

# Chapter Seventeen

## Conversion and Closure Techniques

Ride Right Today, Ride Again Tomorrow

Constructing an OHV project often involves natural surface roads. Almost every OHV trail project includes these roads to some degree, whether it's using natural surface roads as trails or converting abandoned roads to trails. There are benefits and risks to both, but often it is easier from an environmental analysis standpoint to re-purpose an existing impact rather than create a new one.

Effective closure and rehabilitation techniques are essential to controlling and directing the use and providing resource protection. They are essential tasks when converting natural surface roads to trails. They also allow the managers to demonstrate the effectiveness of the program, which can reap significant political rewards that may garner support for the project, agency, and manager.

### Converting Natural Surface Roads to Trails

A road conversion is not a paper exercise. It is all too common for managers to take a natural surface road, delete it from the road inventory, add it to the trail inventory, put up a sign, and call it a new trail. This is really the first step, but it does nothing to address the inherent issues with roads nor does it address the lack in quality of the recreation experience. Not dealing with those issues will likely result in resource impacts and management problems if not management failure. The second step is to physically transform the road corridor into a natural-looking trail corridor with a fun, flowing trail.

With a little creativity, many natural surface (NS) roads and abandoned railroad grades can be converted into quality trails. Leaving roads as they are and calling them trails results in trails that are too straight, too fast, too boring (too easy), and have poor drainage and poor water management. The objective of a successful conversion is to transform those negatives into positives.

Here are some key points on how to accomplish a successful conversion:

- Determine the operating parameters: what is considered “the road”? Is it the physical road or is it the road right-of-way? The right-of-way is wider than the road and will give designers more options to be creative. If it's the road, then normally that definition should be from the top of the cut to the toe of the fill.
- As with everything else, provide variety. If some segments of the NS road provide a good experience and have sustainable elements, leave them as is and work on other segments.
- In the segments that are left in their current condition on the existing alignment, narrow up the roadbed to the designed trail width, if possible, to reduce the size of the tread watershed.



An excavator places debris and installs logs in a herringbone pattern to close off hillclimbs on a sensitive grassland. Note the hand-seeder and bucket of seed ready for immediate application.



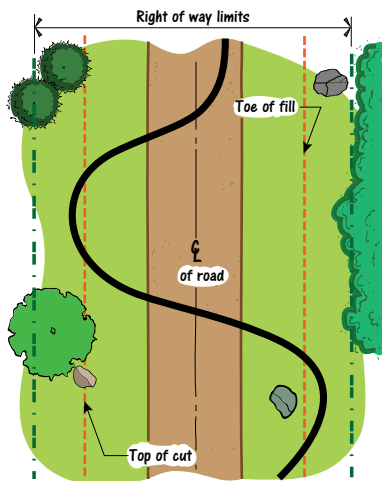
Field trips with stakeholders, media, and agency personnel are an excellent way to document progress on key issues and highlight your successes. They provide real-world perspective and foster communication and trust. The political power of these field trips cannot be overstated.

- To provide horizontal flow, create a serpentine alignment within the road corridor. The degree of sinuosity will depend on the intended difficulty level and the amount of available vegetation and topography to provide screening and relief.



Strategically placing readily available material can produce a significant difference in the horizontal alignment.

- To create vertical flow and roll, take the trail up to the top of the cut and back down or better yet, take it to the top of the cut and down to the toe of the fill if the topography will allow. This provides drainage and reduces the size of the tread watershed. It also provides a roller-coaster effect that increases the fun factor.



Just moving the alignment onto this old berm increases horizontal and vertical flow and provides two drainage points.

- If the NS road prism is flat, a serpentine alignment will still help with drainage by reducing grade and increasing the number of turns. If the NS road has a ditch line, run the trail through the ditch for drainage. If there are no other options, install rolling dips.

#### Converting roads to trails

- Remove culverts in minor drainages and replace them with armored drains. This will reduce potential maintenance problems, provide a drain by dipping down into the channel, make the trail appear more natural, and increase the experience of the rider.



Removing culverts reduces maintenance, restores natural hydrology, provides a dip for trail drainage, and improves aesthetics.



A ditch is being cut along this trail to drain the trail tread and intercept water seeping out of the inside bank. Note that the excavated material is being used to raise the elevation of the trail tread.

