Roads

Reference Conditions

Although Native American Indians likely used trails in and through the watershed for thousands of years, constructed roads did not exist prior to European settlement. Many early roads built to access the area likely mirrored Native American Indian trails because the explorers and colonists climbed over the same passes, followed the same river valleys, and eventually settled in many of the same village sites. As time went by and more people arrived in the area, the road network branched out to new residential areas, and eventually to areas of timber and mineral extraction. During the timber boom that occurred primarily between 1901 and 1920 in this area, roads or railroad grades were constructed in nearly every drainage. As the railroad logging played out, many of the towns and mill sites and railroads disappeared, but a legacy of roads and railroad grades remained.

Under Forest Service management, the road transportation system has continued to change. Some roads were abandoned by the Forest, others were improved, and most railroad grades were abandoned or converted to roads. The Civilian Conservation Corps constructed or reconstructed a number of roads in the 1930s in order to provide better public access, sometimes to recreation or administration sites that they also constructed during that period. Fire towers and associated roads were also built in these early years to help provide fire protection. Later, natural gas was discovered in the area, and roads were constructed to well sites and along pipelines. As previously cutover areas grew trees to merchantable size in the 1960s and 1970s, more roads were constructed for timber production. Finally, many user-created or "woods roads" have developed over time. The Forest does not maintain these roads, and in some cases, does not even have records or knowledge of their existence.

Roads have impacts, and as more people visited this and other national forests, the management of National Forest System (NFS) roads became an issue of national concern. Specific concerns linked to the road management include public access, resource damage, habitat loss and fragmentation, the need for roadless areas, maintenance capabilities, and economics. Through all the controversy, the Forest Service has maintained that some level of road development is needed for public access and to produce the goods and services that Americans expect from their national forests. A long-term and nation-wide approach to address many of these road issues was developed in the Forest Service Road Management Strategy adopted January 12, 2001. Sometimes referred to as the "Roads Rule", this policy established the scope and scale of roads analyses needed to inform road management decisions regarding new road construction, reconstruction, and decommissioning.

The Forest has adopted the agency's road management policy, and has incorporated many of the policy's premises into Forest Plan direction. These premises are largely reflected in Goals RF01 and RF02 for Transportation Planning and Development:

> **Goal RF01:** Provide a transportation system that is safe, cost efficient, meets access needs, and minimizes adverse impacts to natural resources.

Goal RF02: Provide developed roads to the density and maintenance level needed to meet resource and use objectives. During watershed or project-level planning:

a) Update inventory of area transportation system.
b) Determine the minimum transportation system necessary to achieve access management objectives.
c) Incorporate cost efficiency into construction, reconstruction and maintenance needs.
d) Identify roads to decommission, obliterate, replace, or improve that are causing resource damage.
e) Integrate needs for off-road parking.

Current Conditions

Classified and Unclassified Roads

Access to the Forest and the Upper Greenbrier Watershed is provided by a complex and integrated transportation system of roads under Forest Service, state, and private jurisdiction. The entire system of roads ranges from double-lane paved highways to narrow, native-surface roads. Roads are important facilities on the MNF, providing access for recreation activities, timber removal, resource utilization, wildland fire protection, and for facilities operated under special use authorizations. However, roads also have the potential to adversely affect a number of resources in various ways. Forest road systems are dynamic in that roads may be constructed or reconstructed for needed access, or they may be closed or decommissioned in an effort to reduce impacts to other resources.

Road access on NFS land generally consists of two components: Classified roads, which are typically part of the National Forest Road System or developed roads under other jurisdiction (generally federal and state highways or routes); and unclassified roads, also known as "woods roads", which are typically user-created roads that have never been designed, constructed, or maintained. There are an estimated 181.2 miles of Forest classified roads in the Upper Greenbrier Watershed. There are another 50.7 miles of State/Federal roads in the watershed that are considered classified roads by the Forest but are not under Forest jurisdiction. These roads are shown in Table RD-1.

