savers in an emergency.

Some things to look for are: **collapsible shovel, dehydrated food, emergency strobe lights, hatchets, sleeping bags, clothing, hand tools, fuel, "Jerry" gas cans, metal ammunition boxes (make excellent storage cases).**

Below is a suggested list of equipment; you may want to add to it:

### The Basics

- detailed map of the area
- first aid kit
- high-powered flashlight with spare batteries and bulbs
- shovel (folding types are easier to store)
- tow straps - 2" x 30' with loops, not hooks
- tire chains
- ax
- bow saw
- extra food
- water, water filter and purification tablets
- warm clothing
- jumper cables
- portable air compressor, air tank
- extra fan belts
- siphon hose
- fuses
- fire extinguisher
- candle, matches and lighter
- signal mirror

### Tool Kit

- Allen wrench set
- screwdrivers (straight and phillips)
- spark plug socket
- wiring crimpers
- thread locker
- silicone gasket material

- radiator stop-leak
- plastic steel/plastic aluminum

**Hammers**

- small sledge
- claw
- ball-peen

**Socket Set with Extensions**

- 1/4", 3/8", and/or 1/2"

**Wrenches**

- open/closed end box
- adjustable open end  
(crescent: large, medium and small)

**Pliers**

- water pump (channel locks)
- locking jaw
- needle nose
- side cutter
- slip-jaw

**Vehicle Tools**

- star-type lug wrench
- hi-lift jack
- hydraulic jack
- tools specific to your brand of vehicle

**Other**

- plastic tarp for ground cloth
- bailing wire
- duct tape
- electrical wire
- heavy-duty folding knife
- compass
- tire repair kit
- air filter
- oil filter
- oil
- brake fluid
- distributor cap
- cellular phone or C.B. radio for emergencies



**Remember** - if you abuse it, you'll probably lose it! Careless operation of your off-highway vehicle can cause damage and may result in closing of areas to Four Wheel enthusiasts. Respect the environment and other trail users. By using common sense and common courtesy, what is available today will be here to enjoy tomorrow.

*Tread Lightly!*  
&  
*Leave a Good Impression*



## TREAD LIGHTLY! MATERIALS AVAILABLE TO HELP YOU LEAVE A GOOD IMPRESSION

The following materials are available from Tread Lightly!, Inc., 298 24th Street, Suite 325, Ogden, UT 84401 or can be ordered on the Tread Lightly! website at: [www.treadlightly.org](http://www.treadlightly.org) or by calling 1-800-966-9900.

- Tread Lightly! *Guide to Leaving A Good Impression*
- Tread Lightly! *Guide to Responsible Mountain Biking*
- Tread Lightly! *Guide to Responsible ATV Riding*
- Tread Lightly! *Guide to Responsible Snowmobiling*
- Tread Lightly! *Guide to Responsible Trail Biking*
- Tread Lightly! *Guide to Responsible Personal Watercraft Use*
- Tread Lightly! Junior High Curriculum
- Tread Lightly! Science Manual
- "Where the Pavement Ends" video
- Decals – 4-Wheel Drive, ATV, Trail Bike, Hiker, Horseback, Mr. Bike, Snowmobile, X-C Skier
- Apparel – T-Shirts, Polo Shirts, Sport Caps, etc.
- Vehicle Accessories – bumper & reflective stickers, key rings, Tread Lightly! logo decals
- Souvenirs – water bottles, travel mugs, litter bags, pencils
- Advertising Products – IBM and Mac Clip Art Disk, Counter Displays
- Pins – 4-Wheel Drive, ATV, Trail Bike, Hiker, Horseback, Mt. Bike, Snowmobile, X-C Skier
- Outdoor Products – banner, outdoor poster

***Thank you for promoting environmental ethics by  
purchasing and using this booklet.***



## MEMBERSHIP APPLICATION

*Tread Lightly!, Inc.* is a not-for-profit organization dedicated to protecting the great outdoors through education. Your help through membership contributions enables *Tread Lightly!* to continue its educational mission. Become a member today. Individual Memberships can be obtained for a tax-deductible fee of \$20, renewable annually. *Tread Lightly!* offers Individual, Retailer/Outfitter, Dealer and Club memberships. Each category varies in benefits and contribution levels. Upon joining as an Individual Member, you will receive various membership items including a window decal, a product catalog, a copy of *Tread Lightly! "Trails"*, our quarterly newsletter, and tips applicable to your top area of interest. For more information on other membership categories contact *Tread Lightly!*.

### **Individual Membership - \$20 Annual Contribution**

Please rank your top 3 areas of interest in numeric order:

- |   |   |   |
|---|---|---|
| <input type="checkbox"/> Mountain Biking      | <input type="checkbox"/> Camping          | <input type="checkbox"/> Water Recreation |
| <input type="checkbox"/> Hiking/Backpacking   | <input type="checkbox"/> Snowmobiling     | <input type="checkbox"/> Fishing          |
| <input type="checkbox"/> Cross Country Skiing | <input type="checkbox"/> Trail Biking     | <input type="checkbox"/> Four Wheeling    |
| <input type="checkbox"/> ATVing               | <input type="checkbox"/> Horesback Riding | <input type="checkbox"/> Hunting          |
| <input type="checkbox"/> Personal Watercraft  |   |   |

Name (individual) \_\_\_\_\_

Name (business or club name) \_\_\_\_\_

Contact individual for business or club \_\_\_\_\_

Address \_\_\_\_\_

City, State, Zip \_\_\_\_\_

Daytime Telephone \_\_\_\_\_

(Optional) Fax \_\_\_\_\_ e-mail \_\_\_\_\_

Payment Amount \_\_\_\_\_  Check  Money Order  Credit Card

Credit Card Type  Visa  Mastercard  American Express

Card Number \_\_\_\_\_ Exp. Date \_\_\_\_\_

Signature \_\_\_\_\_

**Send mail to:** Tread Lightly!, Inc.  
298 24th Street, Suite 325  
Ogden, Utah 84401

**Fax to:** 801-621-8633  
**Call us at:** 1-800-966-9900  
**See us at:** [www.treadlightly.org](http://www.treadlightly.org)  
**E-mail us at:** [tline@xmission.com](mailto:tline@xmission.com)

Please allow 4 to 6 weeks for the delivery of your *Tread Lightly!* membership package.

## Tread Lightly! Pledge

**T**ravel and recreate with  
minimum impact

**R**espect the environment and  
the rights of others

**E**ducate yourself, plan and  
prepare before you go

**A**llow for future use of the  
outdoors, leave it better than  
you found it

**D**iscover the rewards of  
responsible recreation

tread lightly!®

LEAVING A GOOD IMPRESSION



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