- If there is latitude, leave the NS road occasionally to dive into adjacent thickets or rock piles.

A thicket allows the designers to tighten the alignment and reduce speed. Rocks provide an opportunity to increase challenge and variety.

- Drag in rocks, logs, stumps, and brush to help define and protect the integrity of the serpentine design. Transplanting clumps of living vegetation provides a natural-looking barrier. The objective is to break up and disguise the old road corridor as much as possible.
- Seed all disturbed areas, including the new trailbed, with a mix designed for the region. In the east, this may consist of replacing forest duff, which contains seeds and natural mulch for protection, and in the west it usually requires the application of a seed mix. Seeding the trailbed

#### Tip, Trick or Trap?

**Trap:** If road conversion is just a paper exercise, it will likely fail

helps stabilize the soil during the first season, allows rapid establishment of vegetation on any unused (therefore uncompacted) portions of the trailbed, and helps combat invasive species. This will also help the trail appear more natural.

- To provide a good seedbed, rip all unused and unvegetated portions of the old roadbed.
- In the right growing climate, even if no other work is done, just stopping vegetative maintenance will allow brush to start encroaching into the road prism. Usually, just removing full-size vehicle use will eventually allow re-establishment of vegetation in the unused portion of the roadbed.
- Install entrance management structures, signing, and filters as needed.
- An excavator is a versatile tool for conversions since it can build trail, rip and close the old surface, pluck and place stumps and rocks, transplant clumps of living vegetation, and drag in debris.



This road was half-ripped and entrance management was installed to deter full-size vehicles. Nine years later, vegetation has re-established and the road looks like a trail. The landscape is dynamic and it is important for designers to possess long-term vision.



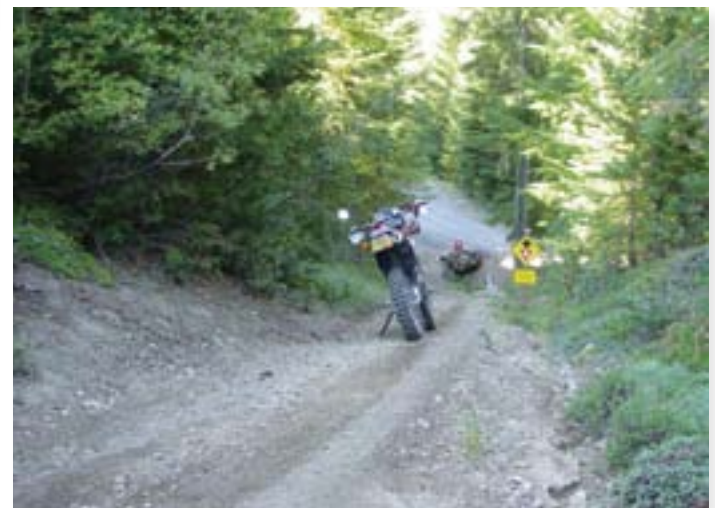
The designer took advantage of this old landing to leave the road corridor to provide sinuosity and drainage.



Here the trail pitches up to the top of the cut bank, around some trees, and then back down again. Though short, it provides diversity for the rider, sinuosity, and drainage.



This is a poor example of road to single track conversion because it's too straight and boring, but it does demonstrate how vegetation will re-establish itself once full-size vehicle use is removed leaving a near-perfect tread width of 12". Unfortunately, most of the vegetation is invasive and the road corridor should have been seeded to help combat this.



Not desirable, but we don't operate in a perfect world. This is a steep road approach and erosion was an issue. To reduce the tread watershed and provide effective drainage, half of the road was converted to a ditch and the excavation was used to raise the grade of the remaining half. Water was diverted off the trail at the top of the hill and a culvert was installed under the road at the bottom of the hill. It's working well and it looks good.

An excavator is a good tool for conversions. Here it is digging a hole to place a strategic rock. Boulders appear more natural and are harder to displace if they are dug into the ground rather than placed on top of the ground.



Rocks define a serpentine corridor which slows the riders before approaching the bridge. In this wet environment, this old road corridor will quickly transform into a great trail.



This road to trail conversion is adjacent to a major trailhead and campground and the kiddies kept riding the ripped up portion. We finally installed these juniper posts to deter that activity and they worked. Utilize the 4E's to implement, evaluate, and adjust as necessary.