Table RD-1. State/Federal Roads in the Upper Greenbrier Watershed

Name and Number	Miles	Status	Surface
State Hwy 92/Federal Hwy 250	7.7	Open	Paved
State Hwy 28/Federal Hwy 250	2.3	Open	Paved
State Hwy 92/State Hwy 28	1.1	Open	Paved
State Hwy 28	7.7	Open	Paved
Federal Hwy 250	7.1	Open	Paved
State Secondary Route 1	2.2	Open	Paved
State Secondary Route 3	7.4	Open	Gravel/Native
Burner Mountain Road	10.1	Open	Gravel/Agg
Middle Mountain Road (from Burner Mtn Road north)	5.1	Open	Gravel/Agg
Total Miles	50.7		

Please note that all road mileages and other road-related calculations in this section are estimates based on the best information that was currently available from various Forest databases, maps, aerial photos, and decision documents. Exact road figures, locations, and conditions will need to be confirmed on the ground during project-level planning and analysis.

Classified roads under Forest jurisdiction are shown in Table RD-2. Maps RD-1 and RD-2 show the location of the known classified and unclassified roads in the Upper Greenbrier Watershed.

Table RD-2. Forest Classified Roads in the Upper Greenbrier Watershed

Name	No.	Miles	Function	Status	Surface	Maint. Level	Comments
Middle Mountain	FS14	4.9	Arterial	Open	Agg/Gravel	4	SR28 to Burner Mtn Rd
Little River	FS17	6.3	Collector	Open	Agg/Gravel	3	
Gaudineer	FS27	1.5	Collector	Open	Agg/Gravel	4	
Gaudineer A	FS27A	0.3	Local	Open	Agg/Gravel	3	
Snorting Lick	FS35	3.5	Collector	Open	Agg/Gravel	3	
Snorting Lick A	FS35A	0.8	Local	Open	Agg/Gravel	3	
Island Campground	FS36	0.3	Local	Open	Agg/Gravel	3	
Glady-Durbin	FS44	17.4	Arterial	Open	Agg/Gravel	4	
Abes Run	FS51	4.6	Collector	Open	Native	2	
Abes Run A	FS51A	2.5	Local	Closed	Improved	1	
Abes Run B	FS51B	1.0	Local	Closed	Improved	2	
Abes Run D	FS51D	0.5	Local	Closed			
Abes Run E	FS51E	0.5	Local	Closed			
Abes Run F	FS51F	0.4	Local	Closed	Improved	1	
Abes Run G	FS51G	0.4	Local	Closed			
Dilly Hollow	FS52	2.0	Collector	Closed	Agg/Gravel	3	Converted to trail for Smoke Camp TS- 1999
Dilly Hollow	FS52	0.2	Local	Closed	Agg/Gravel	3	Access to well site
Dilly Hollow A	FS52A	0.5	Local	Closed	Native	1	Linear wildlife opening
Buffalo Fork	FS54	5.5	Collector	Open	Agg/Gravel	4	
Buffalo Fork A	FS54A	0.1	Local	Open	Agg/Gravel	4	Parking at Lake Buffalo
Buffalo Fork B	FS54B	0.1	Local	Open	Agg/Gravel	3	Parking at Lake Buffalo
Long Run	FS57	3.2	Collector	Open	Agg/Gravel	3	
Long Run A	FS57A	0.9	Local	Closed	Native	1	No gate on visitor map
Smoke Camp	FS58	2.9	Local	Seasonal	Agg/Gravel	3	Open 8/15 – 4/15
Smoke Camp A	FS58A	2.3	Local	Closed	Native	1	
Smoke Camp B	FS58B	1.4	Local	Closed			Added in Smoke Camp
Smoke Camp BA	FS58BA	0.1	Local	Closed			To gas well site. Non-FS on GIS map.
Smoke Camp C	FS58C	0.2	Local	Closed			Added in Smoke Camp
Little River Plantation	FS97	3.1	Local	Closed	Native	3	Loop Road R. Area
Little R. Plantation B	FS97B	0.5	Local	Closed	Native	2	Private maintenance
Allegheny	FS106	3.2	Collector	Open	Agg/Gravel	3	Shared with GW-Jeff
Allegheny A	FS106A	1.1	Local	Closed			Added in Smoke Camp
Allegheny C	FS106C	0.9	Local	Closed			Added in Smoke Camp
Allegheny CA	FS106CA	0.1	Local	Closed			MNF1 - To gas well site (Thornwood Bloc)
Allegheny D	FS106D	0.6	Local	Closed			Added in Smoke Camp
Allegheny E	FS106E	0.9	Local	Closed			Added in Smoke Camp

