

**SUBJECT:** Northern Highland - American Legion State Forest ATV Trail Alternatives and Recommendation

**FOR:** APRIL BOARD MEETING

**TO BE PRESENTED BY:** Paul DeLong and Steve Petersen

**SUMMARY:**

The purpose of this agenda item is to provide a recommendation on the All Terrain Vehicle (ATV) trail alternatives for the Northern Highland - American Legion (NHAL) State Forest.

Over the last several years, the Department has worked with interested stakeholders and the general public to assess the opportunities and merits of establishing ATV opportunities on the NHAL State Forest. The current master plan for the NHAL was approved in 2005, with a directive to evaluate whether, and if so, where, one or more ATV trails might be established on the NHAL. The 2005 master plan requires the Department to conduct an analysis of potential ATV trail considering their ecological, economic, and social impacts.

In February, 2008, the Department shared the findings of a feasibility/suitability assessment for two potential trail alternatives. Public comments received on this assessment were also shared. This information was then presented to the Natural Resources Board as an informational item in February, 2008. Since that time, several questions have been raised by interested stakeholders. These questions are addressed in the attached materials, and primarily focus on trail design, construction standards, and associated costs.

**RECOMMENDATION:** The Department recommends no trails be developed on the NHAL State Forest.

**LIST OF ATTACHED MATERIALS:**

- |    |                                     |   |     |                                     |          |
|----|-------------------------------------|---|-----|-------------------------------------|----------|
| No | <input checked="" type="checkbox"/> | Fiscal Estimate Required                              | Yes | <input type="checkbox"/>            | Attached |
| No | <input checked="" type="checkbox"/> | Environmental Assessment or Impact Statement Required | Yes | <input type="checkbox"/>            | Attached |
| No | <input type="checkbox"/>            | Background Memo                                       | Yes | <input checked="" type="checkbox"/> | Attached |

**APPROVED:**

Bob Mather

Bureau Director

Paul DeLong  
/s/

Administrator

Secretary, Matt Frank

cc: Laurie J. Ross - AD/5

4/9/08

Date

4/9/08

Date

4/11/08

Date

DATE: April 11, 2008

TO: Natural Resources Board Members

FROM: Secretary Matt Frank

SUBJECT: Northern Highland – American Legion State Forest ATV Trail Alternatives Recommendation

For the last several years, the Department has engaged stakeholders and the broader public in assessing both the opportunities for, and merits of, establishing ATV opportunities on the Northern Highland – American Legion (NHAL) State Forest. The current master plan for the NHAL was approved in 2005, with a directive to evaluate whether, and if so where, one or more ATV trails might be established on the NHAL, recognizing the high level of controversy about this issue. The 2005 NHAL master plan requires the Department to evaluate potential appropriate locations for ATV trails, considering their ecological, economic, and social impacts. Although ATV use is authorized in the master plan on designated trails, no trails were designated in the plan, recognizing that a significant amount of work was needed to assess where, if anyplace, ATV trails would be well suited for the property.

In February of 2008, we provided you with information on the Department's feasibility/suitability assessment for the trail alternatives, as well as information collected during the Stakeholder process and the public involvement that followed. We have made several revisions to the report to address questions that have arisen since the February meeting, including the status of the ATV account, and a more detailed assessment of estimated trail costs. Further, we will outline our recommendation and the underlying rationale.

## I. Property Description

The NHAL is located in north-central Wisconsin in Vilas, Oneida, and Iron counties. The NHAL State Forest is Wisconsin's largest state-owned property at 230,000 acres. The NHAL is used heavily for a wide range of recreation uses. The property hosts over two million visitors each year who come to enjoy the area's natural resources and scenic beauty. The NHAL is known for its high quality water resources, with over 900 lakes and 300 miles of rivers and streams contained within the property boundary. In the summer, you can find visitors hiking, biking, boating and camping in the many well-developed recreational areas, as well as in more remote areas. The property's many recreation amenities and large land base make the NHAL one of the most sought after nature-based recreation destinations in the state. The NHAL does not currently have any designated trails for the use of ATVs, but it does host one of the highest concentrations of winter snowmobile trails in the state. Almost half of the land within the region is publicly owned in national, state, and county forests.

In addition to its recreational amenities, the NHAL also supports a diverse range of cover types and habitats. The property contains a high concentration of forested and unforest wetlands and water features, with lakes and streams covering 12% of the property, and wetlands covering an additional 17%. These unique features provide habitat for a variety of fish, birds, insects, and plants, including 14 threatened or endangered species and 79 rare species.

## II. ATV Trail Alternative Summary

### Oneida/Vilas Alternative

This trail alternative is 49 miles in length (25 miles in Oneida County and 24 in Vilas County). It is a linear trail system with two sub-options to connect to local services. The trail starts south of Lake Tomahawk, and connects to Star Lake with access to St. Germain and Sayner. The trail is generally located on existing state forest roads and/or snowmobile trails.

### Iron County Alternative *There are 2 options in Iron County*

**Option A:** This trail is 18 miles in length and connects to the existing Iron County ATV trail network and town road ATV routes. About half the miles are on existing town roads, with 4 miles on state forest.

**Option B:** This trail is 11.6 miles in length, with 2.4 miles on existing town roads and 5.7 miles on existing snowmobile trail in state forest. A portion of the trail for this option (5.2 miles) is shared with option A above, with 1 mile on State Forest.

## III. Public Involvement

Public involvement in developing the trail alternatives process for the NHAL has been extensive over the past two years. It has involved 18 stakeholders' meetings, and numerous meetings with local and county governments, tribal representatives, cooperating agencies, interested organizations, and individuals. The Department engaged the public in the process of evaluating trail alternatives by sharing the results of the stakeholders' work and hosting three public information and input sessions. Over 2,500 comments were received on the trail alternatives. The Department has communicated and involved participants through progress reports, press releases, interviews, and a dedicated ATV trail alternative web site.

## IV. Tribal Consultation

The Department worked with the tribes from the very start of the project to determine a consultation process. This process included meetings with tribal representatives, tribal public meetings, and formal presentations with the Voigt Task Force and Lac du Flambeau Tribal Council. The Voigt Task Force asked the Lac du Flambeau Tribe to be the consultation mechanism, which the tribe agreed to. The Lac du Flambeau Tribe is not expected to provide formal comments on this issue to the Department or the NRB.

## V. Feasibility/Suitability Conclusions

In February 2008, we shared the "NHAL ATV Trail Alternatives Feasibility/Suitability Assessment," an assessment that considered the range of ecological, economic, and social considerations for each trail alternative. Because of the NHAL's complex ecological conditions, a well-developed existing recreational base, and the level of private in-holdings and public interest in the property, the identification of potential sustainable ATV trails on the property has been a challenge. A significant finding of the feasibility/suitability assessment is the fact that ATV use cannot be sustained on either trail alternative in present trail conditions, except on some town roads. Substantial improvements, some with significant costs, would be necessary to avoid, minimize, and mitigate environmental and social impacts stemming from summer ATV use. The two trail alternatives have opportunities and challenges associated with each. Below are the most significant findings from the Department's feasibility/suitability assessment, as well as the reasoning for the recommendations.

***Conclusions on the Oneida/Vilas Trail Alternative:***

The Department recognizes that the trail identified in this alternative is located, to the extent possible, in upland areas on existing forest roads and snowmobile trails. This placement is intended to reduce impacts and minimize the number of wetland and water crossings, which were identified as a primary concern and challenge for any trail in the NHAL. Given the fact that the property has a high number of dispersed lakes, wetlands, and streams, finding locations that did not cross wetlands or streams was extremely challenging. A majority of the trail is located on existing snowmobile trails, or existing forest roads open to licensed motor vehicles. This placement presents both opportunities and challenges. By using existing trails and roads, the trail's "footprint" is already in place; however the footprint is currently developed for a low level of use and would require upgrades to support the addition of ATVs.

At six miles, the extent of the trail that passes through designated native community management areas is relatively small. The trail borders two designated State Natural Areas.

Existing and planned recreation areas are plentiful and widely distributed on the NHAL. ATV trail compatibility with existing recreation use is a major element that needs consideration. Trail location was weighed against existing uses and impacts (water crossings, existing infrastructure, high conservation value forests, etc). Developed recreation areas were avoided to the extent possible, but in some instances could not be completely avoided. The proposed trail location is in close proximity to a number of notable recreation developments where conflicts with other recreation users would be highly likely to occur. Potential areas of conflict include a paved bike trail near Sayner, three rustic campgrounds, and a complex of wild lakes known as the Bittersweet-Prong Recreation Area.

A notable attribute of the Oneida/Vilas trail alternative is the linear nature of the trail. As a linear "dead-end" trail it does not connect to any existing trails outside the property, and there are limited options and no plans in the immediate future to connect the trail with other existing systems.

Although the proposed trail is linear in nature, it provides 49 miles of riding opportunities—long enough that the trail may be a destination point in itself and allow for a full day or two of riding opportunities. The trail is anchored by communities at the north and south, as well as access to a community in the middle, all of which offer a range of services. Additional desirable nature-based destination points are numerous along the trail.

Land ownership is a critical factor when determining trail use. The NHAL has 98,000 acres of private ownership within the state forest boundary. Although the entire trail segment is located on state-owned land, this trail alternative is in close proximity to scattered private in-holdings and more developed residential communities (Lake Tomahawk, St. Germain, Sayner, and Star Lake). In order to stay off private land the proposed trail has a large number of road crossings including five on State Highway 47. For this reason, safety issues could be a concern on the trail during the summer season.

The principle environmental concern for the Oneida/Vilas trail alternative is the potential impacts to wetlands, lakes, and streams that may occur as a result of trail construction and use. This alternative would require significant trail development including building up, "crowning" existing trail surfaces, and the construction of a number of bridges and boardwalks for wetland crossings. This alternative has 16 water crossings covering 2.4 miles, many of which are existing, but will require improvements. The largest wetland crossings (over 1,400 feet each) are on the north end of the trail and the far south end of the trail. These wetlands are very large and deep, with mucky organic soils.

A large portion of the Oneida/Vilas trail alternative is currently open to licensed vehicles used commonly for hunting access. The stakeholder group recommended this use continue. Given the desire for "dual use" (ATV and licensed vehicles) on a portion of the trail, the existing forest road would need to be built to standards to support both vehicles and ATVs. Wisconsin's ATV Association has indicated that a dual

use trail does not always meet the typical ATV user preference for a narrow trail providing a more intimate riding experience. For the portions of the trail alternative that do not currently have existing vehicle use the trail would be designed to support two-way ATV traffic only (typically a 10-12 foot wide primary trail tread versus a 16 foot wide base on the dual use portion). In addition, the majority of the trail is also designated for snowmobile use. For this reason, the trail tread must be wide enough to support snowmobile groomers, typically 12 feet wide. In many sections of the trail there is an opportunity to enhance the snowmobile network through trail improvements, including new bridge crossings.

Development standards directly affect associated cost estimates. The Department is committed to providing sustainable trails using appropriate standards. The Department's ATV Design Standards are attached for your review. Cost estimates for any trail alternative are very challenging to generate at this phase of the project. The scope of the project at this stage dictates a very "broad brush" approach to design and estimation based on many generalizations and assumptions. Cost estimates are organized to provide as much specific and accurate information as possible and to provide the basis for informed decisions on the relative merits of the alternatives.

The major development types that would need to occur with this trail alternative include trail tread development and bridge and boardwalk infrastructure. Although many portions of the existing forest road have been previously modified by adding fill to accommodate minimal vehicle traffic, increased use would require additional improvements, primarily creating a raised tread to control water and provide a solid trail base. The two major wetland crossings would require significant boardwalk to mitigate wetland impacts. The deep, long, and organic soils of the wetlands require high construction standards to qualify for the required permit, most likely requiring piling supported structures, versus "puncheon" structures (floating bridge-like crossings). The two major wetland crossings in this trail alternative (over 1400 feet each) are estimated to cost between \$2 - \$4 million. Three bridges would be required for a total cost range of approximately \$750,000 to \$1 million.

Trail tread and general trail design standards have raised many questions. Independent of the final design, the trail would need to be improved to accommodate additional uses consisting of only ATV use on some trail segments, and both ATV and existing vehicle use on other segments. Some portions of the trail may have different trail tread design standards, primarily trail width, because not all sections would need to support multiple uses. The range of cost estimates for trail tread improvements are between \$6,000 and \$35,000 per mile for this alternative for a total cost range of \$352,000 to \$2 million.

Total cost estimates, including bridges, boardwalks and trail tread, for the Vilas / Oneida trail are between approximately \$3 million and \$6 million (approximately \$60,000 to \$120,000 per mile).

ATV users have expressed concern that a wider than average trail tread supporting multi use is not desirable from a user experience standpoint, and may cause unintended safety issues. In addition, a wider trail has a larger footprint than the existing forest road. The existing footprint of the forest road limits the trail route options but improvements would need to occur to support increased use, and at times, shared use.

The economic impacts to local communities that may come about as a result of this proposed trail are difficult to determine and appear mixed. Some positive economic impacts to local businesses are expected, but these may come at the expense of displacing other users, which may negatively impact different local businesses.

Public support for the trail is generally low, with the majority of local residents and businesses not in favor of the trail. On the other hand, many statewide ATV users and other public land agencies currently providing ATV trails are in favor of the trail, as were some private landowners, businesses, and local

communities. Although the majority of those commenting opposed both trail alternatives, the Oneida/Vilas alternative is compounded by the strong opposition to ATV trails within Vilas County.

***Conclusions on the Iron County Alternative:***

The Iron County trail alternative has many of the same opportunities and challenges as the Oneida/Vilas trail alternative, but is unique in other aspects. Both Iron County options connect to an existing trail network. One option would create an additional loop connected to the east end of the existing Iron County network (over 200 miles), providing additional access points and riding opportunities on an already well-used trail system. The second option does not connect two separate trail systems; it merely extends an existing system with an additional loop.

The Iron County alternative is located on lands and roads owned and maintained by multiple units of government, including the county, towns, and the state, as well as on private property. It is important to note that this trail proposal relies on local towns to continue to support the designation of their roads as ATV routes. Loss of these designated routes would necessitate significant additional expense, as the NHAL would need to build alternative trails across wetlands if the trail were to remain linked to the existing trail system in Iron County.

**Option A (18.5 miles)** Approximately 85% of the trail would be located on existing infrastructure with raised roads owned and maintained by the towns. There are few private inholdings along the proposed trail, so impacts to local residents and communities are much lower than the Oneida/Vilas alternative.

The trail is located in the far northwest portion of the state forest, away from the most intensively used areas of the property. Existing recreation use in this area is generally lower than the rest of the forest, with very few developments. The two most significant recreational uses likely to be impacted by this trail are an existing rustic campground and river users on the Manitowish River. The trail would cross the Manitowish River, a designated Scenic Management Area, in two places. This crossing may impact the experience of river users, though it should be noted that the river in this location runs very close and parallel to State Highway 51. The ATV trail would cross Highway 51 in two locations, both with some level of existing infrastructure.

The portions of the trail that are adjacent to State Natural Areas would be located on existing town roads.

Trail development structures are complex and numerous in this option, including six bridges, seven boardwalks. In addition, 5.8 miles of trail tread would also need to be constructed. Total estimated costs for this option are between \$1.8 million to \$3.8 million (\$320,000 to \$650,000 per mile).

**Option B (11.6 miles)** shares 5.2 miles of trail with Option A, but includes 2.4 miles of trail on town road and 3.7 miles on state forest trails currently designated for snowmobile use only. The designated snowmobile trail is located in the peatlands area, with a number of wetland and water crossings. This alternative does not affect existing recreation uses to the degree that option A does, and does not cross the same level of private in-holdings. However, it crosses a long stretch of ecologically sensitive wetlands, which would necessitate constructing a significant amount of infrastructure to assure trail sustainability. Two significant wetlands crossings, which are very deep and long (3,250 feet), would require boardwalk at an estimated costs of \$2.1 million to \$3.9 million. The total cost range for this trail alternative is between \$2.7 million and \$5.1 million (\$540,000 to \$1 million per mile).

## **VI. Recommendation**

The NHAL ATV stakeholder's group, formed following the completion of the NHAL Master Plan, worked very hard for over a year to find locations suited to ATVs in light of ecological, economic and social factors. Their job was not an easy one, particularly given the amount of water, wetlands, private in-holdings and existing public use on the property. As a result, they eliminated a significant portion of the property that did not meet the necessary criteria or had other limitations. Even the two trails they forwarded for further consideration are not without significant challenges.

The public has demonstrated through this process that they care deeply about the NHAL State Forest. The public is strongly divided with respect to ATV recreation on public lands, particularly where ATV trails are not already established. Establishing either of the trails as presented would displace current users to some degree, and change the character of that portion of the property.

Given the level of existing use in the area that would be affected by the Oneida/Vilas trail, and the very strong opposition to ATVs on public land in this area of the forest, particularly in Vilas County, the Department recommends to the Board that the Oneida/Vilas trail alternative not be considered further.

The Iron County trail is similar in many ways to the Oneida/Vilas trail alternative, though there are a few notable differences. This area of the forest is somewhat better suited to accommodate ATVs from a social standpoint, with the proximity of existing trails, the overall receptivity of Iron County and its affected towns, and the lower level of overall recreational activity compared to other portions of the NHAL State Forest.

On the other hand, the Department is concerned about the potential for adverse ecological impact from the development of this trail, the high cost per mile to develop it, and the on-going maintenance and enforcement challenges that would result. On balance, the Department believes the negatives outweigh the positives on this trail alternative as well. As a result, the Department recommends to the Board that neither Iron County trail option be considered further.