Nothing was done to this road except remove the full-size vehicle use and stop vegetative maintenance. In this good growing environment, it has quickly converted to trail width complete with leg slappers. It would have been better to have a serpentine alignment, but at least in this segment, the road corridor is obscured.



One nice thing about a roadbed is that it can provide a wide platform to accommodate creative design. This feature provides drainage, but it also provides three approach lines and three different experiences. If more native rock had been available, three levels of technical challenge could have been provided also.



This is a poor conversion of a road to a trail. The road goes right up the bottom of this draw, the fall line, and there is no drainage for ½ mile. Though the grade is low, there has been enough erosion for the trail tread to have dropped more than 2 feet in 15 years. This will continue unless the trail is relocated out of the draw. With this gentle topography, a serpentine trail crossing to both sides of the draw would have been far more sustainable and fun.



It isn't pretty, but stumps were available and the price was right. In a dry environment, it becomes more difficult to define and produce a serpentine alignment.

### Tip, Trick or Trap?

**Tip:** Ensure that the use pattern has been successfully changed before investing in expensive rehabilitation treatments like transplanting or native seed mixes

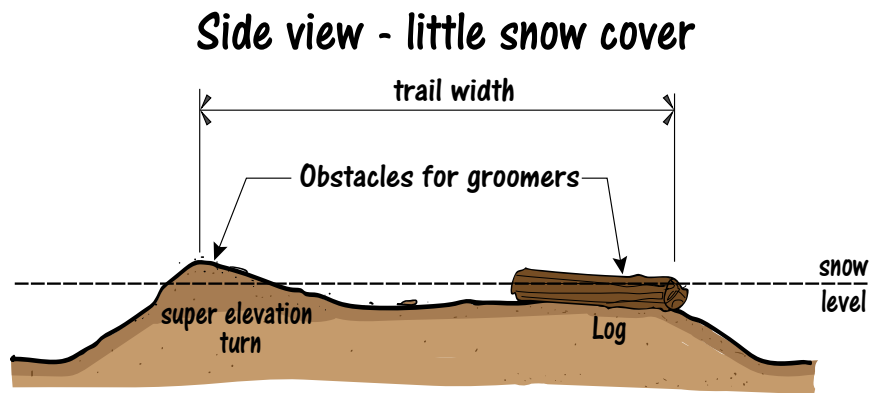


This is great use of an old roadbed and a good example of techniques to reduce the size of the tread watershed. Half of the old road has been turned into a ditch to lead water into the culvert. Then the designer pitched up onto the cut bank to create a grade reversal which also added flow. Excess road width on the left side was removed (arrow) and used as fill to build a bench for the trail on the old cutbank.

## Using Snowmobile Routes and Trails as OHV Trails

Because they are existing infrastructure, there is a temptation to use snowmobile trails as multi-season trails. There are pros and cons to using snowmobile routes and trails that the managers must evaluate to make an informed decision.

**Routes.** Many snowmobile trails utilize existing roads. If that is the case, then the normal road risks need to be considered: too flat, too straight, too fast, too boring, poor drainage, and large tread watersheds. Because most snowmobile trails are groomed, the ability to convert a snowmobile trail to an OHV trail is normally limited. Snowmobile groomers are not able to make as sharp or tight turns as an OHV. In areas with marginal snow depths, the groomers will not lay down a trail that will cover up superelevated turns or other obstacles in the OHV trail.



**Trails.** If the snowmobile trail is an actual trail and not a route, then there is another set of considerations:

- Since snowmobiles operate over frozen ground, the trail may cross over surfaces that are not sustainable or available when the ground is not frozen. These can include wet areas, farm fields, or drainage ditches. Prior to opening a winter trail to summer motorized use, the trail tread must be reviewed during spring or wet conditions to verify its sustainability.
- To hold snow, snowmobile trails are often located in draws to provide shade. This works for winter use, but in the summer, those draws can be water courses with soil, riparian vegetation, and wildlife concerns.
- To hold snow, snowmobile trails are often located on north-facing slopes. These slopes may have water issues in the summer.
- Snowmobile trails are not usually designed for wheeled vehicles. A snowmobile trail goes over the ground and, for the most part, stumps and groundcover vegetation are not disturbed. An OHV trail lies on or in the ground. Snowmobile moguls get groomed out, but OHV ruts will channel water.
- Because they are groomed, snowmobile trails will have a wider corridor and flatter horizontal and vertical curves. This can compromise the trail experience and decrease challenge and flow.
- Drainage is normally less of an issue on snowmobile trails, so there can be long, steep grades and large tread watersheds that will be detrimental and not sustainable for an OHV trail.