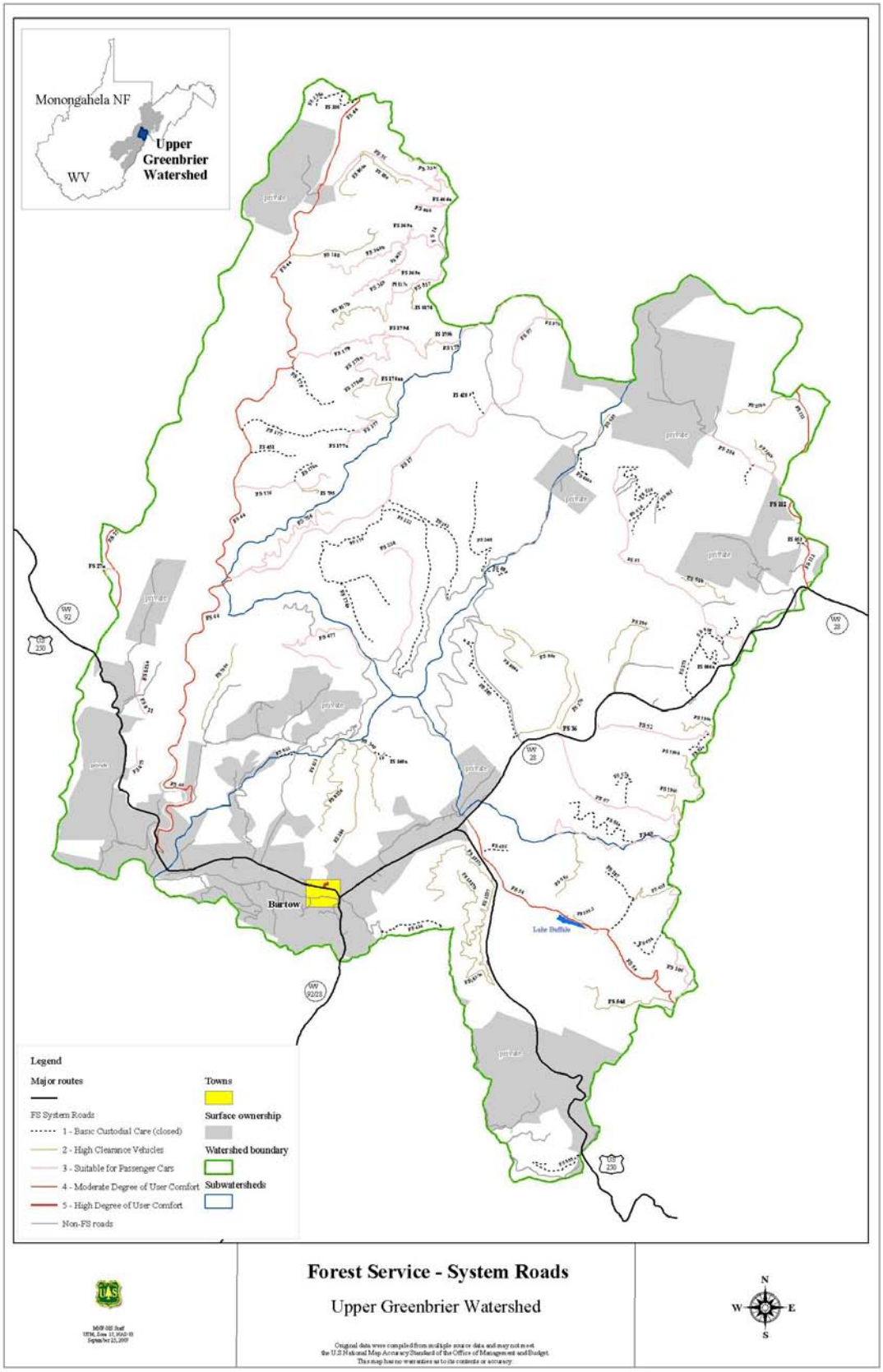
Name	No.	Miles	Function	Status	Surface	Maint. Level	Comments
Spruce Mountain	FS112	2.6	Arterial	Open	Agg/Gravel	4	
Span Oak	FS174	3.6	Collector	Closed	Native	1	
Span Oak A	FS174A	1.2	Local	Closed	Native	1	
Iron Bridge	FS176	1.9	Local	Closed	Native	3	
Iron Bridge A	FS176A	0.5	Local	Closed	Native	1	
Mill Run	FS177	2.1	Local	Closed	Native	3	Converted to trail for May/LR TS - 2000
Mill Run	FS177	0.8	Local	Seasonal	Native	3	Open 8/15 to 12/15
Mill Run A	FS177A	0.5	Local	Seasonal	Native	3	Open 8/15 to 12/15
Gertrude Run	FS178	1.1	Local	Closed	Native	3	Reduced by 0.6 mile and converted to trail for May/LR TS
Gertrude Run A	FS178A	2.3	Local	Seasonal	Agg/Gravel	3	Reduced by 1.0 mile in May/LR TS – 2000. Open 8/15 to 12/15
Gertrude Run AA	FS178AA	1.8	Local	Seasonal	Native	3	New road for May/LR TS. Open 8/15 to 12/15
Gertrude Run AB	FS178AB	0.4	Local	Seasonal	Native	3	New road for May/LR. Open 8/15 to 12/15
Elklick Run	FS179	4.2	Collector	Seasonal	Native	3	Open 8/15 – 12/15
Elklick Run B	FS179B	0.2	Local	Closed	Native	2	Access via FR179
Elklick Run D	FS179D	0.2	Local	Closed	Native	3	Access via FR179
Mikes Run	FS180	1.7	Local	Closed	Native	2	
Mikes Run B	FS180B	0.2	Local	Closed			Access via gated 180
Elklick	FS222	3.6	Local	Closed	Native	1	
Span Oak	FS224	2.3	Local	Closed	Agg/Gravel	3	