The Department's recommendation should in no way be interpreted as a lack of support by the agency for the development of sustainable ATV trails. As the manager of ATV trails on state properties such as the Black River and Flambeau River State Forests, we understand the opportunities and challenges inherent in developing and managing sustainable ATV trails. The current ecological and social conditions on the NHAL do not lend themselves to the development of cost-effective ATV trail experiences which meet the conditions desired by riders.

The Department believes there are trail development opportunities elsewhere that provide a more cost-effective use for these funds to increase trail riding opportunities in the Wisconsin. Much of the revenue to the ATV account is used to fund on-going trail maintenance, safety training, and enforcement aids. The portion of the ATV account that is available to develop and rehabilitate ATV trails is a little under \$2 million annually. At that level, developing both the Oneida/Vilas and Iron (Option A) alternatives to their full extent would utilize the equivalent of between 2.5 to more than 5 years of available funding. Developing only the Iron county trail (Option A) would consume between one and two years of funding available statewide.

The Department remains fully committed to working with partners to improve existing ATV trail opportunities and to expand opportunities in Wisconsin to address the demand for an increasingly popular form of outdoor recreation. ATV registrations increased 348% from 1996 to 2005. We are committed to doing so in a manner that is cost-effective and sustainable over the long-term. Over the last five years the Department has distributed nearly 600 grants to 34 counties totaling more than \$13.1 million for ATV trail projects. The Department is currently evaluating existing ATV trails, over 30 miles, on the Black River State Forest as part of that master planning process. Furthermore, the Department will be assessing

opportunities to enhance the regional trail network as we evaluate the ATV trails on the Flambeau River State Forest. The Department is facilitating a dialogue in the Peshtigo River State Forest area, working jointly with other public and private landowners to explore the full range of options to provide a north-south connector to existing regional trail networks. In addition, at the request of the Board, the Department has for the last several years been working to develop a motorized sport recreation area concept plan that we can work with partners to realize. The Department believes that ATV recreational opportunities can be located and designed to satisfy user demand and preferences, that suitably located and designed facilities would have strong local support, would neither displace traditional recreation users nor have adverse effects on the environment, and that such locations and designs can be developed at a reasonable cost.

We appreciated the April 10, 2008 letter from Wisconsin ATV Association suggesting elimination of Iron County Option B and continuing our dialogue about user preferences and trail design. Our cost comparison did anticipate elimination of Iron County Option B at the low end. In addition, WATVA provided information on user preferences and trail design standards. Staff discussed these options with WATVA in refining our cost estimates. Our finding remains that the pre-existing trail footprint and the multiple trail users preclude some of the suggested cost saving designs, and do not resolve the environmental impacts of trail construction.

# **Northern Highland – American Legion State Forest**

## **ATV Trail Alternatives Cost Estimates**

### ***Methods, assumptions and estimates***

*A supplement to the NHAL ATV trail alternative decision item*

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Department of Natural Resources  
April 2008

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The purpose of this document is to summarize the evaluation methods, assumptions, design standards, and cost estimates for the NHAL ATV trail alternatives, with the primary focus on cost estimates.

Overall, the costs for the trail alternatives are significant due to major physical constraints along most of the route including highly sensitive wet areas, sustainable development standards, and the very preliminary nature of the plans and estimates, which increases uncertainty and thus necessitates a broad range of estimates.

The scope for this project, at this stage, dictates a very “broad brush” approach to design and estimation, based on many generalizations and assumptions. The tables and estimates are organized to provide as much specific and accurate information as possible, to provide the basis for informed decisions on the relative merits of the alternatives, and to provide a clear starting point for more detailed plans and estimates, if needed.

Table 1 summarizes the infrastructure and improvement needs for each trail alternative and a range of costs for each major development. Included in the evaluation, and included in detail at the end of this document, are recent comparative costs from a number of other public agencies, primarily the County Forests. In addition to the comparatives, the Department’s development handbook costs are included. All comparatives are from Wisconsin. The range in variability of comparatives and estimates are wide given the development project requirements are heavily dependant on local conditions and associated design standards. The Department used the best available information to provide a reasonable cost estimate range for each trail alternative.

A map of each trail alternative that identifies the location of the major developments and associated cost estimate range is included. And lastly, a detailed assessment identifying the types of major wetland crossings is included to provide information in determining the development standards for the major wetland crossings.

If the project advances, a more detailed assessment of the actual trail specifications and associated design and construction standards will be developed. This detailed assessment may reduce the number of assumptions and provide more accurate estimates.

### **Assumptions**

- A significant design element provided by the stakeholders' group was that wherever possible the trail would remain open to existing uses rather than develop a separate trail. Where the corridor is currently open to licensed vehicles it would remain open even with the addition of ATVs. Corridors that are currently closed to licensed vehicles but are suggested for ATV use would remain closed to other motorized vehicles. This multiple use requires designing a safe and sustainable corridor for passage of ATVs and other traffic such as cars and trucks.
- The NHAL trails that need to support existing licensed motorized vehicle use in addition to ATV's would require wider than typical trail base (typical for 2-way ATV is 12 feet) with an improved trail tread base. In these areas, the NHAL trail would increase to approximately 16 foot wide crowned base. This increase would accommodate existing vehicle access. The dual use requirement was a recommendation from the stakeholders group.
- A majority of the trail is located on existing lightly developed forest roads and snowmobile trails. These roads and trails in their current condition can not support a significant increase in use. The existing roads and trails would require improvements including bridges, boardwalks and improved trail base.
- The NHAL trail alternative cost estimates were developed using recent actual costs for similar ATV trail developments in Wisconsin, mainly from the County Forests, the USDA Forest Service, and Department projects of similar scope.
- Some development types are easier to estimate than others. Recent project costs for bridges are extensive and costs do not vary a great deal. Other development types, for instance boardwalks and trail tread, are more difficult to estimate given the large variation in design standards and existing soil conditions.
- Design standards for trail tread are not well defined and few examples exist for sustainable trails receiving significant use. User preferences vary on the desirable type of tread, but generally, independent of the tread, users prefer a more intimate experience consisting of narrow winding trails.
- Water features are frequent along the trail segments. A crowned trail base, with water diversion/control features would be required.
- The unique wet soil conditions of the NHAL may require additional engineering and construction efforts, particularly the wetland areas. The wetlands are deep and long with organic soils and would require a piling type structure versus floating bridges.

- Costs estimates do not include improving or developing portions of the trail owned and maintained by the towns or the counties.
- The costs and responsibilities for ongoing maintenance of the trail are major considerations for determining feasibility. Cost for maintenance can be reduced significantly by proper trail design and construction, particularly the trail tread construction standards. Maintenance costs are not included in this estimate.

### **Estimation Methods**

There were 4 phases in developing costs estimates.

#### **Phase 1: On the ground evaluation and inventory**

This phase includes on the ground inspection of the trail alternatives. The inspection identified existing road and trail conditions, water crossings, wetlands, potential development options and required lengths. Approximate distances for each development are taken. For example, water crossings and associated bridge lengths.

#### **Phase 2: Identifying and grouping construction types**

Significant developments were placed in one of five categories to provide a logical and reasonable cost estimating structure. The categories include bridges (short, long and extensive), boardwalks, and trail tread which include trail base and general water control structures.

#### **Phase 3: Determining standard and average construction costs for each type**

This phase included gathering Department standard construction rates as well as recent comparatives for project of similar scope and scale. The county forests provided the majority of recent costs.

#### **Phase 4: Estimating**

The last phase pulls all of these elements together. A range of costs, low to high, were summarized for each development type. This is shown in table 3. The Department used local knowledge to identify a likely cost for each development.

**Development Cost Estimates**

**Bridges**

- **Short bridges up to 50 feet.** These are bridges which may be supported on the ends by pilings or pan footings but are clear span. They are frequently pre-fabricated and assembled quickly on site.
- *The Iron County option A trail alternative includes four (4) short bridges with a total length of 91 feet.*

**Construction Standards and Cost Comparatives**

- Oneida County provided recent cost figures ranging from \$480 to \$1,822 per linear foot for bridges of this type. The range is due to soil and stream bank conditions as well as height requirements. The average cost for this type of bridge construction in Oneida County is approximately \$991.
- Washburn, Barron and Burnett County recently completed a number of bridge projects ranging from approximately \$420 to \$447 per linear foot.
- Department guidance for estimating bridge projects of this scale is \$1,152 per foot.

**Cost Estimate:**

<b>Cost Estimate Range (per linear foot)</b>	
<b>Low</b>	<b>High</b>
<b>\$421</b>	<b>\$1,822</b>

<b>Total Cost Estimate Range for Short Bridges</b>	
<b>Low</b>	<b>High</b>
<b>\$38,300</b>	<b>\$165,800</b>

The total cost range for 91 feet of short bridges is between \$38,300 and \$165,800. There are no unique conditions for short bridge design and construction suggesting the NHAL estimate would likely be within the range. Many of the short bridges could also provide for snowmobile use and improve the snowmobile trail network.

- **Long bridges.** These are longer bridges that can be supported by pilings their full length.
- ***Two long bridges are required for the trail alternatives for a total of 420 feet.*** One bridge is at Dog Lake in Oneida County and the other is on the rail grade in Iron County.

**Construction Standards and Comparatives**

- Oneida County provided cost figures ranging from \$457 to \$899 per foot.
- Washburn County recently completed a 170 foot bridge at a cost of \$426 per linear foot.
- The Departments guidance for estimating bridge projects of this scale is \$1,320 per foot.

**Cost Estimate:**

<b>Cost Estimate Range (per linear foot)</b>	
<b>Low</b>	<b>High</b>
<b>\$426</b>	<b>\$1,320</b>

<b>Cost Estimate Range for NHAL Long Bridges</b>	
<b>Low</b>	<b>High</b>
<b>\$179,000</b>	<b>\$554,000</b>

**Cost Estimates**

- The total cost estimate for ***420 feet of long bridges is*** between \$179,000 and \$554,000 using the low and high comparatives. There are no unique conditions for long bridge design and construction on either trail alternative suggesting the NHAL estimate would likely be within the range. Many of the long bridges could also provide for snowmobile use and improve the snowmobile trail network.

- **Extensive bridges.** These are either very long, very high, or both and would require extensive engineering.
- There are **3 bridges** in the NHAL alternatives that are considered extensive; the Manitowish River crossing at the wayside (Iron County) and the Rainbow Flowage crossing, and the Plum Creek crossing (Oneida /Vilas), a total of **510 feet**.

**Construction Standards and Comparatives**

- Oneida County reported costs for one bridge project with a similar scope at a cost of \$1,634 per foot.
- Department guidance for estimating bridge projects of this scale is \$2,236 per foot.

**Cost Estimate:**

<b>Cost Estimate Range (per linear foot)</b>	
<b>Low</b>	<b>High</b>
<b>\$1,634</b>	<b>\$2,236</b>

<b>Cost Estimate Range for NHAL Extensive Bridges</b>	
<b>Low</b>	<b>High</b>
<b>\$686,000</b>	<b>\$939,000</b>

**Cost Estimates**

- NHAL trail costs are estimated to be between \$1,634 and \$2,236 per foot for a total of \$686,000 and \$939,000
  - For all of the bridge work, extensive bridges are the most significant cost, almost 7 times the cost of the short bridge work and 2 times the cost of the long bridges. The 3 bridges on the NHAL trail alternatives are expected to be within this range. The Rainbow bridge, in combination with the Dog Lake bridge, will benefit the snowmobile trail network by allowing sleds to cross on a bridge, eliminating multiple highway crossings. These bridges are likely to be constructed for this purpose independent of the ATV trail discussion.
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**Boardwalks.** The trail alternatives cross a number of significant wetlands requiring a considerable amount of boardwalk. For the purposes of this assessment only the significant wetlands were identified and included. Smaller wetland crossings are expected along the trail and those are captured in the trail tread section of this report.

A variety of boardwalk types exist and the appropriate type is dependant on the type of wetland it needs to cross. For very shallow, mineral based soils an unsupported wooden “floating” boardwalk (known as a puncheon) may be appropriate. For longer and deeper wetlands with organic soils board walks require sunken pilings for adequate support. A number of different types of piling supported boardwalks exist. Wetland crossing and associated boardwalks are the most difficult development type to estimate given the variation in wetland types and permitting requirements. Without a detailed wetland examination only a broad brush estimate is appropriate. Attached to this report is an assessment for each wetland to assist in determining the most appropriate type of wetland crossing structure. The wetland assessment includes reference to the likelihood of the Department permitting crossings for each wetland. A notable finding is that all of the wetlands are organic soils that are generally deep and long, thereby likely requiring driven piling foundation.

The trail alternatives cross a total of approximately 8,632 feet of wetlands. Two wetland crossings on the Oneida/Vilas trail (2,915 feet) and eight wetland crossings on the Iron County option (2 crossing for 3,250 feet in option B and 5 crossing for 5,717 feet in Option A, and one additional wetland crossing 850 feet for both options where they are on common trail.

#### **Construction Standards and Comparatives**

- A number of cost estimates for county forest installed puncheons were provided (\$65 per linear foot). Puncheons are structures placed on a floating log base and must be used with considerable judgment for local site conditions. Based on initial evaluations of the NHAL wetland crossings, puncheons would not be sufficient for these types of wetlands other than as part of trail tread over slightly wet areas. County Forest did not supply cost estimates for boardwalks other than puncheon style crossings.
- Department guidance for building piling based wetland crossings range between \$650 and \$1,200.

**Cost Estimate:**

<b>Cost Estimate Range (per linear foot)</b>	
<b>Low</b>	<b>High</b>
<b>\$650</b>	<b>\$1,200</b>

<b>Cost Estimate Range for NHAL Extensive Bridges</b>	
<b>Low</b>	<b>High</b>
<b>\$5,610,800</b>	<b>\$10,358,400</b>

**Cost Estimates**

- o NHAL trail costs are estimated at a range of \$5,610,800 to \$10,358,400.

All types of boardwalks were considered but based on the broad wetland assessment, the NHAL trail alternatives would most likely require a piling type structure and the costs would be at the higher end of the range. Puncheon type floating boardwalk may work to some extent for one crossing in Iron County but puncheons would generally not be a viable option for the other wetland crossings. This is due to the fact that the major wetland crossings identified for each alternative are long, deep wetlands with an organic soil type, requiring piling versus floating boardwalks. In addition, ATV maintenance equipment would need to use the boardwalks for general trail maintenance, particularly where access by other means is not possible or practical.

For the segments of the trail that are also snowmobile trails, it is more desirable for the grooming equipment to use the boardwalk versus a separate trail over the frozen wetland. The snowmobile trail can be visibly noticeable and can be a potentially attractive nuisance for ATV users. If two trails are maintained, one for ATV and one for snowmobiles, gates would be required. In addition, if two trails were present, in some instances, the boardwalk for ATV use would not need to be built to support the weight of snowmobile trail grooming equipment but the additional costs to support additional weight is minimal. The majority of the boardwalk costs are in labor and not materials costs, so building the trail to support both ATV and snowmobiles is both cost effective and environmentally appropriate, by creating one wetland crossing versus two (even though one is during frozen conditions).

Given the fact that the wetland crossings are one of the most significant environmental concerns and require an additional level of permitting, the Department fully recognizes the opportunities to

mitigate the impacts and potential costs. These mitigation techniques include reducing the length of the trail segments. For the Oneida/Vilas trail the major wetland crossings are at the far south and north ends of the trail. The trail length could be shortened, eliminating the need to cross the two major wetlands. This option would still provide approximately 30 miles of riding opportunities. In addition, this may allow future viable alternatives to develop over time to extend the trail to the north and south.

**Trail Tread Surfacing and Water Control.** The NHAL trail alternatives include 58.8 miles of existing state forest roads, snowmobile trails, and new trails. The current condition of the existing lightly developed road and snowmobile trail base varies significantly. Generally these roads are primitive roads supporting a very low level of use.

**Construction Standards and Comparatives**

Current forest roads are minimally developed, given generally low use levels. Existing roads would need to be improved to support a greater level of use and support two-way passage of both existing licensed vehicles as well as ATV’s. In some cases this may require wider than typical trail widths to accommodate both types of users. Typical 2-way ATV trail widths range from 10-12 feet. The estimates below are for a primary trail width of 16 feet with an additional clearing of 6 feet on each side for the ditch but the wider trail is not necessary in all places.

- The Flambeau River State Forest recently completed a trail re-development project cost with averaged of \$21,000 per mile. The trail re-design included pit run gravel, culverts, contour and compacting. (some work performed by county/prison labor).
- USDA Forest Service estimates \$35,000 per mile for a contracted ATV trail route.
- A number of recently completed ATV trail projects for the County Forests ranged from approximately \$6,000 to \$25,000 with an average of approximately \$15,000 per mile.
- Department guidance for estimating road resurfacing (gravel placed on a prepared tread) is \$34,800.

**Cost Estimate:**

<b>Estimate Range (per mile)</b>	
<b>Low</b>	<b>High</b>
<b>\$6,000</b>	<b>\$35,000</b>

<b>Estimate Range for NHAL Trail Tread</b>	
<b>Low</b>	<b>High</b>
<b>\$352,000</b>	<b>\$2,058,000</b>

- The NHAL costs estimates range between **\$352,000** and **\$2,058,000**. The NHAL is expected to be on average at the higher end for the range, primarily due to the requirement for dual use on a majority of the trail. The trail is expected to require a crown and gravel base to minimize environmental

impacts and reduce maintenance costs. In addition, given the number of water features and desire to limit the impact to water flows, a high number of culverts and other water control structures may be needed.