The trailhead for this OHV trail is a snowmobile parking lot and access limitations forced co-location of the trails. A serpentine OHV trail meanders down this snowmobile trail corridor and it works well at this site. In 5 years, the Yield Ahead sign has not been hit by the groomer, but note how the Yield symbol has faded.

If the decision is to use a groomed snowmobile trail, then managers and designers can incorporate the same techniques described for natural surface road to trail conversions, but on a conservative scale. Whatever is done must not hinder grooming operations, including OHV trail signing. If winter signing is not applicable to summer use, then those signs should be covered or replaced with multi-use signs or changed to fit the season.

## Effective Closure and Rehabilitation Techniques

There are political benefits of effective trail closure and rehabilitation. Past impacts need to be rectified to ensure future use. Although riders tend to see closure as a negative, a loss of riding opportunity whether it was good or bad, closures are usually a necessity for effective OHV management. The goal for an effective closure is to plan it and implement it so it changes from a lose-win to a win-win scenario.

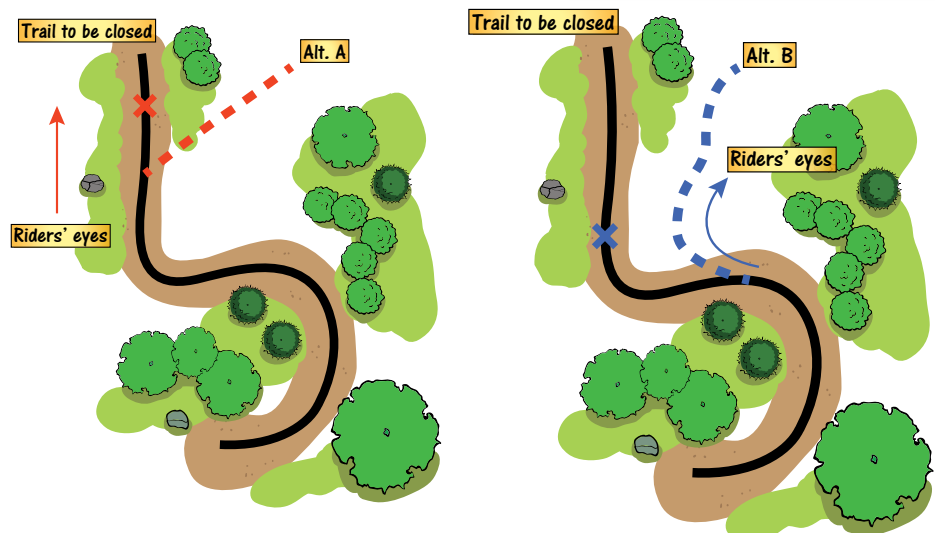
Whether closing a trail, trail segment, road, or area, the closure and subsequent rehabilitation process is essentially the same. To determine the best closure strategy, consider the intensity of use (high versus low), duration of use (historic versus recent), proximity to high traffic areas (trail-heads, staging areas, destinations), visibility (who can see it, from how many vantage points, from how far away?), growing climate (wet versus arid), political climate (risk to public safety, agency risk, risk to resources to be protected), and management history (new program versus established program, good versus poor compliance or success).

Below are the nine steps to success. Not all of these steps have to be implemented, but the chances of success will increase with an increase in the number of steps taken.

**1. Provide an alternate route.** Before starting closure and rehabilitation work, it is essential that the existing use is redirected.

The best way to accomplish that is by:

- Providing an alternative route that still connects Point A to Point B, if possible;
- If circumvention is not possible, providing an attractive route(s) someplace else;
- Ensuring that any new trail is of a higher quality (longer, more fun, more challenging) than the one being closed; and
- Informing the riders of these changes before starting the closure process.



Directing the riders' eyes away from the old road to the new trail alignment is key for increases compliance.

### Tip, Trick or Trap?

**Tip:** Avoid closing one trail before opening another

The key point is to not close a trail before opening another route and to try to give riders something more than they lost. When riders realize that they can still get to where they want to go or have a new higher quality opportunity, compliance with the closure will significantly increase.