Hinkle Run	FS248	2.0	Local	Closed	Native	1	No gate on Visitor Map
Blister Swamp	FS250	0.4	Local	Closed	Improved	2	
Blister Swamp A	FS250A	1.2	Local	Closed	Improved	2	
Pigs Ear	FS254	1.6	Collector	Open	Native	3	
Pigs Ear A	FS254A	0.4	Local	Closed			
Pigs Ear B	FS254B	0.8	Local	Closed	Improved	2	
Greenbrier	FS270	1.1	Local	Closed	Native	2	
High Knob	FS271	0.8	Local	Closed	Native	1	
High Knob A	FS271A	1.3	Local	Closed	Native	1	Not on map
Tower Road	FS284	2.4	Local	Closed	Improved	2	
Poca Ridge	FS286	2.5	Local	Closed	Native	2	
Toolbox Hollow	FS287	1.4	Local	Closed	Native	1	Linear wildlife opening
Left Side 5 Mile	FS289	2.5	Collector	Closed	Native	1	
Beulah	FS338	0.6	Collector	Closed	Improved	1	
Buelah A	FS338A	0.6	Collector	Closed	Native	1	
Hawchen Hollow	FS340	1.5	Collector	Closed	Agg/Gravel	2	
Hawchen Hollow A	FS340A	0.4	Local	Closed	Improved	1	
Hawchen Hollow B	FS340B	0.3	Local	Closed			
Fox Run	FS369	2.5	Local	Closed	Native	3	Private maintenance
Fox Run A	FS369A	0.3	Local	Closed	Native	3	Private maintenance
Fox Run B	FS369B	1.8	Local	Closed	Improved	3	
Fox Run C	FS369C	0.1	Local	Closed	Native	3	Private maintenance
Fox Run E	FS369E	0.2	Local	Closed	Native	3	Private maintenance
Buffalo Wells	FS393	0.4	Local	Closed	Improved	2	
Widney Allotment	FS430	1.0	Local	Closed	Native	2	
Widney Allotment A	FS430A	0.4	Local	Closed	Native	1	