**Plan, Design and Engineering and Administration Costs**

In addition to the actual construction costs, other fees must be considered. Department of Administration guidance requires all projects to budget for the following

- Design and Engineering, 4-7%
- Remote location fees, approximately 10%
- Contingency is built into the budget at 7% to cover bidding climate, unforeseen conditions and revisions
- Supervision and administration of the project is 4% of the total

Table 1. Estimate by Development Type and Comparison with Similar Projects and Standards

Development Specification	Comparatives (low and high)		*DNR development cost guidance
Trail Tread Improvements and surfacing (16 feet wide 4"thick)	\$6,000	\$34,800	\$35,000
Short bridge (12 feet wide)	\$421	\$1,822	\$1,152
Long bridge (12 feet wide)	\$426	\$1,320	\$1,320
Extensive bridge (12 feet wide)	\$1,634	\$2,236	\$2,236
Boardwalk	\$650*	\$1,200	\$650-\$1,200

\* Puncheon floating boardwalk structure were not included. NHAL wetland crossing would most likely require a piling type system.

Table 2: NHAL ATV Trail Infrastructure Listing

<b>Trail Alternative</b>	<b>Infrastructure</b>	<b>Development Type</b>	<b>Units in feet Trail Tread units =miles</b>
Iron A	Iron 4 bridge on grade by Sandy Beach	Long Bridge	350
Iron A	Wayside bridge	Ext. Bridge	70
Iron A	Boardwalk just east of Wayside	Boardwalk	176
Iron A	Bridge just east of Wayside	Short Bridge	24
Iron A	Boardwalk near 51 by repair shop	Boardwalk	200
Iron A	Boardwalk at Circle Lily	Boardwalk	227
Iron A	Bridge at Circle Lily Creek	Short Bridge	18
Iron A	Boardwalk at Circle Lily	Boardwalk	250
Iron A	Bridge at Circle Lily Creek	Short Bridge	18
Iron A	Boardwalk west of Circle Lily	Boardwalk	39
Iron A	Bridge at Circle Lily Creek	Short Bridge	31
Iron A	Boardwalk on swamp near Circle Lily	Boardwalk	975
Iron A	Option A trail tread	Trail tread	4.8
Iron A&B	Option A&B combined route boardwalk	Boardwalk	850
Iron A&B	Option A and B link to Iron County	Trail tread	1
Iron B	Option B boardwalk	Boardwalk	1550
Iron B	Option B boardwalk	Boardwalk	1700
Iron B	Option B trail tread	Trail Tread	4
Oneida/Vilas	Trail tread Lake Tomahawk to 70	Trail tread	14
Oneida/Vilas	Trail tread south end to Lake Tomahawk	Trail tread	4
Oneida/Vilas	Trail tread Sayner to 70	Trail tread	10
Oneida/Vilas	Trail tread to St. Germain	Trail tread	6
Oneida/Vilas	Trail tread to Shell station	Trail tread	0
Oneida/Vilas	Trail tread to Star Lake	Trail tread	15
Oneida/Vilas	Bridge at Plum Creek	Ext Bridge	160
Oneida/Vilas	Bridge at Rainbow Flowage	Ext Bridge	280
Oneida/Vilas	Boardwalk at Birch Springs	Long Bridge	1475
Oneida/Vilas	Bridge at Dog Lake	Long Bridge	70
Oneida/Vilas	Boardwalk at 47 end	Long Bridge	1440
Oneida/Vilas	Star Lake parking lot	Parking Lot	1

**Summary**

- The total estimated cost range for the Oneida/Vilas trail is between \$2.9 million and \$6.3 million.
- The total estimated cost range for the Iron County trail alternative, option A, is between \$2 million to \$4 million.
- The total estimated cost range for the Iron County trail alternative, option B, is between \$2.6 million to \$5 million

The table below provides a summary of the estimated construction costs for each trail alternative, as well as a range using Department standards and other comparatives. These planning-level costs estimates are based on preliminary investigations of the site conditions and requirements, and conceptual level design. The costs estimates vary significantly among segments along the route, given different site conditions and requirements. Overall, constructing any of the potential improvements would be expensive and would need to be phased over a period of time.

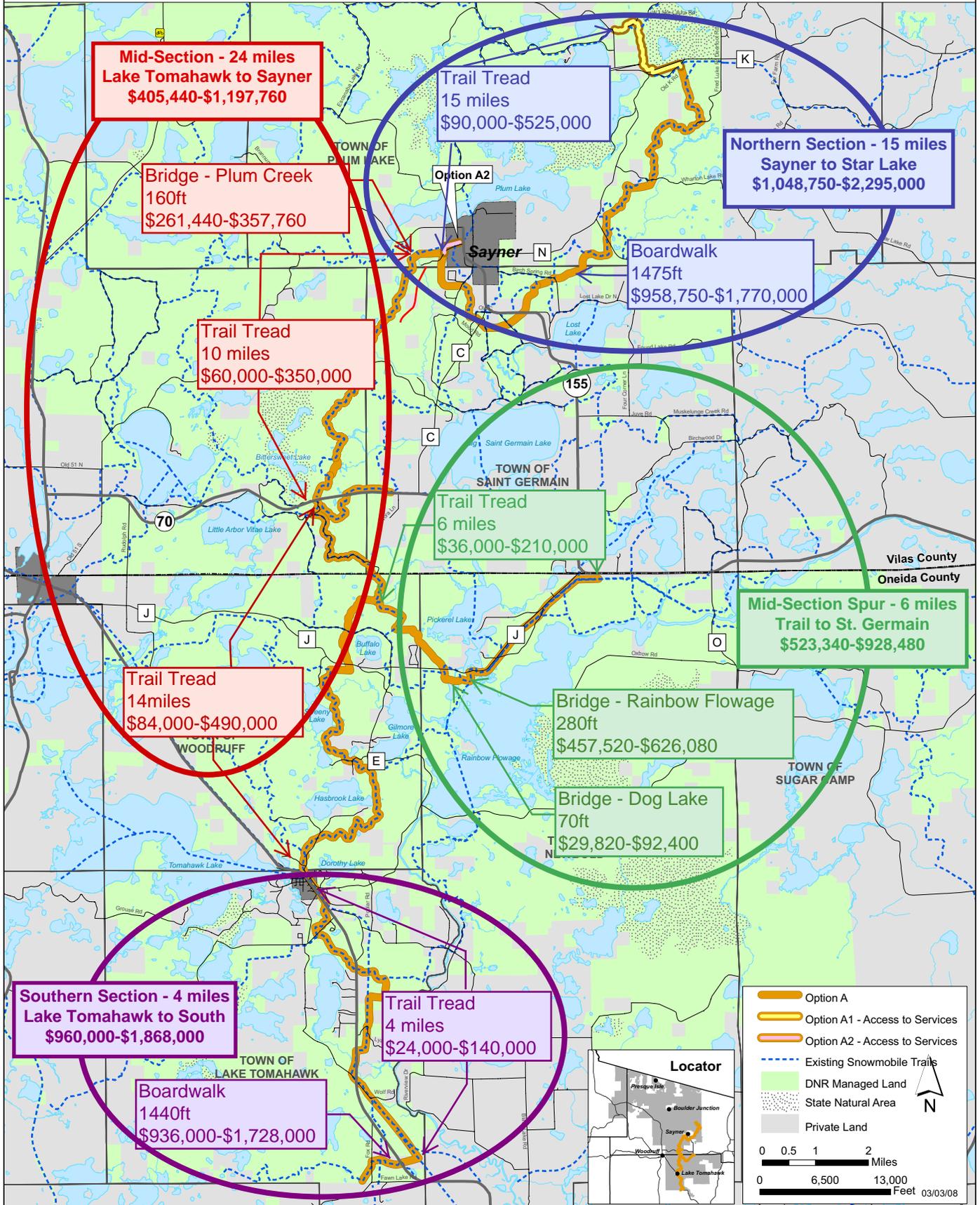
*See attached map for “section” classification*

<b>Oneida / Vilas</b>	<b><u>Low</u></b>	<b><u>High</u></b>	<b>Miles</b>	<b>Per mile range</b>
Northern Section	\$1,048,000	\$2,295,000	15	\$70K -153K
Mid Section	\$405,440	\$1,197,000	24	\$17K-\$50K
Mid Section Spur	\$523,340	\$928,000	6	\$87K-\$154K
Southern Section	\$960,000	\$1,868,000	4	\$240K-\$467K
<b>TOTAL</b>	<b>\$2,937,530</b>	<b>\$6,289,240</b>	<b>49</b>	<b>\$60K-128K</b>
<b>Iron County</b>				
Option A	\$1,867,560	\$3,794,000	5.8	\$321K-\$654K
Option B	\$2,695,000	\$5,095,000	5	\$539K-\$1M
<b>TOTAL</b>	<b>\$4,004,000</b>	<b>\$7,835,000</b>	<b>9.8</b>	<b>\$409K-\$800K</b>

*a portion of the trail is shared for option A and option B. The sum of the two options will not equal the total costs.*

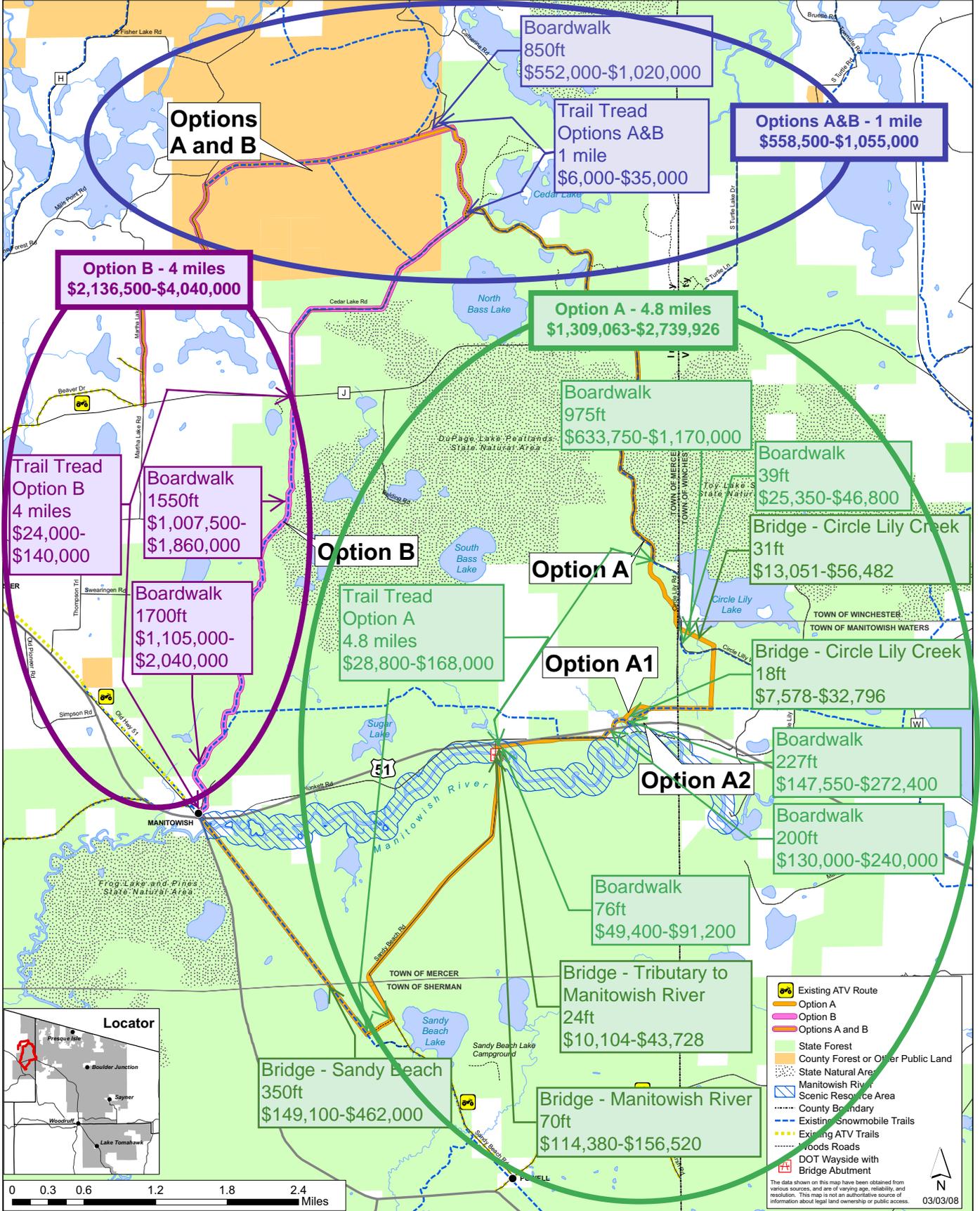
# Northern Highland - American Legion State Forest

## Vilas and Oneida Counties ATV Trail Alternative Overview



# Northern Highland - American Legion State Forest

## Iron County ATV Trail Alternative Overview



Washburn County wetland crossing. Puncheon type bridge, approximately 8 feet wide. Approximate costs \$70 / linear foot.



Washburn County wetland crossing requiring piling construction. Approximate cost \$425 per foot (170 foot crossing) Completed in 2002



Washburn County ATV and Snowmobile bridge crossing approximately 40 feet. Prefab Steel \$16,800. Completed in 2004.



Flambeau River State Forest trail improvements, tread re-design. Crowned base with slope and a ditch. Approximate costs \$21,000 per mile. Completed in 2007.



Washburn County trail tread improvement project. Gravel base, no ditch. Approximate cost average \$12,500 per mile.



**Wetland Crossing Summary  
NHAL Proposed ATV Trails  
New Construction**

**Iron County ATV Trail Alternative**

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**Iron 4 Bridge on Grade by Sandy Beach**

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Wetland Crossing: Proposed bridge to cross wetland

- 350 feet long and 12 feet wide
- Recommend helical pile crossing design

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Soils: Loxley

- 0 – 13 inches = mucky peat
- 13 – 60 inches = muck

Dawson

- 0 – 8 inches = peat
- 8 – 38 inches = muck
- 38 – 40 inches = silt loam
- 40 – 60 inches = sand

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Photo 1: Location of proposed wetland crossing.



## Boardwalk Just East of Wayside

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### Wetland Crossing:

Proposed boardwalk to cross wetland

- 76 feet long and 12 feet wide
  - Recommend driven/vibrated pile crossing design to replace existing fill
  - Existing fill is not wide enough to accommodate ATV traffic and is eroding
- 

### Soils:

Totagatic

- 0 – 4 inches = muck
- 4 – 8 inches = loamy fine sand
- 8 to 17 inches = fine sand
- 17 – 28 inches = fine sand
- 28 – 46 inches = sand
- 46 – 70 inches = sand
- 70 – 80 inches = sand

Bowstring

- 0 – 38 inches = muck
- 38 – 47 inches = fine sand
- 47 – 80 inches = muck

Ausable

- 0 – 10 inches = muck
  - 10 – 60 inches = sand
-

Photo 2: Location of proposed wetland crossing.



## Boardwalk Near 51 by Repair Shop

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### Wetland Crossing:

Proposed boardwalk to cross wetland

- 200 feet long and 12 feet wide
  - Recommend helical pile crossing design
- 

### Soils:

Totagatic

- 0 – 4 inches = muck
- 4 – 8 inches = loamy fine sand
- 8 to 17 inches = fine sand
- 17 – 28 inches = fine sand
- 28 – 46 inches = sand
- 46 – 70 inches = sand
- 70 – 80 inches = sand

Bowstring

- 0 – 38 inches = muck
- 38 – 47 inches = fine sand
- 47 – 80 inches = muck

Ausable

- 0 – 10 inches = muck
  - 10 – 60 inches = sand
-

Photo 3: Location of proposed wetland crossing.



## Boardwalk at Circle Lily

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### Wetland Crossing:

Proposed boardwalk to cross wetland

- 227 feet long and 12 feet wide
- Recommend driven/vibrated pile crossing design to replace existing fill

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### Soils:

Totagatic

- 0 – 4 inches = muck
- 4 – 8 inches = loamy fine sand
- 8 to 17 inches = fine sand
- 17 – 28 inches = fine sand
- 28 – 46 inches = sand
- 46 – 70 inches = sand
- 70 – 80 inches = sand

Bowstring

- 0 – 38 inches = muck
- 38 – 47 inches = fine sand
- 47 – 80 inches = muck

Ausable

- 0 – 10 inches = muck
  - 10 – 60 inches = sand
-

Photo 4: Location of proposed wetland crossing.



## Boardwalk West of Circle Lily

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Wetland Crossing:	Proposed boardwalk to cross wetland <ul style="list-style-type: none"><li>▪ 39 feet long and 12 feet wide</li><li>▪ Recommend driven/vibrated pile crossing design</li></ul>
Soils:	Rubicon Sand <ul style="list-style-type: none"><li>▪ 0 – 1 inch = sand</li><li>▪ 1 – 24 inches = sand</li><li>▪ 24 – 60 inches = sand</li></ul>

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Photo 5: Location of proposed wetland crossing.