**2. Manage the riders' eyes.** If managers don't want the riders to go somewhere, avoid focusing their eyes on that location. This is especially important for closures and rehabilitation. Focus the riders' eyes away from the corridor to be closed so the closure will be more effective.

**3. Restore natural drainage patterns.** If the trail to be closed is a fall line trail, water will run down it and not in the natural drainageways. Install lead-off ditches to intercept this water and direct it back into the natural drainage course.

**4. Install erosion control.** Controlling water volume and velocity is essential to effective closure and rehabilitation. Erosion control structures need to be installed to heal the impacts of past erosion and reduce the potential for future erosion.

Here are some considerations for erosion control methods:

- In deeper trenches, install check dams to help divert water into the lead-off ditches above.
- Between ditches or if ditches are not required, installing check dams in the trench at regular intervals will decrease the velocity of the water and allow it to drop its sediment load. The sediment provides a seedbed to aid in the re-establishment of vegetation. Eventually, the sediment will build up and help stabilize the sides of the trench.
- Check dams are normally made of logs or rocks, but sandbags and hay bales also work well. They are more temporary, but they usually last long enough for vegetation to get re-established.
- If check dams are not required, install soil, rock, or log waterbars at regular intervals.
- Placing logs or rocks in a herringbone pattern works well to control water and stabilize the erosion process. Using sandbags, hay bales, or straw wattles works well if native material is not available.
- Even just throwing woody debris into the trench will help.
- Placing logs at an angle across hillclimbs will serve as waterbars and help deter use.
- For roads, remove culverts and restore natural drainage channels.



Steep, unstable ground forced the trail to stay on the existing roadbed, but the designer has created a nice sinuous flow. Ripping the unused portion of the road increases water absorption and decreases the tread watershed.

**5. Rip or scarify.** Scarifying is scratching the surface and ripping is gouging the soil 12 to 18 inches deep. The goal is to break up the compacted soil to make it a good seedbed and to increase the soil's capacity to absorb water. Whether to rip or scarify depends on the soil type and depth of compaction. Whichever method is used, it is best to rip in a sinuous line rather than a straight line. This is accomplished by alternately locking one track and then the other. The "S" pattern improves the aesthetics of the product, loosens the soil better, produces smaller clumps of soil, reduces the potential flow of water down the ruts, and often drags in vegetation and debris from the sides of the road or trail.



It was a struggle to revegetate this road corridor. Seed was tried first and failed. Next transplanting was done and it failed also. Finally, a wildfire burned it and the next spring, it looked great.

**6. Disguise the corridor.** This involves dragging in rocks, brush, stumps, logs, and clumps of vegetation to break up the line of the old corridor and visually disguise it. At a minimum, this is done as far as the eye can see at the termini of the closure. But if the trail can be seen from other vantage points, then the whole length of the closure needs to be treated. As in road conversions, an excavator is a good tool to quickly accomplish this work. Don't go overboard with falling trees or piling brush to block the corridor. The goal is to make the corridor look natural and a mass of jackstrawed trees can actually draw attention to the corridor. That being said, it can be difficult to close and disguise a corridor that has been used traditionally by wildlife or livestock. In these cases, fencing or heavier debris placement is needed to discourage use.



Depending on the tree species and size (juniper works well), consider creating living barriers by making a backcut only and carefully pushing the tree over so it remains attached to the stump. The tree will stay green and provide more of a visual barrier to disguise the corridor, and a tree that is attached to the stump is much harder to move out of the way.

**7. Re-establish vegetation.** In most places, this is best done in the fall so the seed can germinate with the warmth and moisture of the spring; however, it is also best to seed or replace forest duff immediately after the ripping or scarifying. Some soils can form a crust that can inhibit the penetration of the seed into the soil and reduce germination success. Transplanting clumps of vegetation with the roots intact can provide an instant visual barrier that will last.

In some regions, seed doesn't take well and there can often be better success by transplanting native vegetation. This can be labor-intensive and expensive, but it can also make a great volunteer project.

Consult with a specialist to determine the best seed mix for the climate and region or if native seed mixes are required. If it is unclear if the use pattern has been changed, then seed with a quick-growing annual seed. This will supply the needed visual effect and soil stabilization in the short term until the more expensive treatments can be applied for the long term.