Name	No.	Miles	Function	Status	Surface	Maint. Level	Comments
Old Pike Spur	FS434	1.2	Local	Closed	Native	1	
Big Run Spur	FS435	1.1	Local	Closed	Native	2	Linear wildlife opening
Upper Mikes Run	FS464	0.6	Local	Closed	Native	3	Private maintenance
Upper Mikes Run A	FS464A	0.1	Local	Closed	Native	3	
Fill Run	FS475	0.5	Local	Closed	Agg/Gravel	3	
Upper Mountain Lick	FS477	3.4	Collector	Closed	Other	1	
Simmons Ridge	FS494	0.8	Local	Closed	Native	1	Same as 106A?
Rough Knob	FS495	0.5	Local	Closed	Native	1	Not on SC TS map.
Little River West	FS756	2.9	Local	Closed	Native	2	
Mountain Lick	FS794	3.8					Non-FS on GIS map.
Mountain Lick A	FS794A	1.7	Collector	Closed	Native	2	
Cove Run	FS795	0.4	Local	Closed	Improved	2	Need to seed and take off system: May/LR TS
Bear Wallow	FS804	4.3	Collector	Closed	Agg/Gravel	2	
Bear Wallow A	FS804A	0.7	Local	Closed	Native	2	
Campbell Run	FS805	0.4	Local	Closed	Native	1	
Colaw Knob	FS806	1.1	Collector	Closed	Native	1	
Colaw Knob A	FS806A	0.8	Local	Closed	Native	1	
Old House Run	FS812	2.6	Local	Closed	Native	1	
Fox Ridge	FS817	1.7	Collector	Closed	Native	3	Private maintenance
Fox Ridge A	FS817A	0.1	Local	Closed	Native	3	Private maintenance
Fox Ridge B	FS817B	1.6	Local	Closed	Improved	2	Private maintenance
Fox Ridge D	FS817D	0.4	Local	Closed	Improved	2	Private maintenance
Cherry Run	FS821	0.4	Local	Closed	Native	3	
Cherry Run A	FS821A	0.6	Local	Open	Agg/Gravel	3	
Johns Run	FS822	0.4	Local	Open	Native	1	
Right Fork Johns Run	FS823	1.0	Local	Closed	Improved	2	
Right Fk Johns Run A	FS823A	2.4	Local	Closed	Improved	2	
Burning Run	FS852	0.2	Local	Closed	Native	2	
Wildell	FS854	1.3	Local	Closed	Improved	2	
Wildell A	FS854A	1.0	Local	Closed	Improved	2	
Little River East	FS855	1.2	Local	Closed	Improved	1	
Frank Mountain	FS1537	2.4	Collector	Closed	Native	2	
Frank Mountain A	FS1537A	2.4	Local	Closed	Native	2	
Frank Mountain B	FS1537B	1.8	Local	Closed	Native	2	
Frank Mountain C	FS1537C	0.9	Local	Closed	Agg/Gravel	2	
Old House Run P. Area	FS1836	0.1	Local	Open	Paved	5	Picnic area on Hwy 250
Total Miles		181.2					