## Boardwalk on Swamp near Circle Lily

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### Wetland Crossing:

Proposed boardwalk to cross wetland

- 975 feet long and 12 feet wide
- Recommend helical pile crossing design

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### Soils:

Seelyville

- 0 – 80 inches = muck

Markey

- 0 – 32 inches = muck
- 32 – 60 inches = sand

Loxley

- 0 – 13 inches = mucky peat
- 13 – 60 inches = muck

Dawson

- 0 – 8 inches = peat
  - 8 – 38 inches = muck
  - 38 – 40 inches = silt loam
  - 40 – 60 inches = sand
-

Photo 6: Location of proposed wetland crossing.



## Option A & B Combined Route Boardwalk

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### Wetland Crossing:

Proposed boardwalk to cross wetland

- 850 feet long and 12 feet wide
- Recommend driven/vibrated pile crossing design

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### Soils:

Loxley

- 0 – 13 inches = mucky peat
- 13 – 60 inches = muck

Dawson

- 0 – 8 inches = peat
- 8 – 38 inches = muck
- 38 – 40 inches = silt loam
- 40 – 60 inches = sand

Greenwood

- 0 – 8 inches = peat
  - 8 – 11 inches = muck
  - 11 – 65 inches = mucky peat
  - 65 – 80 inches = mucky peat
-

Photo 7: Location of proposed wetland crossing.



## Option B Boardwalk

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Wetland Crossing:	Proposed boardwalk to cross wetland <ul style="list-style-type: none"><li>▪ 1550 feet long and 12 feet wide</li><li>▪ Recommend helical pile crossing design</li></ul>
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Soils:	Seelyville <ul style="list-style-type: none"><li>▪ 0 – 80 inches = muck</li></ul> Markey <ul style="list-style-type: none"><li>▪ 0 – 32 inches = muck</li><li>▪ 32 – 60 inches = sand</li></ul> Loxley <ul style="list-style-type: none"><li>▪ 0 – 13 inches = mucky peat</li><li>▪ 13 – 60 inches = muck</li></ul> Dawson <ul style="list-style-type: none"><li>▪ 0 – 8 inches = peat</li><li>▪ 8 – 38 inches = muck</li><li>▪ 38 – 40 inches = silt loam</li><li>▪ 40 – 60 inches = sand</li></ul>
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## Option B Boardwalk

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Wetland Crossing:	Proposed boardwalk to cross wetland <ul style="list-style-type: none"><li>▪ 1700 feet long and 12 feet wide</li><li>▪ Recommend helical pile crossing design</li></ul>
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Soils:	Seelyville <ul style="list-style-type: none"><li>▪ 0 – 80 inches = muck</li></ul> Markey <ul style="list-style-type: none"><li>▪ 0 – 32 inches = muck</li><li>▪ 32 – 60 inches = sand</li></ul>
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## Vilas and Oneida Counties ATV Trail Alternative

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### Boardwalk at 47 End

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Wetland Crossing:	Proposed boardwalk to cross wetland <ul style="list-style-type: none"><li>▪ 1440 feet long and 12 feet wide</li><li>▪ Recommend helical pile crossing design</li></ul>
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Soils:	Carbondale <ul style="list-style-type: none"><li>▪ 0 – 35 inches = muck</li><li>▪ 35 – 60 inches = mucky peat</li></ul> Lupton <ul style="list-style-type: none"><li>▪ 0 – 12 inches = muck</li><li>▪ 12 – 60 inches = muck</li></ul> Markey <ul style="list-style-type: none"><li>▪ 0 – 26 inches = muck</li><li>▪ 26 – 60 inches = sand</li></ul>
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Photo 8: Location of proposed wetland crossing.



## Boardwalk at Birch Springs

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### Wetland Crossing:

Proposed boardwalk to cross wetland

- 1475 feet long and 12 feet wide
  - Recommend helical pile crossing design
- 

### Soils:

Seelyeville

- 0 – 60 inches = muck

Markey

- 0 – 40 inches = muck
  - 40 – 60 inches = sand
-

# Information Regarding the Wisconsin ATV Account

*A supplement to the NHAL ATV trail alternative decision item*

Department of Natural Resources  
April, 2008

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The purpose of this document is to provide a brief overview of the status of Wisconsin's ATV account, including revenue, expenditures and distribution. This document was produced upon request of the Natural Resource Board, at their February, 2008 meeting. It is not intended to provide a detailed assessment of the account, rather a broad overview using the most current information.

**What is the condition of the ATV Account?**

Revenue to the account during FY 07 was \$6.1 million and FY08 is estimated to be \$6.4 million. Expenditures were \$4.8 million in FY07 and estimated to be \$7.6 million in FY08.

**ATV Account Revenue in FY07**

ATV registrations	\$3,705,700	61%
Fuel Tax Transfers	\$1,707,900	28%
Safety Certification Fees	\$ 36,700	1%
Non-Resident Trail Pass	\$ 251,800	4%
Interest income	\$ 153,000	3%
Miscellaneous	\$ 254,900	4%
<b>TOTAL</b>	<b>\$6,110,000</b>	

**ATV Account Expenditures in FY07**

Local ATV Trail and Project Aids	\$2,594,500	54%
State ATV Trail and Project Aids	\$ 147,200	3%
State Enforcement and Safety Training	\$1,043,700	22%
ATV Trail Safety Grant	\$ 250,000	5%
ATV Safety Education	\$ 25,900	1%
County Enforcement Aids	\$ 200,000	4%
Customer Assistance and Licensing	\$ 332,200	7%
DNR Administration	\$ 134,300	3%
Admin. Facility Repair and Debt Service	\$ 2,000	<1%
Regional Warden expenses	\$ 33,300	1%
<b>TOTAL</b>	<b>\$4,763,100</b>	

The 2007-09 budget (2007 Wisconsin Act 20) authorized a number of expenditure increases in FY08 from the ATV account, including: (some items are one-time expenditures)

Richard Bong Recreation Area ATV Trail	\$ 300,000
NH-AL Trail Development/Operations on Forests	\$ 504,100
State Safety and Enforcement Training	\$ 200,000
ATV Trail Safety Grants	\$ 300,000
Local ATV Trail and Project Aids	\$ 634,700
ATV Safety Education	\$ 50,000
Development of a promotional brochure	\$ 50,000
Lightweight Utility Vehicle Pilot Program	\$ 10,000
<b>TOTAL</b>	<b>\$2,048,800</b>

In addition to the expenditure increases, the 2007-09 budget increased the fee for ATV nonresident trail passes from \$18 to \$35, which is expected to generate approximately \$200,000 in additional revenue. The funds received from this increase will be placed in a continuing appropriation to be used for a new Landowner Incentive Program created in the 2007-09 budget, along with up to \$100,000 that may be shifted from the ATV local trail aids in 2007-08. (note: the scope statement not yet published in the Administrative Register).

There are roughly 250,000 ATVs registered for use on public land, and this number is estimated to increase 10 -15% in each of the next two years. Registration costs \$30 for two years.

Given these revenue and expenditure increases, the Department projects that the ATV Account will have a closing balance on June 30, 2008 of \$1.3 million and a closing balance on June 30, 2009 of \$900,000.

### **How are funds from the ATV account spent?**

#### ***Local Units of Government Trails - ATV Grant Program***

The ATV Grant-in-Aids Program is administered by the Bureau of Community Financial Assistance through a Community Services Specialist in each DNR region. The ATV grant program was created by the Wisconsin Legislature in 1985. The DNR was authorized to administer a grant program to accommodate ATVs through acquiring, insuring, rehabilitating, developing, and maintaining all-terrain vehicle trails, intensive use areas, support facilities, and routes in accordance with section 23.33 of Wisconsin Statutes. An off-road vehicle (ORV) advisory council, consisting of seven members appointed by the Natural Resources Board, advises the Department on matters related to administering the program.

Cities, villages, towns, counties, and federal agencies are eligible to apply for funding from this program. Since January 2003, \$13.1 million has been granted to support ATV trails. Eligible project costs include:

- Maintenance of all-terrain vehicle trails – up to \$450 per mile for summer maintenance and up to \$100 per mile for winter maintenance. Local units of government are funded to maintain approximately 1,700 miles of trails for summer use and almost 4,000 miles for winter use.
- Maintenance of intensive use areas – up to 50% of eligible costs.
- Up to 100% of the cost of purchasing liability insurance for the sponsor of the trail or intensive use area.
- Acquisition – provides up to 100% of the cost to purchase lands for ATV trails or facilities. The cost of trail easements or leases may be reimbursed at \$.10/rod.
- Major rehabilitation of bridges and trails – provides up to 100% of the eligible costs for the major rehabilitation of bridge structures or trail segments requiring significant improvement or repair.
- Development of ATV facilities – provides up to 100% of the total approved cost of the development of ATV trails and intensive use areas, including routes.

The highest priority for ATV vehicle grant funds is the maintenance, insurance, and acquisition of existing trails and intensive use areas, followed by bridge and trail rehabilitation, and the development of new all-terrain riding opportunities and support facilities.

#### ***State Property ATV Trails***

The Department owns and maintains approximately 180 miles of summer ATV and 183 miles of winter ATV trails, located mostly on designated state trails, state forests and recreation areas. Trail maintenance, development projects, enforcement and other ATV related activities are funded by a State appropriation, General Program Ops – State ATV. These trails are funded at the same maintenance rates as the trails operated by other units of

government. The ongoing allocation for state properties has been \$225,000 per year, which approximately \$100,000 is used for maintenance and the balance is used for trail development projects and other related ATV efforts. There was an increase in the state allocation in FY07-09 for specific ATV projects, including development, maintenance and enforcement on specific properties.

<u>ATV Account Revenue</u>	<u>FY 08 (projected)</u>		<u>FY07</u>		<u>FY06</u>		<u>FY05</u>		<u>FY04</u>	
ATV registrations	\$3,645,000	60%	\$3,705,700	61%	\$3,636,300	60%	\$3,822,500	69%	\$2,520,000	66%
Fuel Tax Transfers	\$1,815,200	30%	\$1,707,900	28%	\$1,573,000	26%	\$1,435,800	26%	\$1,243,300	32%
Safety Certification Fees	\$34,100	1%	\$36,700	1%	\$38,500	1%	\$47,500	1%	\$30,300	1%
Non-Resident Trail Pass	\$343,000	6%	\$251,800	4%	\$219,900	4%	\$187,100	3%	\$31,700	1%
Interest income	\$100,000	2%	\$153,000	3%	\$179,700	3%			\$7,000	0.2%
Miscellaneous	<u>\$180,000</u>	3%	<u>\$254,900</u>	4%	<u>\$457,100</u>	7%	<u>\$9,600</u>	0.2%	<u>\$9,900</u>	0.3%
<b>TOTAL</b>	<b>\$6,117,300</b>		<b>\$6,110,000</b>		<b>\$6,104,500</b>		<b>\$5,502,500</b>		<b>\$3,842,200</b>	

<u>ATV Account Expenditures</u>										
Local ATV Trail and Project Aids	\$3,913,200	52%	\$2,594,500	54%	\$2,327,800	49%	\$1,691,700	41%	\$1,638,700	56%
State ATV Trail and Project Aids	\$1,029,100	14%	\$147,200	3%	\$216,400	5%	\$316,800	8%	\$160,000	5%
State Enforcement and Safety Training	\$1,270,500	17%	\$1,043,700	22%	\$1,209,700	26%	\$1,165,000	28%	\$334,000	11%
ATV Trail Safety Grant	\$300,000	4%	\$250,000	5%	\$250,000	5%	\$250,000	6%	\$334,000	11%
ATV Safety Education	\$34,100	0.5%	\$25,900	0.5%	\$48,000	1%	\$30,000	0.7%	\$53,700	1.8%
County Enforcement Aids	\$500,000	7%	\$200,000	4%	\$200,000	4%	\$200,000	5%	\$100,000	3%
Customer Assistance and Licensing	\$318,500	4%	\$332,200	7%	\$309,400	7%	\$293,100	7%	\$239,000	8%
DNR Administration	\$141,300	2%	\$134,300	3%	\$111,900	2%	\$132,100	3%	\$64,900	2%
Admin. Facility Repair and Debt Service	\$3,000	0.04%	\$2,000	0.04%	\$2,300	0.05%	\$2,200	0.05%	\$2,500	0.09%
Regional Warden expenses	\$35,700	0.5%	\$33,300	1%	\$30,700	1%	\$39,500	1%	\$13,100	0%
<b>TOTAL</b>	<b>\$7,545,400</b>		<b>\$4,763,100</b>		<b>\$4,706,200</b>		<b>\$4,120,400</b>		<b>\$2,939,900</b>	

In addition, in FY07:

\$2,567,000 Encumbrances  
\$819,700 Committed not yet encumbered  
\$1,401,300 Continuing Balances



## **INTRODUCTION**

All-terrain vehicle (ATV) trail design standards were developed to provide information for the proper design and construction of ATV trails and related facilities on Department lands. The standards are intended to provide a consistent statewide framework for the development of ATV trails with the goal of helping to reduce environmental and social impacts, providing a reasonably safe operating environment for riders and machines, and providing quality recreational experiences.

## **ESTABLISHING ATV TRAILS**

All ATV use on Department lands will be on designated trails or trail systems that may include combinations of trails and internal roads not designated as public highways and related facilities. The exceptions are ATV use as a means of personal conveyance as provided under M.C. [2527.7](#) for persons with disabilities and for department maintenance and law enforcement purposes.

On Department-managed lands, all designated ATV trails will be established following the criteria and process in M.C. [2527.9](#) and (chapter [NR 150](#), Wis. Adm. Code). This process provides for public review and disclosure of environmental impacts related to ATV trail development and use. It will require the evaluation of alternative trails and any mitigation measures that might lessen environmental and social impacts.

The single most important factor in providing a quality ATV trail involves an inventory of potential ATV trails, including alternative trails. Site factors such as topography, existing road or rail corridors, soil types, amount and type of wetlands, water and road crossings, ownership patterns, surrounding land use, restrictive covenants, and zoning can greatly influence the location, safety, and both the initial cost of developments and long-term maintenance of an ATV trail system.

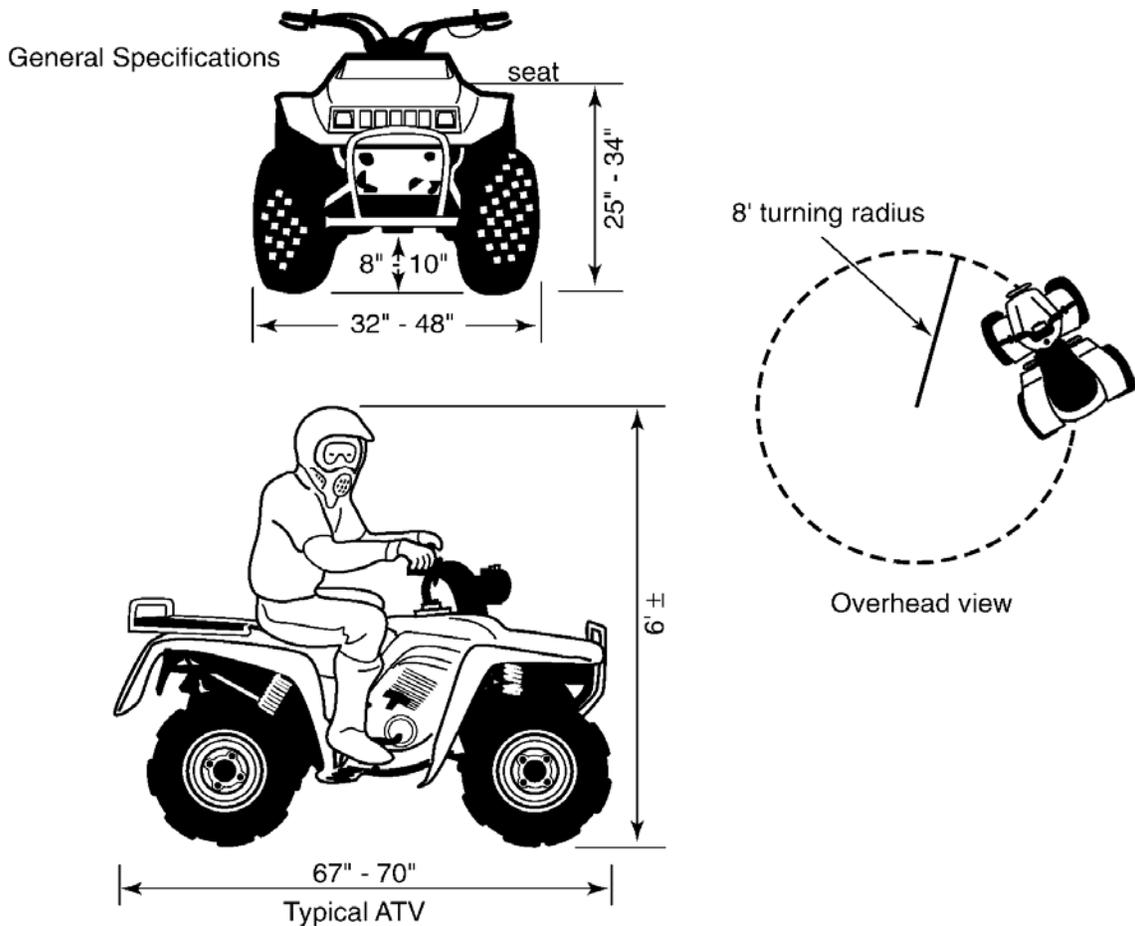
Under the Department master planning code, ch. [NR 44](#), Wis. Adm. Code, recreational trail settings for ATV trails will always be type 3 or 4 recreational settings because ATV use is a motorized activity.