Fires can be devastating, but their heat releases seeds that have been buried dormant in the soil for years. That's why burned areas are so green the following spring. Fire can be a good tool to establish vegetation in difficult areas and to help hide visual scars on open slopes.

Adding straw or other mulch on top of the seed helps protect the seed from displacement during weather events and fosters germination by providing a cooler and wetter microclimate.

**8. Install signing and barriers.** Sometimes just the disguising will be enough to deter use, but signing and barriers are often needed for a site that is highly visible or has had a high level of traditional use. Sometimes a sign can be installed first and if that doesn't work, then back it up with a barrier. A good sign explains the closure, the reasoning for the closure, and redirects the riders to the new routes.

Here are some thoughts regarding signing and barriers:

- Always install the sign in the middle of the trail to be closed, not off to the side. The sign makes more of a statement and more of a barrier when placed in the middle of the trail.
- Whenever possible, drag in a log, brush, or even sticks and place them directly behind the sign. Though small, this creates an additional visual barrier, but more importantly it helps in managing the riders' eyes, which are usually scanning for the path of least resistance. A simple stick can turn the riders' attention elsewhere.
- Signing that explains the rationale for the closure can increase its effectiveness.
- It takes more time and money, but a manmade barrier is more effective at deterring use than natural debris. A tree can fall down and riders are used to seeing natural debris. When a conscious effort is made to install a barrier, it makes a stronger statement both visually and psychologically.
- Put debris behind a sign and a barrier in front of the sign.
- Barriers send a message, but they don't need to be a physical deterrent. Often a simple low barrier is equally effective and less visually intrusive than a multi-rail fence.
- Do not use tank traps as a barrier when closing roads. Ripping and debris are more effective and reduce agency risk.



The living barrier is a great technique for a well-anchored, long-term visual obstruction. No undercut and the backcut is only deep enough to be able to push the tree over.

- Rarely does installing only a sign alone work. Back up the sign with ripping, debris, or barriers.
- Don't invite failure or risk. Never install a fence or barrier across a trail that has not been ripped, blocked, and signed as closed.

9. **Utilize the 4Es.** Effective application of the 4Es is essential to the success of any closure effort.

Some key points are:

- Engineering is used in the design and placement of erosion control structures. It is also used in the design of the signing and barriers. Opening another, nearby route that is designed before the trail is closed will increase compliance.
- Educate the riders. Use posters on the kiosk; place notices in club newsletters, the media, the agency or trail system website; or use social media to inform riders of the closure and why the trail is being closed. They may not agree with it, but compliance will be better if they understand the rationale behind the closure.
- In some situations, enforcement may be needed, but again effective engineering and education will reduce the need for enforcement.
- Evaluation is critical. The site must be monitored for effectiveness and any breaches or missing signs must be fixed immediately. People sometimes initially push back, but persistence by the agency will usually squash that quickly since most people have better things to do. When dealing with the public, nothing is ever 100 percent guaranteed.
- Make necessary adjustments. As compliance is ensured and the vegetation is becoming established, consider removing the signs and then the barriers to avoid drawing attention to the site.
- Finally, document successes. What method(s) worked the best? Take before, during, and after photos. They can be a valuable tool to garner political support and to help ensure the acceptance and success of future actions. Conduct field trips with stakeholders, media, and agency personnel to highlight the management successes.

Expect setbacks, but use the 4Es to determine the cause and beef up the engineering, education, or enforcement to correct them.



An example of poor sign placement. Granted no one will run over this sign since it's protected by the tree, but with no ripping, disguising, or barrier, this closure is totally ineffective.



If the ATV wasn't in the picture, one would wonder which trail is closed, or maybe both are open and the sign means no cross-country travel. This sign fails to clearly communicate the intent of management.



This was a high-use, historic trail that went through several sensitive plant populations. A by-pass trail was constructed and in four years, there was only one breach which happened immediately after the closure. There was a Trail Closed sign, but the botanist recommended taking it down since the trail was healing up so well. A few years later, the barrier was removed as well. The small bitterbrush plants in the foreground were transplanted by hand.



An excavator has just finished scarifying, adding drainage, and scattering debris. The project manager followed by taking down stakes and flagging and seeding all disturbed areas.

This is the same site nine months later with 100% compliance. A good example of effective rehab and closure.