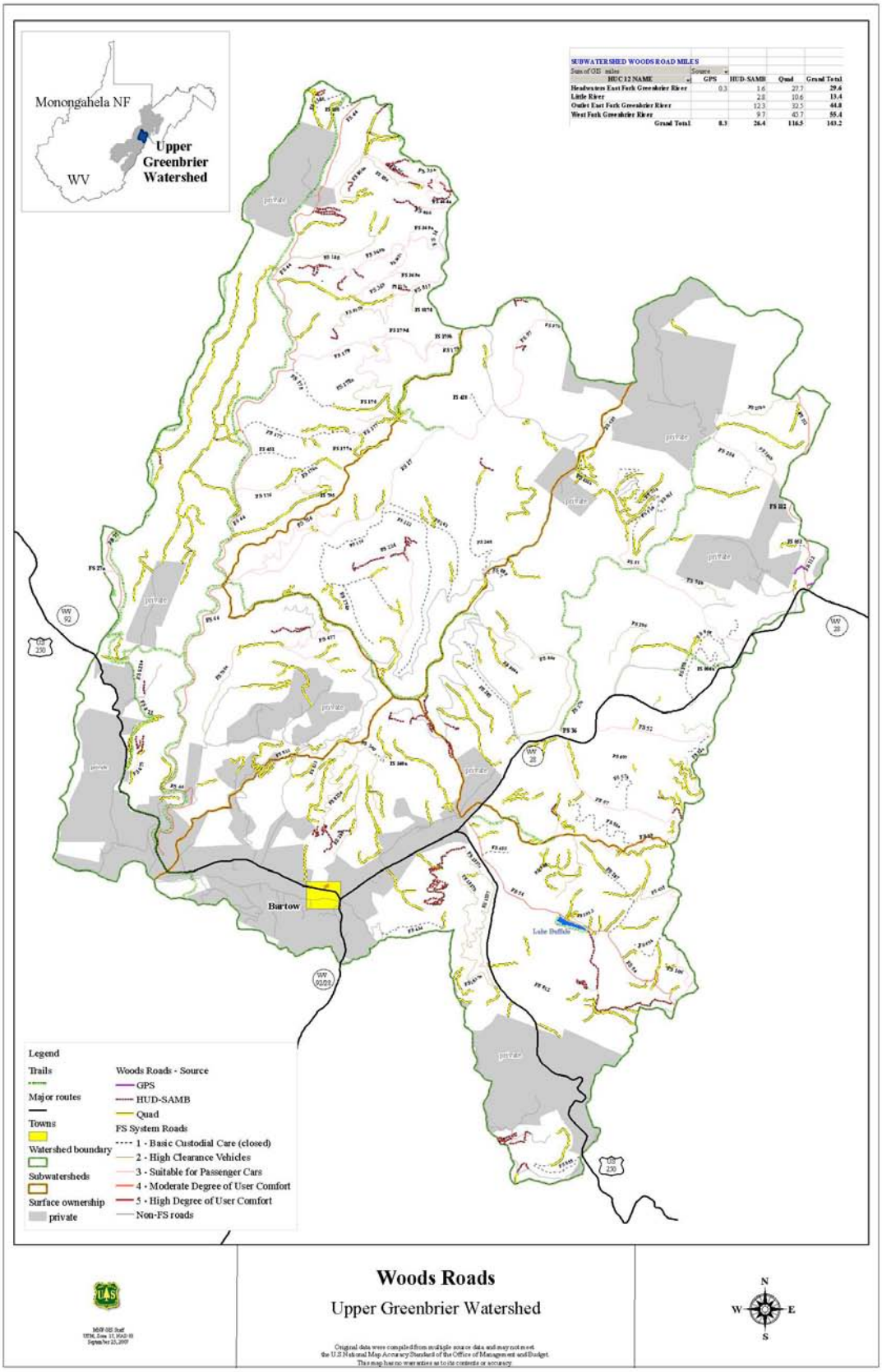
Of the 117 classified roads in the watershed under Forest Service jurisdiction, 19 (16 percent) are open to public motorized use year-round. Of the 181 miles of classified road under Forest Service jurisdiction, an estimated 57 miles (31 percent) are open to public motorized use year-round. Of these open roads, 54 miles are arterial or collector, and only 3 miles are local roads. Another 12.5 miles (7 percent) of road are open seasonally to the public. Over 111 miles (62 percent) of classified roads are closed year-round to public motorized use.