## **ATV TRAIL DESIGN**

### **Definition of All Terrain Vehicle (ATV)**

Wisconsin has a state statute that defines an ATV. It is an engine-driven vehicle, travels on three or more wheels, is straddled by the rider, is less than 48 inches wide, weighs less than 900 lbs., and runs on special six inch-wide, low-pressure tires (6psi) (See Chapter [340](#), Wis. Stats.). See attached graphic of ATV with Rider for design specification. The graphic provides technical information about ATVs to give the reader information to deal with special design problems that may arise with ATV trail construction and maintenance.

**GRAPHICS OF ATV WITH RIDER**

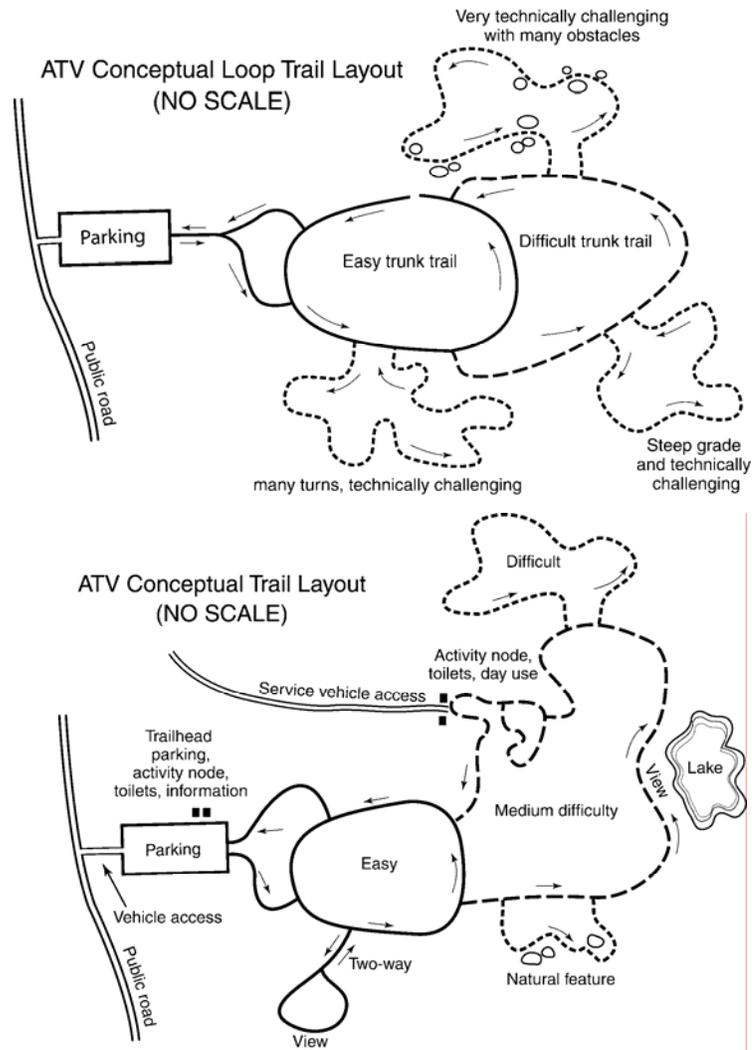


In general, there are two types of ATV trails: Loop Trails and Regional Trails.

**Loop ATV Trails**

Loop ATV trails are typically 8 to 10 miles long or more and are composed of a series of looped trails (see attached graphics). These types of trails are designed to provide for a range of recreational riding experiences, with the first loop for beginner skill level, second loop for moderate skill level, and third loop for advanced riding experience. The layout allows the rider to loop back to the trailhead on a trail he/she judges to be appropriate for his/her skill level. This type of trail system will be designed principally for ATV use and will usually have a trailhead with support facilities, including toilets, drinking water and car trailer parking dedicated to ATV use. In addition, this type of trail can be modified to provide scenic corridors with vistas and/or overlooks and provide activity nodes that include day use, camping, fishing, etc., in addition to a riding recreational experience.

## Two Conceptual Loop Trails



### Regional ATV Trails

Regional ATV trails are long trail systems that can be several hundred miles in length and cross multiple jurisdictions - often a combination of private lands and county, state, and federal ownerships. Because regional trails require a very large geographic area, ATV trails may share the trails with other motorized - and even some non-motorized - recreational uses, e.g., winter snowmobile trails, utilities corridors, ORV roads, logging roads, and abandoned railroad corridors.

Public access is provided at strategic points - usually at 20- to 50-mile intervals along the trail. This can consist of a gravel parking area that can accommodate cars and ATV trailers but may also include information kiosks, drinking water, and toilet facilities. However, these support facilities may more typically be provided by private sector businesses in towns and village on or near the ATV trail. Short spur ATV trails from the main trail may be needed to access services. A typical regional trail network will cross public roads at grade with some high-volume, high-speed roads usually having either above-grade or below-grade crossings.

Generally, regional ATV trails are designed to accommodate ATV riders of basic-to-average skill and do not usually provide the advanced ATV rider with a challenging recreational riding experience.

## **EVALUATING ATV TRAILS**

The construction of an ATV trail has many of the design considerations typical of laying out a light-duty road. The principal difference is that ATV trails are often designed to provide a recreational experience.

The following are major items to consider in the analysis of a potential ATV trails.

### **Topography**

Topographic maps USGS (maps) at 1:24,000 scale are the single most useful tool in laying out and evaluating an ATV trail. The maps provide preliminary information on an overall trail system, water features, elevation change, roads, railroads utility corridors, and cultural features.

Another useful source of information is recent air photos. They can provide information about current vegetation, wetlands, local development, and, in some cases, evidence of abandoned road or rail corridors that can prove useful for ATV use. The proposed trail and alternatives should be plotted on these maps.

In addition, historic railroad maps may prove useful in locating abandoned railroad corridors. In Wisconsin, many short spur railroad lines were built and abandoned during the logging era of the late 1800's and early 1900's.

### **Soils**

To evaluate soil conditions along a proposed trail corridor, consult county soil maps and/or contact USDA or County Ag officials. University or public libraries may also have county soil maps.

The soil conditions along a proposed trail are an important indicator of the cost of development of a particular trail.

The ideal ATV trail would be located on upland well-drained soils; coarse, gravelly soil would be least expensive to develop for an ATV trail.

The second most desirable soil types are sandy and loamy soils. They may require gravel fill and/or limestone screenings, along with armoring to prevent erosion, especially on heavily used trails and moderate slopes that might exceed 6%.

The least desirable soil types are peat and other wet organic soils that are water saturated at least part of the year. These will always be the most expensive to develop and will require bridging or some types of special construction (see wetland and water crossing section). In Wisconsin, crossing a wetland will require state and sometime federal permits along with special construction to mitigate impacts to the wetland.

Solid ledge rock can be found at or near the surface in some parts of Wisconsin. It can make a desirable trail, provided the area is reasonably smooth -free of fissures or faults. A word of caution: some rock surfaces can become quite slippery when wet. However, with cautionary signing these areas may still be appropriate for ATV trail use.

Almost all soil conditions can be developed into ATV trails with the expenditure of money, but development of these difficult areas will also require long-term maintenance costs. In short, these trail segments with adverse conditions should be kept to a minimum for both long-term cost and environmental reasons.

### **Slopes**

The slope conditions along an ATV trail are also a good indicator of development costs - and, to some extent, long-term maintenance cost.

A quick way to check slope conditions is to use a 1:24,000 scale topo map for quick evaluation of the slopes along the trail, i.e., 10-foot rise over 100 feet equals 10% slope on a topo map (see below slope graphic). However, there is no substitute for direct field measurement; in that case, use an "Abney Hand Level" to recheck areas with critical slope conditions. The following slope conditions are divided into three broad categories: mild, moderate and steep slopes.

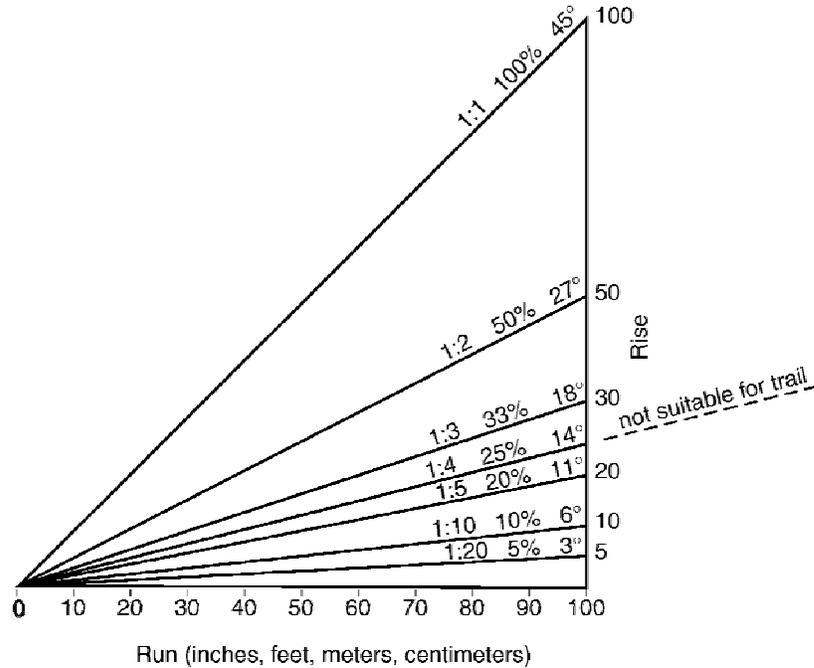
Flat to mild slopes of **1% to 5%** are easy to develop into ATV trails and are even desirable to provide some drainage.

Moderate slopes in the **6% to 12%** ranges are workable and will require additional protective measures depending on soil types - and these slopes also provide a moderate challenge for the ATV rider. The maximum sustained grade on ATV trails will be 12%.

Steep slopes from **13% to 25%** become problematic for development. Great care should be used in developing trails on steep slopes. A steep trail over even a brief distance can provide a high degree of difficulty for the ATV rider. If a steep slope must be crossed, it would be best to incorporate steep slopes in short duration, a few hundred feet at a time, mainly to provide diversity and rider challenge. Steep slopes with light sand or organic soil type may require extensive armoring with gravel, frequent water bars, culverts, pavers, GeoBlock®, and even pavement to prevent erosion.

Extended slopes in excess of **25%** should not be considered for ATV trail development.

**Run and Rises Chart**



**WATER FEATURES**

Many trail users highly value proximity or access to lakes, streams and wetlands. These resources are easily degraded, however, and a comprehensive set of federal, state, county, and local requirements must be taken into consideration when considering trail development.

Water access is a magnet for trail users. Access points should be carefully identified and designed to prevent erosion and sedimentation problems and unauthorized off-trail operation on banks or beds of waterways and wetlands. Where any of these potential impacts are likely, the trail should be routed away from water features.

Here is a brief summary of water laws and requirements. DNR water management specialists should be consulted regarding water law issues related to trail development. Additional details and recommendations for trail development are provided in following sections.

**WATERWAY AND WETLAND PROTECTION REQUIREMENTS  
(PARTIAL LIST)**

<b>Environmental Issue</b>	<b>Authority</b>	<b>Contact</b>
Waterway Crossings and Modifications	Chapter <a href="#">30</a> , Wis. Stats.	DNR Water Management Specialist
Wetland Crossings and Modifications	Chapter <a href="#">NR 103</a> , Wis. Adm. Code (Chapter <a href="#">281</a> , Stats.) Federal Clean Water Act, Section 404	DNR Water Management Specialist US Army Corps of Engineers
Stormwater and Grading	Chapter <a href="#">NR 216</a> , Wis. Adm. Code (Chapter <a href="#">283</a> , Stats.)	DNR Storm Water and Water Management Specialists
Shorelands and Floodplain	County Shoreland and Floodplain Zoning Ordinances Pursuant to Chapter <a href="#">NR 115</a> , Wis. Adm. Code (Chapter <a href="#">59</a> , Wis. Stats.) and <a href="#">NR 116</a> , Wis. Adm. Code (Chapter <a href="#">87</a> , Stats.)	County Zoning office  Also check with local jurisdiction (township, village, city)

**Water Crossings**

In Wisconsin, permits are needed to cross all navigable waterbodies and wetlands including marshes, ponds, lakes, streams, rivers, some intermittent streams, and even some drainage ditches that may be navigable only part of the year. The permit will require a detailed review of alternatives and may require rerouting the trail if an alternative can be found that would not impact water features.

If the permit process indicates that no suitable alternatives exist and that a water feature must be crossed, the crossing should be designed to minimize impacts on the water feature. Bridges are recommended for open water crossings. Culverts are less desirable but may be acceptable in certain circumstances. Water fords are the least desirable type of water crossing and should only be used in limited circumstances.

Trail managers and designers should anticipate that trail users may be tempted to go off-trail at water crossings. Techniques such as additional signs, design considerations such as boulders or brush next to a bridge for example and law enforcement will be needed to prevent damage.

**Bridges:** Bridges are the most effective and environmentally friendly way to cross a water feature (see Bridge Guidelines WDNR PUB-CF-005 2003).

Things to consider in siting a bridge on an ATV trail:

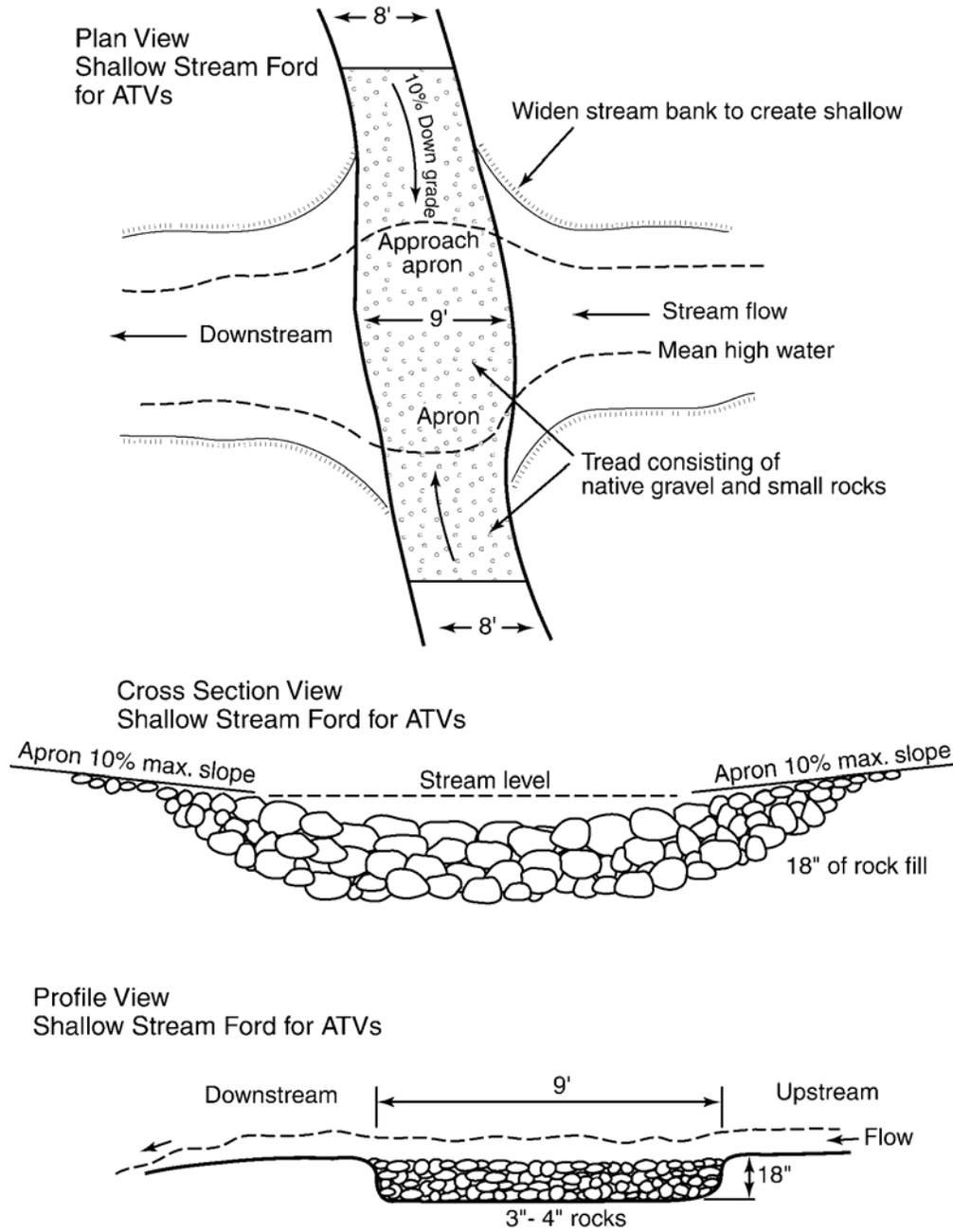
- All bridges and fords should cross at right angles, if at all possible, to the water feature or flow to minimize environmental impact, provide a safe crossing, and reduce costs.
- Bridge should not be located near a sharp bend in the stream of a river channel. Look for a straight section with natural narrowing with moderate flows.
- If possible, choose a site with upland (higher) bank as opposed to a sectional with a wetland edge. This will minimize the impacts to wetland along the stream.
- Navigable waters require five feet of boat navigation clearance for normal water levels to bottom of the bridge. This will also be required on relatively small waters suitable for canoe and kayak use, even though canoe use may not be common. This may mean that the bridge and approaches will be raised, arched, or elevated above the normal bank height.
- Bridge carrying capacity should allow for mowing equipment (tractor and mower)—10,000 lbs at mid span. In addition, in some situations, larger capacity (14,000 lbs) may be needed to do development and maintenance (e.g., gravel truck). In place of heavy bridge construction, a water crossing ford may be used on small to mid-sized

streams to provide maintenance access, or means of access other than the ATV trail that would not involve a bridge crossing could provide the appropriate access.