These are good, simple signs that are effective and to the point.



This is a sandy site that had been rehabbed two years earlier. The soil is stable and vegetation is starting to re-establish. The "path" on the outer edge of the trail has been made by cows. This will deter the revegetation and water may eventually run down that path. Rider compliance has been 100%.



It appears that use has been eliminated on this well-disguised road and the revegetation is well on its way. Depending on where the riders' eyes are focused, it may be time to consider taking down the sign since it is now drawing attention to a site that is pretty well camouflaged.



There are risks of using tank traps for closures. They make a poor closure device and invite failure. Once again, the road leading up to the structure and beyond it was not ripped or blocked. This road is adjacent to a subdivision where residents wanted OHV access to the forest. Converting this road to a trail may have been a better management strategy than trying to close it. When possible, work with human nature rather than against it.



Managing OHV use in the desert can be tough since it's physically possible to ride almost anywhere. Here, riders were short-cutting a curve in the trail, but after placing a simple row of rocks as a visual deterrent, there are no tracks on the short-cut. No signs and no expensive barriers were needed to change the use pattern.



Just above this site, a ditch was installed to direct water into the natural drainageway. Check dams were installed in the trench near an equipment access point. Woody debris was placed in a herringbone pattern between check dams. The treatment was a little overboard, but the political sensitivity was very high. The far left photo is how the area looked on the day of treatment. The left photo was taken two weeks later.



The woody debris effectively manages the riders' eyes at this site, but the signs give a mixed message. The area is closed, so stay on the closed trail? Stay on Trail or Stay Home should be used as an education sign on an open trail, not a closed one.



This low, simple barrier and some Area Closed signs have effectively protected this pumice flat with several populations of sensitive plants.



Review the considerations for developing a closure strategy. Obviously, just putting up a sign and a fence which is now cut was not adequate. Without an alternate route, trying to close a trail that appears open is difficult without ripping and blocking. The riders get blamed for these breaches, but poor management is equally at fault.



This is a good example of what not to do. Obviously, there had been an issue with OHVs riding through the creek, but a well-designed fence or barrier directing riders to the bridge would be far more effective and visually appealing than this clutter.



Before and five years later. Once a hot-bed of controversy, a major trail ran through this stream that feeds a community water supply. The access trail was effectively closed and rehabbed and the site has totally recovered. WOW. This book is about great trails, but a great trail is a package that includes not only the trail, but the successful management of the trail and the area around it.



Once in the dense trees all of these hill-climbs have been effectively blocked and rehabbed, but a lack of funding has prevented further work at this site adjacent to a prior staging area. The sign alone is ineffective and look at the amount of sedimentation. In an area dominated by OHV management success, this highly visible site gives the impression of failure and sends the wrong message to visitors on their way to the new trailhead.



This section of road has been effectively closed and around the corner, the rest of the road has been converted to a trail. Leaving the road marker here only invites a breach by a full-size vehicle.



Some areas require intensive techniques, but with the proper funding, materials, and expertise, successful closure and rehab can be achieved.



This more formidable barrier was destined for failure due to improper and ineffective closure techniques.

## A Look Back...

Here are some of the elements discussed in this chapter:

- There are benefits and risks in converting roads to trails. If done properly, the risks are minimized and the benefits are maximized.
- Effectively converting a road to a great trail requires creativity and vision.
- The versatility of an excavator makes it a good machine for both conversion and closure.
- Before considering using snowmobile trails as OHV trails, understand the site and the risks to make an informed decision.
- Successful closure and rehabilitation techniques are essential to controlling and directing the use and providing resource protection.
- By demonstrating adept OHV management, there can be political benefits that can bolster project support.
- Effective closure includes implementing as many of the following steps as possible in a given situation:
  - Provide an alternative route. Avoid closing one trail before opening another.
  - Manage the riders' eyes.
  - Restore natural drainage patterns.
  - Install erosion control.
  - Rip or scarify.
  - Disguise the corridor.
  - Incorporate effective measures to revegetate the site (seeding, transplanting, burning, spreading forest litter, etc.).
  - Install signing and barriers. Do not install a fence across a trail that has not been ripped or blocked.
  - Utilize the 4Es.
- A great trail is a package; it's a composition of elements that includes not just the trail, but the successful management of the trail and the area around it.