**Culverts:** Culverts can be an effective means of crossing on only small to moderate streams. Some analysis of the watershed is needed to provide properly sized and placed culverts. Culverts of corrugated steel, plastic or concrete usually require considerable amounts of fill on both sides and one foot of fill above the top of the culvert to provide structural strength. In addition, culverts can be a barrier to some types of fish and aquatic invertebrate migrations. The minimum size culvert should be 18” in diameter to facilitate maintenance, even though a smaller culvert might suffice. See Culvert Placement Diagram in Trail Drainage and Erosion Protection section.

**Water Fords:** Water fords will be considered only on very small streams where ATV use or other vehicle use would be infrequent; otherwise a bridge will be required on most navigable water and intermittent drainage ways that will receive frequent use (more than six crossings per day). The graphic that follows details the proper construction of a small stream ford.

### Constructions Detail of a Water Ford



### **Wetland Crossings**

In Wisconsin, wetland crossings and modifications (including filling) are regulated activities. In addition to the state review, a federal permit is required for wetland fills. The permit application process will require a detailed review of alternatives that would avoid wetland impacts, including a “no action” alternative. Trails may require rerouting if an alternative can be found that would not impact wetlands.

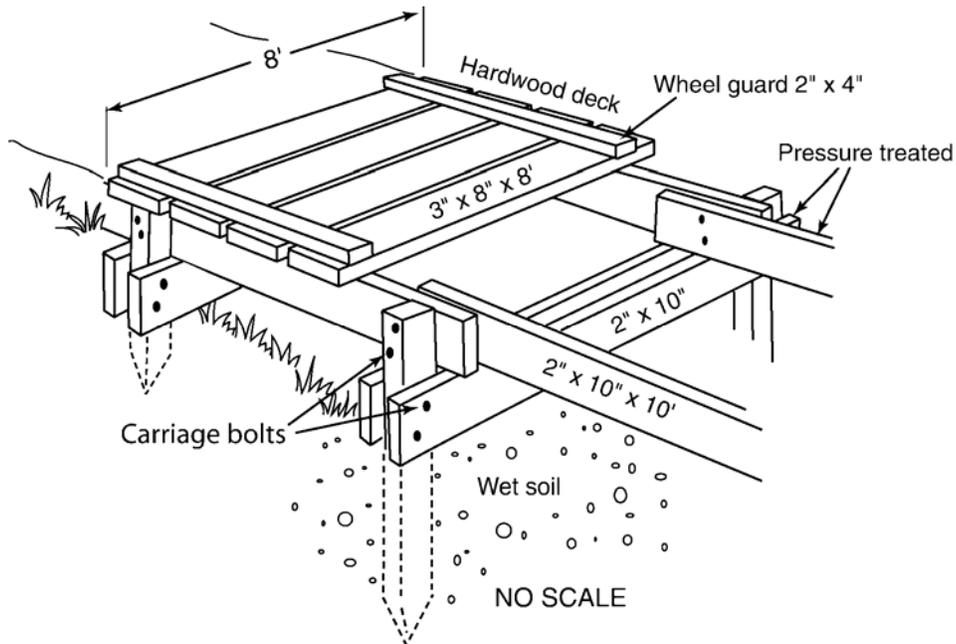
Wetland maps are available through the Department. Be aware that dry and wet weather cycles of 7 to 10 years are common in Wisconsin and can influence local water tables. In dry years, it may not be obvious that a trail is passing through a wet area. Some of the more reliable indicators of wetland conditions are the presence of wetland plants, mottling in the subsoil, or the presence of very dark organic soils and dry peat soils.

If the permit process indicates that no alternatives exist and that a wetland must be crossed, the Department will require use of special construction techniques to help reduce the impacts. Elevated boardwalks (raised plank decking) are preferred; they are considered an avoidance alternative depending on how they are constructed and may be unregulated. Other wetland crossing methods such as puncheons and turnpikes or raised fill would be subject to a detailed state and federal review. Puncheons are preferred over turnpikes and fills. Turnpikes and fills will require a permit from the U.S. Army Corps of Engineers in most cases.

Again, trail managers and designers should anticipate that trail users will be tempted to go off-trail at water and wetland crossings. Techniques such as additional signs, design considerations boulders, dense shrub planting next to a bridge, along with enforcement will be needed to prevent damage.

**Raised Plank Decking:** Raised plank decking consists of heavy wood deck planks supported by a low piling. This type of construction minimizes impacts to the wetland but can only be used where underlying soil will support upright pilings. The big advantage of this type of construction is that it utilizes wooden planks and beams that are readily available at commercial lumberyards; they can all be pre-cut and are easy to assemble and fasten in place. However, transportation to remote trail sites can be costly.

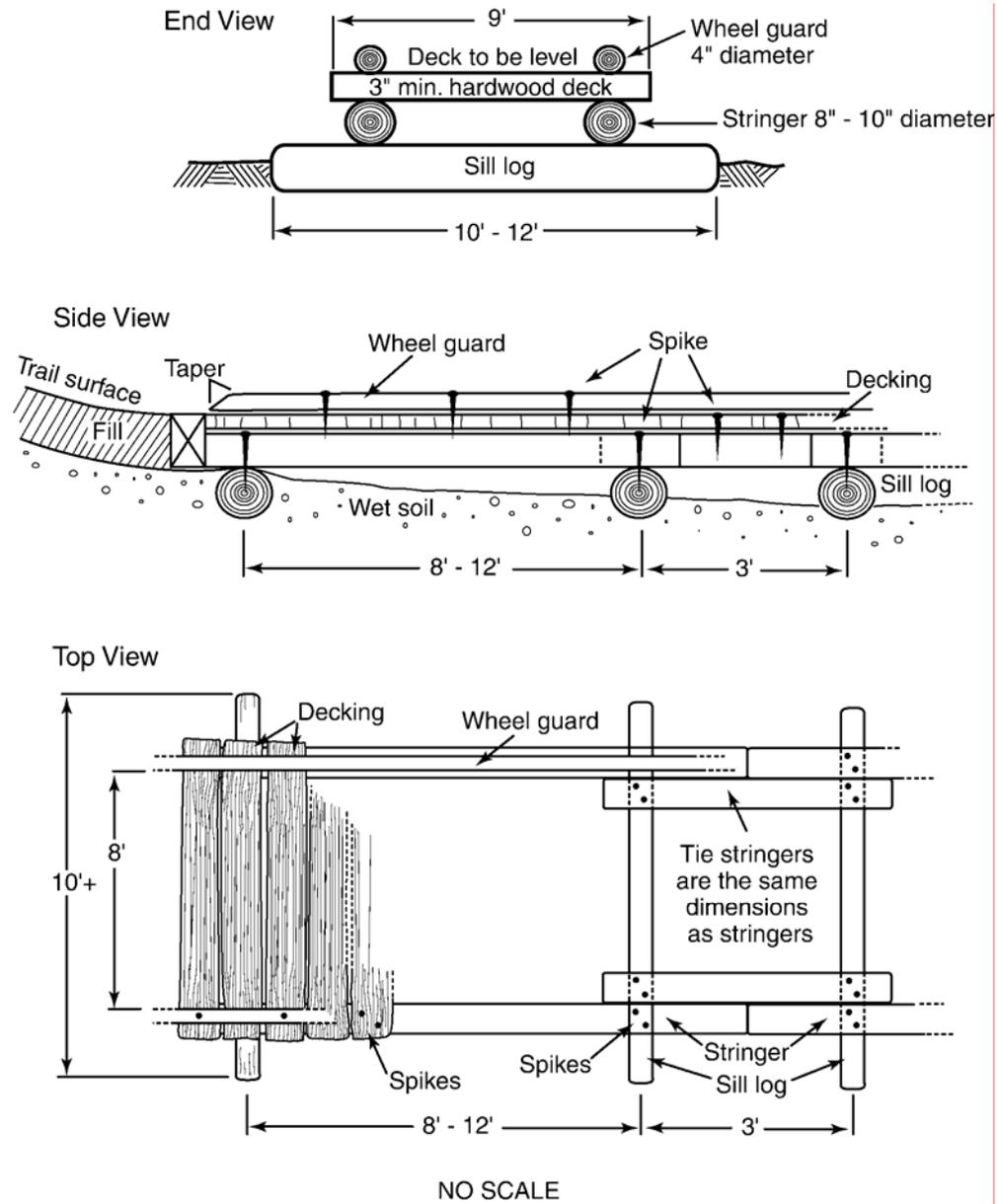
**ATV Raised Plank Decking Diagram**



**Puncheons:** Puncheons are structures made up of rough-cut logs. The bottom members consist of sill log base placed horizontally on a wet area to provide a base for a log stringers that support a deck of rough-cut planks (see Puncheon detail). This construction technique is useful where soil conditions will not support upright pilings. The softer the soil conditions, the greater the frequency and length of horizontal sill support logs that will be needed to support the stringers and deck.

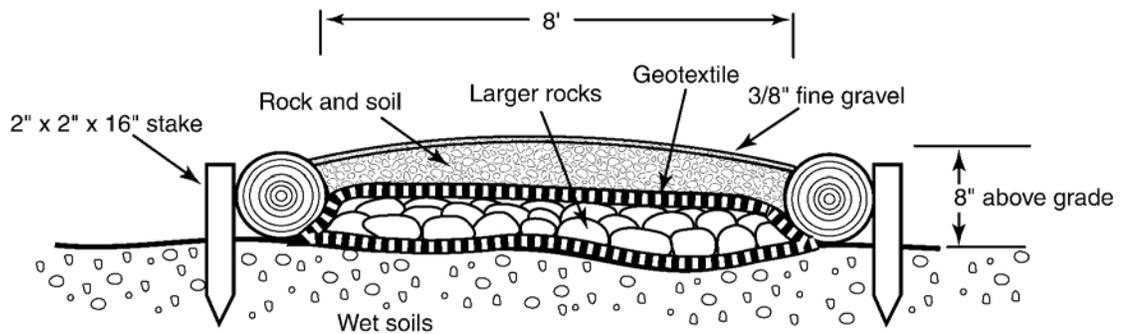
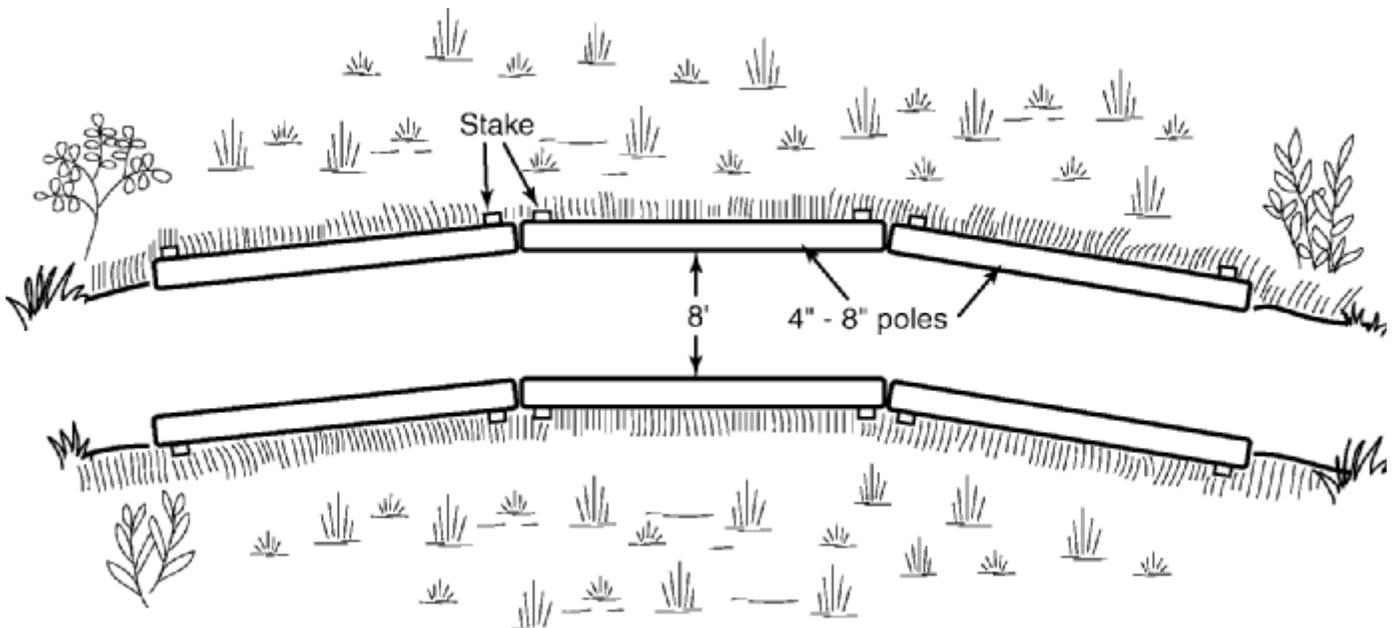
Considerable judgment is needed in the use and placement of this type of construction; in flood ways and flood plain areas, this type of construction can be washed away because these are unanchored structures. The big advantage of this type of construction is that it utilizes rough-cut local timber at relatively low cost in remote areas where transportation can be costly.

**Typical Puncheon Construction Detail**



**Turnpike or Raised Fill:** The use of a long, narrow raised bed of fill to cross wetland should be avoided if possible. In wetlands, they can collect water and alter the natural surface flows, even with the use of culverts, and can cause significant changes in the surrounding vegetation. It is possible with the use of special geo-textiles with larger rock base to design a pike that better accommodates modest water flowing through the base of the structure. See Turnpike or Raised Fill Construction diagram.

**Turnpike or Raised Fill Construction**



**SHORELAND, FLOODPLAIN AND OTHER LOCAL ZONING ORDINANCES AND REGULATIONS**

Towns, cities, villages and counties regulate activities through zoning ordinances. All counties, except Milwaukee County, have shoreland zoning ordinances in place that regulate activities within:

- 1,000 feet of the ordinary high water mark of a lake, pond or flowage; or
- 300 feet of the ordinary high water mark of rivers and streams or to the landward side of the floodplain, whichever distance is greater.

Floodplain zoning ordinances and shoreland-wetland zoning ordinances are also typical in many locations and apply in those areas mapped as floodplains or shoreland-wetlands. General zoning ordinances apply to the entire area within a governmental unit.

Under Wisconsin common law, state agencies are not subject to local zoning ordinances except when constructing buildings, structures or facilities to be used by state employees instead of for use by the general public. However, the DNR has a policy of trying to comply with local ordinance regulation as much as possible and still achieve the goal of a project. DNR's "good neighbor" policy is to try to comply with the substantive standards that would apply to similar projects completed by a private entity.

DNR staff should not be applying for zoning permits (except when constructing buildings, structures or facilities to be used by state employees instead of for use by the general public), paying fees, or appearing before boards of adjustment/appeals or planning and zoning committees to apply for conditional use permits or variances. Regardless of whether a project and its design will or will not meet local ordinance requirements, the procedure outlined below should be followed.

1. The property manager should advise local zoning officials about the proposed project. Provide zoning officials with detailed information about the proposed project so they can give us their comments and suggestions on how the proposed project might be improved.
2. If the local zoning officials do not agree with the plans for the proposed project, the property manager needs to inform his/her immediate supervisor. The supervisor, with assistance from the regional DNR zoning specialist, should work with the property manager to seek resolution with the local zoning officials.
3. If the local zoning official still does not concur, a letter should be drafted for signature by the regional land and/or water media leaders advising the local zoning official in writing of the reasons for proceeding with the project without local zoning acceptance.

In Wisconsin, storm water construction site discharge permit coverage is required where the trail construction will disturb one or more acres of land. This permit requires the development and implementation of an erosion control plan to keep sediment from eroding into waters of the state during construction until the trail is stabilized from erosion. For example, if a 10-foot wide path is graded for a length of 4,356 feet or more, then construction site permit coverage is required. A Notice of Intent (application for construction site permit coverage) must be submitted to the Department a minimum of 14 working days prior to the anticipated start of construction.

## **DEVELOPING AN ATV TRAIL**

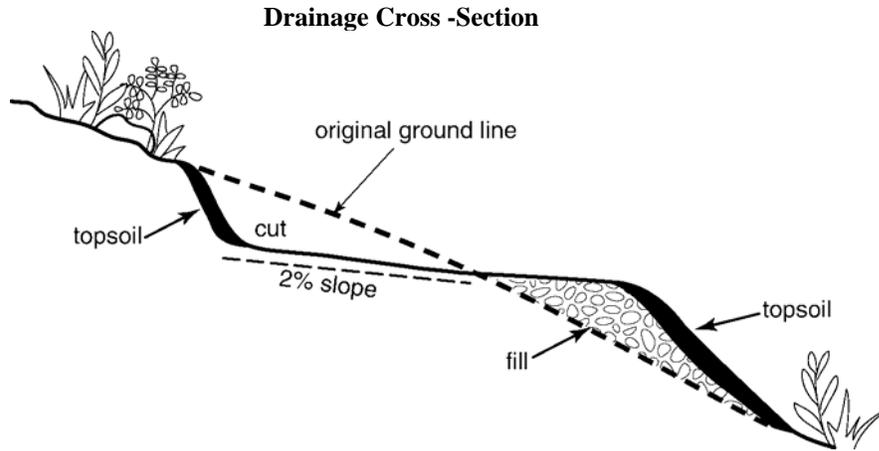
### **Trail Alignment**

Assuming you have secured appropriate land rights to construct an ATV trail, the first step in laying out the trail is to walk the trail you have mapped out on the 1:24000 scale USGS map and stake and flag the centerline of the trails. The process will require minimal clearing of the centerline - this is the best time to make final field adjustments in the centerline to avoid large trees and other obstacles, taking care that the trail is still properly aligned. A combination of wooden stakes at the centerline and plastic flagging to mark the extent of the clearing of the ATV trail should be used. The goal is to align the trail along a smooth arc so as to provide visibility ahead of and behind the rider.

### **ATV Trail Width**

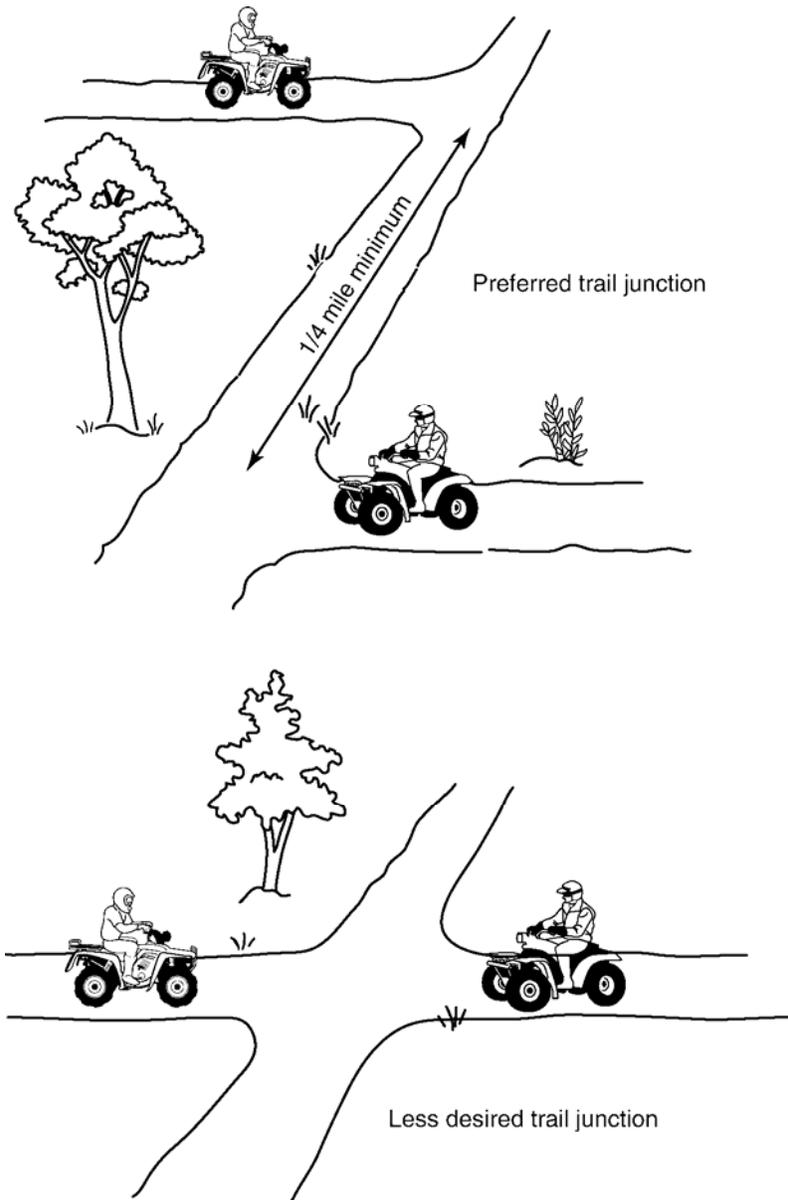
The normal straight or slightly curved trail tread for a one-way ATV trail should be a minimum of 8 feet wide for a one-way trail and 12 feet wide for two-way ATV trail. The trail tread will require additional widening of the tread at turns, bridges, water crossings, and intersections

On level ground trails will be crowned from the center to provide drainage. With ATV trails that cross a slope, the trail tread should be pitched toward the downhill side with a 2% slope to facilitate natural sheet drainage. See trail drainage cross-section below.



Intersecting trails should be at right angles to the main trail and avoid a direct crossing; instead, stagger the crossing if possible by  $\frac{1}{4}$  mile. (See the following attached detail.)

### Intersecting ATV Trails Crossing



### Vegetation Clearing

The next step in construction of the actual trail will require clearing of vegetation and removal of stumps and root tangles, loose stones, and other debris for the trail corridor. The area to be cleared should be a minimum of 12 feet wide on straight-a-ways and 16 feet wide on turns; at intersecting ways, additional clearing may be needed to provide clear visibility in several directions.

Additional clearing but not grading may be needed along trails to remove hazard trees, create aesthetic views, wildlife openings, or restore some native plant community type and manage water runoff.

If the trail construction activity will disturb one or more acres, a DNR stormwater permit and other requirements will apply. See information above.

Please note that any construction activity on the banks or slopes adjacent to navigable water and wetlands (including grading of less than one acre) are regulated. Contact DNR water staff before proceeding.

### **Grading**

Grading will be required on most new ATV trails. This involves clearing topsoil; usually the darker organic soils are bladed to one side to be used in finish grading of side slopes and shoulders of the trail. The grading out of a trail usually involves taking down higher spots to be used in nearby low spots of the trail - a process called "balancing out cut and fill." The goal is to minimize the movement of soil and create a trail that blends with the topography and create generally smooth arcing trails designed for the average ATV rider.

If the trail construction activity will disturb one or more acres, a DNR stormwater permit and other requirements will apply. See information above.

Please note that any construction activity on the banks or slopes adjacent to navigable waters and wetlands (including grading of less than one acre) is a regulated activity. Contact DNR water staff before proceeding.

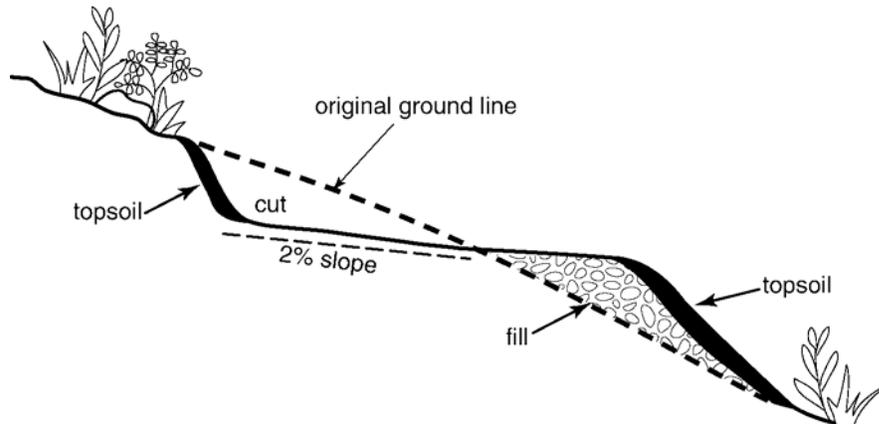
### **Trail Surface**

The final top dressing of the trail will often be of local subsoil. However, if local soil conditions are unfavorable and trail surfacing must be ordered - crushed gravel or crushed stone in gradation #3 WDOT mix (3/8- inch sieve) is recommended for the trail surface.

### **TRAIL DRAINAGE AND EROSION PROTECTION**

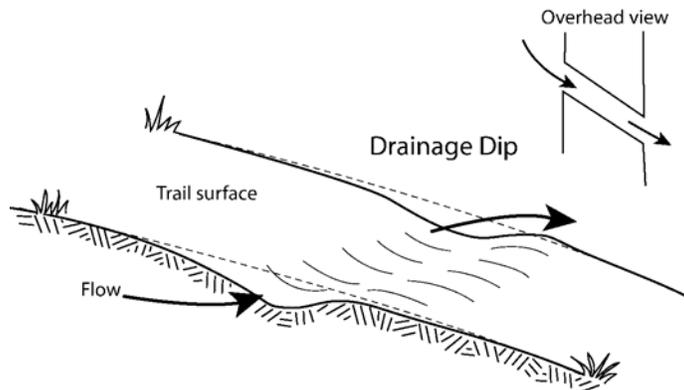
The surface water runoff is one of the significant impacts of trail development. The more recent thinking is to minimize the collection or concentration of surface water to the greatest extent possible. The following are techniques that can help minimize water problems by the maintenance of natural surface flow across the trail, the frequent use of drainage dips, and proper use and placement of culverts. See details below.

### Drainage Cross Section



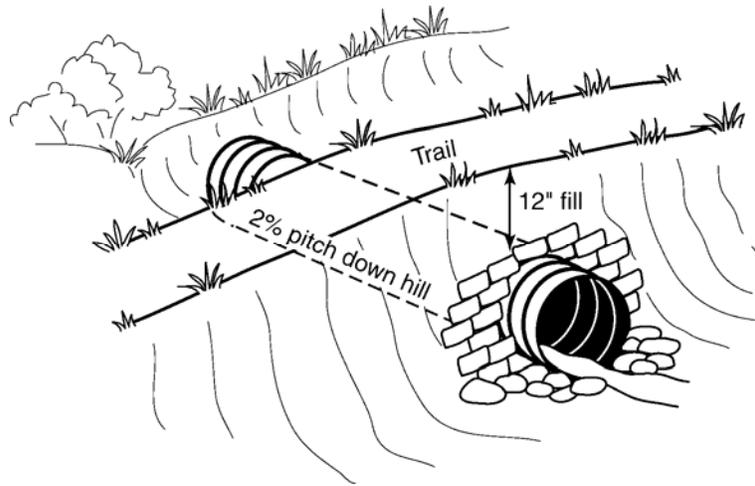
**Drainage dips** are shallow diagonal depressions in the trail surface that are used to move small amounts of surface water across the trail. They should be used at frequent intervals, i.e., every six feet on the steeper sections of the trail to avoid the collection of water on the uphill side of the trail.

### Shallow Drainage Dip 1''-2'' Depth



**Culverts** are effective in moving water under the trail surface but work best with slight pitch of 2% and need 12'' of fill over the top of culvert for load bearing for vehicles. This may mean raising the trail bed as much as 30'' above the surrounding grade to accommodate the 18'' culvert (see below).

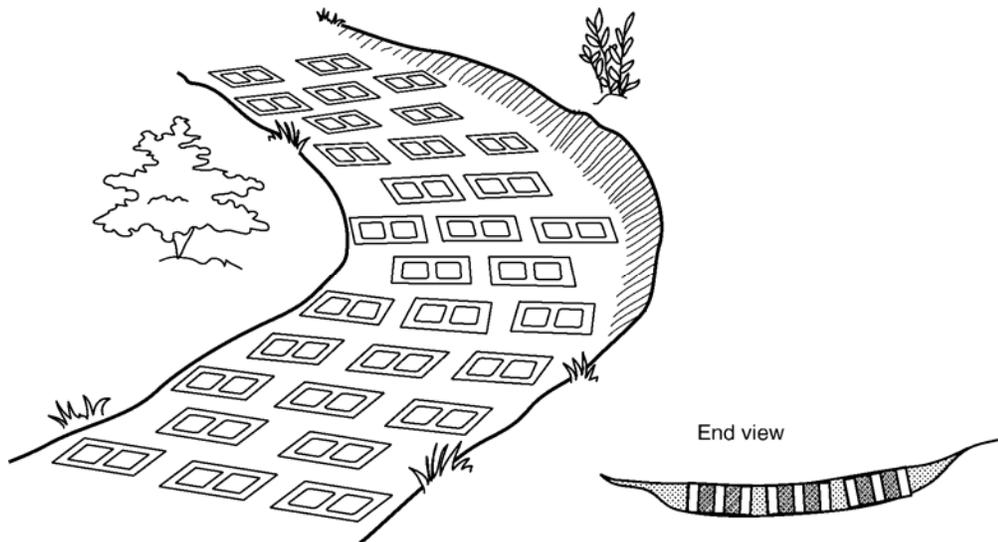
**Culvert Placement Diagram**



**Armoring ATV Trails**

Even modest turns on level ground are subject to a significant degree of rutting action over time and potential erosion. The cutting action is compounded on sloping ground and if left unchecked can lead to serious erosion. To deal with this situation, it is possible to use cinder blocks or other deeply bedded pavers laid out in a banking pattern to greatly reduce the normal cutting action and reduce long-term maintenance costs (see drawing below).

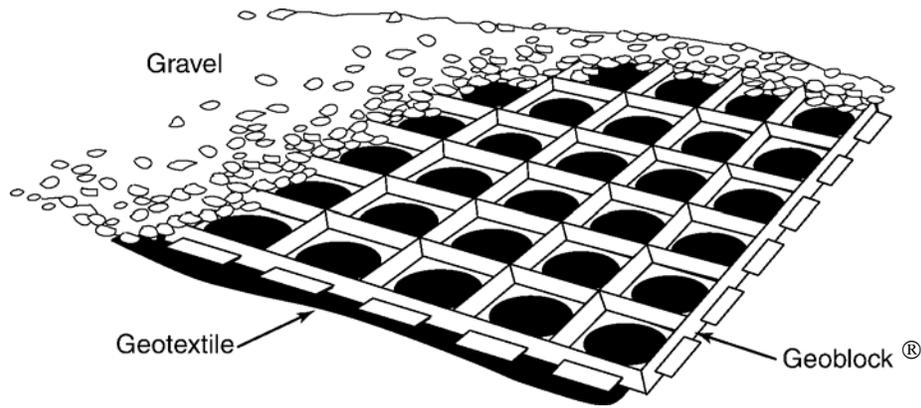
**Cinder Block Armoring of a Turn**



**GeoBlock®**

In addition, the placement of GeoBlock® ridged, plastic web materials placed over geofabric layer can be use in some light soil conditions, steep slopes and seasonally wet areas. (See drawing below.) Early test results of GeoBlock® by U.S. Forest Service seem to indicate good durability in armoring sensitive trail sites. However, costs of the product and its installation can be quite high.

**Geoblock® Armoring of a Trail  
Detail for 8' Wide Trail.**



**HIGHWAY AND ROAD CROSSINGS**

State and local permits are required to cross state and local highway right-of-ways. ATV trails should be aligned to cross at approximately right angles (90 degrees +/-) to the roadway at a point that provides clear visibility in both directions for both the highway motorist and the ATV rider.

ATV trails crossing major highways with traffic counts of 3,500 vehicles per day or higher or highways or with other road alignment or visibility problems may have to under go a warranting process established by DOT. The process could result in relocation of an ATV crossing or and may require a grade separation, such as an underpass or overpass.

Contract District DOT Offices well in advance of any proposed ATV road crossings.

**SIGHT DISTANCE**

**At Highway Crossings**

A minimum sight distance from the shoulder of the highway should be 10 x posted highway limit i.e. on 55 mph highway the site distance should be 550' feet down the roadway in both directions.

**At ATV Trail Intersections**

A minimum sight distance from the intersecting trails should be 150 feet down the trail in both directions.

**ATV Trails**

On ATV trails, forward minimum sight distance on the trail will increase with the design speed of the ATV trail. The following are suggested sight distances related to operating speed on the ATV trail.

ATV Braking Chart

Speed - MPH	Traveling Feet Per Second	Braking Time in Seconds with Distance Traveled in Feet		
		.75 Sec	1.5 Sec	3 Sec
20	29.33	22	44	88
30	44.00	33	66	132
40	58.67	44	88	176
50	73.33	55	110	220
60	88.00	66	132	264
70	102.67	77	154	308

**ATV TRAIL SUPPORT FACILITIES**

The following support structures and facilities may be needed at major access point on an ATV trail system. Support facilities can be provided by private sector businesses or other units of government especially on regional trail networks.

### **Entrance Sign**

These may be needed along public access road leading to mark the ATV Trailhead. In addition, State and Federal highway directional signs may be needed on major approach roads.

### **Signing at Access Points**

Kiosks will be needed at key access points along an ATV trail. They will usually contain user information such as emergency numbers, trail maps, and any information about trail conditions. Informational signing should be placed in one designated area at each trail access point. Usually, a kiosk will be used at the trailhead to help reduce sign clutter and help visitors find crucial information.

### **Trail Signing**

Standard trail signing will be required on all Department-designated trails. See Department Trail Signing Handbook PUB-CF-023-2003.

The following are the minimum types of signs (see Department Sign Handbook, [8672.05](#), for ordering and mounting details):

**Directional Signs:** Directional signs and arrows will be placed along the trail as needed at all intersections or at directional changes in the trail.

**Mile Markers:** Trail mile markers will be posted at one-mile intervals to facilitate emergency rescue and trail maintenance.

**Stop Signs:** Stop signs will be placed on ATV trails at all public road crossings.

**Warning Signs:** Warning signs will be posted as needed to give advanced warning on the trail to reduce speed at bridges, fords, turns, wetland crossing, and changes in speed due to trail conditions.

**Speed Limit:** Speed limit signs will be posted as appropriate for existing condition but will not exceed 40 mph. on state ATV trails.

### **Gates**

Trail gates are critical to the operation of ATV trail systems and will be installed on all trail systems on department lands. Weather conditions, construction, and maintenance activity may require temporary closing of ATV trails.

### **Parking**

Parking for cars and trailers with ATVs will be needed at access points. The parking lot design will be similar to boat launch parking standards. (See Department Design Standards Chapter 90.)

### **Toilets**

Toilet facilities will be required at only major ATV trail access points. Regional trail networks may use private facilities provided appropriate trail links can be made.

### **Drinking Water**

Drinking water will only be required at major ATV trail access points.

**Waste**

Trash disposal containers will not be provided at trailheads on Department lands. Instead, carry-in and carry-out trash policy will be used on all state ATV trails, similar to other types of state recreational trails.

**MANAGEMENT, MAINTENANCE AND MONITORING OF ATV TRAILS**

**Trail Inspections**

On Department-managed lands, all trails require biannual safety inspections with a report filed by the inspector. Environmental inspections and monitoring of trail conditions should be recorded at that time, as well.

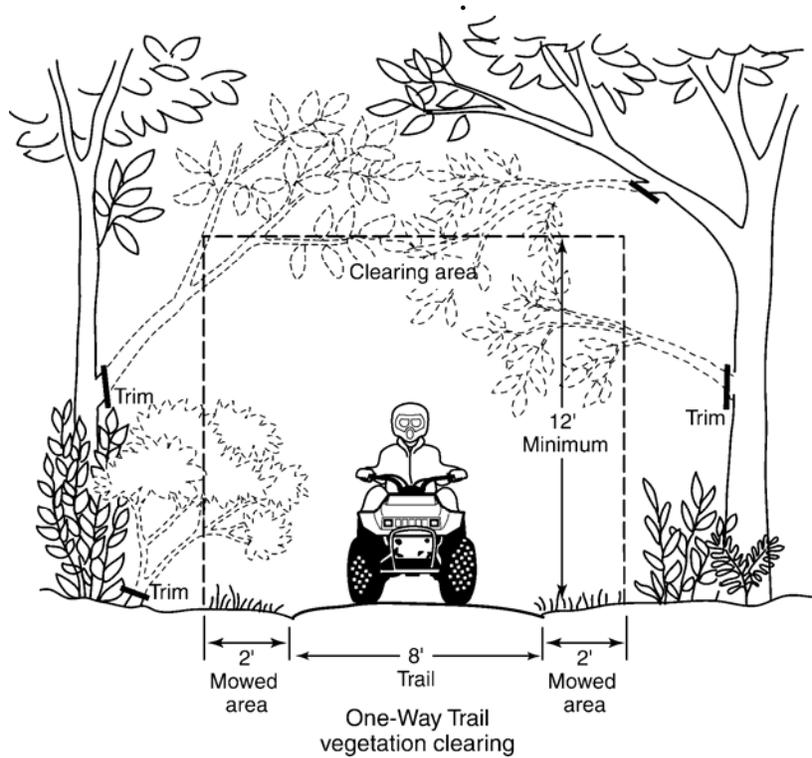
**Trail Closure**

The property manager will be responsible for making a determination of when an emergency, weather conditions, or repair and maintenance warrant trail closure. On state lands, a combination of legal notice (newspaper) for a non-emergency, posted notice signing, along with gate closure will be used to officially close an ATV trail to public use.

**Trail Vegetation Maintenance**

All ATV trails will require yearly vegetation maintenance. The work is best accomplished in the dormant seasons of late fall or winter. Vegetation should be cleared to twelve feet over the trail and two feet on either side of the trail. Particular attention should be paid to hazard trees and limbs along the trail. Overhead and side limbs clearing should take into account the wet and ice-covered limb vegetation that may block the trail. See diagram below.

**Standard Trail Vegetation Clearances**



**TRAIL ABANDONMENT AND RESTORATION**

Occasionally, it may be necessary to abandon all or parts of an established ATV trail. ATV trails on Department lands that are no longer in an approved recreational use will be restored to complement the surrounding natural landscape conditions or as in the case of an abandoned railroad or roadway corridor to the conditions prior to the development of the original ATV trail. Restoration will normally include the removal of all built structures such as fords, bridges, culverts, gates, and signing, including proper disposal of material from these structures into approved landfills or approved recycling processes.

Trail tread and corridors should be re-graded to blend into surrounding slopes and terrain. All disturbed areas will be covered with minimum of 3” of topsoil, preferably from the local area, and re-seeded and planted with native vegetation that includes grasses, forbs, shrubs, and trees consistent with the ecosystem type for that site. See Ecological Landscapes of Wisconsin Handbook, [1805.1](#), for additional guidance.



**County Forest ATV Trail Funded  
Development Projects**

Provided by the Wisconsin County Forests  
Association, March 2008

ATV Development Projects - County Forest Trail Systems  
(Includes Snowmobile bridge developments)

<u>Grant</u>	<u>Project</u>	<u>Item</u>	<u>Quantity</u>	<u>Unit</u>	<u>\$/Unit</u>	<u>Cost</u>
ATV-1591	Hay River Bridge & Trail - 3.5 miles	Bridge	40	feet	\$447.50	\$17,900.00
Barron Co.		2007/2008 Excavating				\$17,800.00
	<b>\$56,518.88</b> Not Complete	Labor				\$320.00
		Engineering				\$200.00
	\$892.50 per foot bridge construction	Permit				\$50.00
	\$5,948.25 per mile trail construction (less bridge)	Signs				\$516.50
		Site Prep				\$19,732.38
<hr/>						
ATV - 1673	Northside Trail - 4.8 miles	Bridge	40	feet	\$447.50	\$17,900.00
Barron Co.		2008/2009 Excavating				\$15,750.00
	<b>\$63,060.68</b> Not Complete	Labor				\$600.00
		Signs				\$1,233.50
	\$841.25 per foot bridge construction	Site Prep				\$27,577.18
	\$6,127.23 per mile trail construction (less bridge)					
<hr/>						
ATV-1327	Trail 925 East - .56 mile	Site Prep				\$950.00
Burnett Co.		Bridge	40	feet	\$407.50	\$16,300.00
	<b>\$46,253.84</b> per mile construction inc. bridge	Boardwalk	90	feet	\$216.67	\$19,500.00
		Signs/Gates/Misc				\$703.84
		Trail Leveling &Gravel	3000	feet	\$2.93	\$8,800.00
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ATV-1479	Chippewa Co. Trail Extension - 3.5 miles	Dozer	60	hours	\$85.00	\$5,100.00
Chippewa Co.		Dozer	40	hours	\$65.00	\$2,600.00
	<b>\$34,295.00</b> Not Complete	Pit Run Gravel	1500	yards	\$6.00	\$9,000.00
		Clearing/Chipping	0.2	miles		\$2,075.00
	\$9,798.57 per mile construction inc. bridge	Culverts				\$2,575.00
		Relocate Bridge				\$2,500.00
		Bridge Decking				\$70.00
		Posts	100	posts	\$13.75	\$1,375.00
		Signs/Misc				\$1,600.00
		Gates				\$400.00
		Rip-Rap & Installation				\$2,000.00
		Labor	200	hours	\$25.00	\$5,000.00

Clark Co.	Bachelor Ave. ATV Trail - 2.0 miles	Labor	320 hours	\$32.08	\$10,267.00
		Equipment	251 hours	\$33.22	\$8,337.00
	<b>\$42,694.00</b> Complete	Contract Equipment			\$4,500.00
		Gravel/Rock			\$17,290.00
	<b>\$21,347.00</b> per mile construction	Signs/Misc			\$400.00
		Culverts			\$1,900.00
S-3281 Douglas Co.	Cut-A-Way Bridge Demo/Replacement	Legal notices			\$461.93
		Engineering			\$20,375.00
	<b>\$106,564.53</b> Complete	Demo/Installation			\$85,559.50
	<b>\$1,614.61</b> per foot construction	Signs			\$168.10
Langlade Co.	Wolf River State Trail Sec C - 2.45 miles	Labor	8 hours	42.51	340.08
		Truck	4 hours	13.00	52.00
	<b>\$61,422.08</b>	Grade	2.45 miles	1,500.00	3,675.00
		Gravel	2.45 miles	15,000.00	36,750.00
	<b>\$25,070.24</b> per mile construction	Signing			5,850.00
		Brushing	2.45 miles	500.00	1,225.00
		Gates	1 gate	2,500.00	2,500.00
		Trailhead			11,030.00
Langlade Co.	Augustyn Springs - 10.5 miles	Dozer	50 hours	\$100.00	\$5,000.00
		Fill	1000 yards	\$5.00	\$5,000.00
	<b>\$13,495.16</b>	Fill	1000 yards	\$0.50	\$500.00
	<b>\$1,285.25</b> per mile construction	Brushing	10.5 miles	\$100.00	\$1,050.00
		Signs/Misc.			\$1,945.16

ATV-1335	Georgetown ATV Trail - 10.3 miles		Notices	2 notices	\$157.50	\$315.00
Price Co.		2007	Processor	269.5 hours	\$75.00	\$20,212.50
	<b>\$271,135.00</b> Complete		Skidder	185 hours	\$65.00	\$12,025.00
			Backhoe	563 hours	\$85.00	\$47,855.00
	<b>\$26,323.79</b> per mile construction		Log Truck	92 hours	\$70.00	\$6,440.00
			Dozer	248 hours	\$85.00	\$21,080.00
			Grader	12 hours	\$75.00	\$900.00
			Dump Trucks	187 hours	\$60.00	\$11,220.00
			Gravel	10090 yards	\$2.35	\$23,711.50
			Gravel	305 yards	\$8.00	\$2,440.00
			Loader	800 yards	\$0.85	\$680.00
			Gates	12 gates	\$158.00	\$1,896.00
			Culverts	150 feet	\$21.00	\$3,150.00
			Misc			\$4,055.00
			Bridge	75 feet	\$812.00	\$60,900.00
			Boardwalks	414 feet	\$70.00	\$28,980.00
			Labor	842.5 hours	\$30.00	\$25,275.00
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ATV - 1233	Rusk County Trail - 10 miles		Permits			\$226.39
Rusk Co.		2006	Engineering			\$9,768.80
	<b>\$272,107.87</b> Project Complete		Trail Construction			\$219,459.74
			Bridge	51 feet	\$441.32	\$22,507.54
	<b>\$27,210.79</b> per mile construction inc. bridge		Bridge Engineering			\$6,918.70
			Signs/Gates/Labor			\$13,226.70
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ATV - pending	Rusk County Trail - 14 miles		Engineering			\$48,500.00
Rusk Co.		2008/2009	Trail Construction			\$283,800.00
	<b>\$465,300.00</b> Pending ORV Review		Bridges (2)	120 feet	\$1,041.67	\$125,000.00
			Signs/Gates/Labor			\$8,000.00
	<b>\$33,235.71</b> per mile construction inc. bridges					
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ATV -1741	Spooner - Shell Lake Rail Grade - 4.5 miles	Gravel	3500 Yards	\$12.00	\$42,000.00
Washburn Co.		2008 Dozer	40 hours	\$39.00	\$1,560.00
<b>\$53,580.00</b>	Grant awarded, project pending	Grader	40 hours	\$53.84	\$2,153.60
		Operator	80 hours	\$30.00	\$2,400.00
<b>\$11,906.67</b>	per mile construction	Signs	36 signs	\$9.50	\$342.00
	(existing snowmobile trail)	Posts	36 signs	\$8.00	\$288.00
		Club Labor	24 hours	\$6.50	\$156.00
		Dust Agent	9000 gallons	\$0.52	\$4,680.00

ATV-1472	Harmon Lk Connector - 6 miles	<b>Puncheon</b>	<b>90 feet</b>	<b>\$123.60</b>	<b>\$11,124.00</b>
Washburn Co.		2008 Culvert	4 30" culvert	\$800.00	\$3,200.00
<b>\$94,726.00</b>	Grant awarded, project pending	Culvert	4 16" culvert	\$400.00	\$1,600.00
		Signs	50 signs	\$10.00	\$500.00
<b>\$15,787.67</b>	per mile construction inc. boardwalk	Posts	30 posts	\$8.00	\$240.00
		Gates	15 16' gate	\$200.00	\$3,000.00
		Gates	6 6' gate	\$100.00	\$600.00
		Dozer	80 hours	\$40.00	\$3,200.00
		Grader	40 hours	\$55.00	\$2,200.00
		ASV	12 hours	\$25.00	\$300.00
		Operator	132 hours	\$30.00	\$3,960.00
		Club labor	208 hours	\$6.50	\$1,352.00
		Gravel	4200 yards	\$15.00	\$63,000.00
		Permits	3 permits	\$150.00	\$450.00

ATV-1599	Thayer Rd Reroute - 1 mile	Gravel/pit run	1496 yards	9.17	\$13,718.32
Washburn Co.		2007 Club Labor	158 hours	\$6.50	\$1,027.00
<b>\$14,745.32</b>	Project Completed				

**\$14,745.32** per mile construction

ATV-1504	Hall Rd - Cedar Creek Firelane - 4.0 miles	Notice	1 notice	\$149.40	\$149.40
Washburn Co.		2007 Gravel	740 yards	\$16.00	\$11,840.00
	<b>\$92,851.80</b> Project Completed	Culvert	1 culvert	\$247.50	\$247.50
		Gravel	1605 yards	\$13.90	\$22,309.50
	<b>\$23,212.95</b> per mile construction inc. boardwalk	Culvert	3 culvert	\$300.00	\$900.00
	(50% new trail, 50% existing snow trail)	Culvert	2 culvert	\$165.70	\$331.40
	100% gravel surface	Culvert	4 culvert	\$257.85	\$1,031.40
		Club Labor	856 hours	\$6.50	\$5,564.00
		Grader	40 hours	\$61.34	\$2,453.60
		Gravel trucking	270 hours	\$80.00	\$21,600.00
		Gravel stockpile	1650 yards	\$4.00	\$6,600.00
		<b>Puncheon bridge (3)</b>	<b>305 feet</b>	<b>\$65.00</b>	<b>\$19,825.00</b>
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ATV-1432	Lakeside Rd to Hall Rd - 8.1 miles	Notice	1 notice	\$14.40	\$14.40
Washburn Co.		2007 Notice	1 notice	\$16.60	\$16.60
	<b>\$96,790.97</b> Project Completed	<b>Bridge (prefab, installed)</b>	<b>40 feet</b>	<b>\$337.50</b>	<b>\$13,500.00</b>
		Backhoe	18 hours	\$100.00	\$1,800.00
	<b>\$11,949.50</b> per mile construction inc. boardwalk & bridge	Dozer	11 hours	\$80.00	\$880.00
	existing snowmobile trail	Gravel stockpile	5000 yards	\$3.65	\$18,250.00
	100% gravel surface	Gravel trucking	156 hours	\$42.00	\$6,552.00
		Culverts	11 culverts	\$218.77	\$2,406.47
		Trucking	585 hours	\$75.00	\$43,875.00
		Club Labor	461 hours	\$6.50	\$2,996.50
		<b>Puncheon Bridge (1)</b>	<b>100 feet</b>	<b>\$65.00</b>	<b>\$6,500.00</b>
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ATV-1344	Beaverbrook Trail- 6.4 miles	Backhoe	43 hours	\$105.00	\$4,515.00
Washburn Co.		2006 Gravel & Grading	2205 yards	\$11.66	\$25,710.30
	<b>\$34,760.87</b> Project Completed	Culverts	11 culverts	\$218.77	\$2,406.47
		Dozer	11 hours	\$39.00	\$429.00
	<b>\$5,431.39</b> per mile construction	Grader	15 hours	\$61.34	\$920.10
	existing snowmobile trail	Operator	26 hours	\$30.00	\$780.00
	70% gravel surface				

S-3146	Trail 8 Bridge (40' prefab)	Notice	1 notice	\$10.00	\$10.00
Washburn Co.		2007 Notice	1 notice	\$16.60	\$16.60
<b>\$16,857.10</b>	Project Completed	Bridge (prefab, installed)	40 feet	\$325.00	\$13,000.00
		Bridge railing	80 feet	\$40.00	\$3,200.00
	<b>\$421/linear foot</b>	Bridge approach	2 approaches	\$200.00	\$400.00
		Bridge decking	40 feet	\$3.00	\$120.00
		Club labor	17 hours	\$6.50	\$110.50
		Engineering (included)			
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S2342	Hay Creek Bridge (170' constructed)	Notice	1 notice	\$41.50	\$41.50
Washburn Co.		2002 Gravel	20 yards	10.7	213.89
<b>\$74,120.39</b>	Project Completed	Bridge + engineering	170 feet	\$434.50	\$73,865.00
	<b>\$436/linear foot</b>				
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	Trail 39 North - 15 miles	Dozer	380 hours	\$40.00	\$15,200.00
Washburn Co.		Grader	60 hours	\$55.00	\$3,300.00
<b>\$391,425.00</b>	Pending Review by ORV Council	Gravel	14500 yards	\$15.00	\$217,500.00
		Signs	215 signs	\$15.00	\$3,225.00
	<b>\$26,095.00 per mile construction inc. boardwalk</b>	Rock	40 yards	\$30.00	\$1,200.00
		Culverts	20 culverts	\$200.00	\$4,000.00
		Gates	24 gates	\$250.00	\$6,000.00
		Gates	24 gates	\$150.00	\$3,600.00
		<b>Boardwalk</b>	<b>1600 feet</b>	<b>\$80.00</b>	<b>\$128,000.00</b>
		Labor	400 hours	\$6.50	\$2,600.00
		Misc			\$6,800.00