In addition to the classified roads listed above, there are an estimated 143.2 miles of unclassified or “woods” roads on NFS lands in the watershed. Because these roads have not been designed, constructed, or maintained by the Forest, sometimes little is known about their use and condition.

Map RD-1. Forest Classified Roads in the Upper Greenbrier Watershed



Map RD-2. Forest Unclassified Roads (Woods Roads) in the Upper Greenbrier Watershed



SUBWATERSHED WOODS ROAD MILES				
Sum of OD miles / HUC12 NAME	GPS	HUD-SAMB	Quad	Grand Total
Headwaters East Fork Greenbrier River	0.3	1.6	27.7	29.6
Little River		2.8	10.6	13.4
Outlet East Fork Greenbrier River		12.3	32.5	44.8
West Fork Greenbrier River		9.7	45.7	55.4
Grand Total	0.3	26.4	116.5	143.2

They may range from obvious features on the landscape, with substantial impacts from ongoing illegal vehicle use, to vague linear features that have not been used in so long that they are growing trees and are barely discernable. Woods roads that are found to be unused, stabilized with tree vegetation, and without structures that may fail over time are often just removed from the woods roads database and allowed to return to productivity, as rehabilitation treatments would only result in unneeded disturbance to the land. Other woods roads that are being used may require treatments to reduce detrimental disturbance and sedimentation, as well as physical obstacles (gates, boulders, tank traps, etc.) to prevent further use. Still other woods roads may be in an acceptable location to use for long-term management, and the Forest may improve them to standard and add them to the system of classified roads. These types of actions are typically made through project-level surveys, planning, analysis, and decisions.

Road Densities

The total amount of road mileage in the watershed—including Forest classified and unclassified roads, and private roads (36.6 miles)—adds up to an estimated 411.6 miles. Thus, the estimated road density for the entire 85,100-acre watershed is 3.09 miles per square mile. For NFS land within the watershed (69,300 acres), the total amount of Forest classified and unclassified roads is estimated to be 324.4 miles, with an overall road density of 2.99 miles per square mile.

Of course, the road density figures above are averages over a very large area. To better show how these densities are distributed across the landscape, they are displayed by subwatershed in the table below. This table includes all Forest classified and unclassified roads, as well as private roads, federal highways, and state highways/routes for the entire 85,100-acre watershed.

Table RD-3. Upper Greenbrier Watershed Road Density by Subwatershed

Subwatershed Name	Subwatershed Acres	Road Miles	Road Density (miles/square mile)
Little River	12,480	50.8	2.6
Headwaters East Fork Greenbrier River	24,210	103.1	2.7
West Fork Greenbrier River	28,210	138.4	3.1
Outlet East Fork Greenbrier River	20,180	119.4	3.8

The Forest Plan provides guidelines for the density of system roads on NFS land for the Management Prescription areas where there are the most opportunities for new road construction or road decommissioning. These guidelines are shown below.

Management Prescription 3.0: "New road construction should not cause road density within the prescription area unit to exceed 1.0 mile per square mile for collector roads, or 4.0 miles per square mile for any combination of collector and local roads" (Forest Plan, p. III-8).

Management Prescriptions 4.1 and 6.1: "New road construction should not cause road density within the prescription area unit to exceed 1.0 mile per square mile for collector roads, or 2.5 miles per square mile for any combination of collector and local roads" (Forest Plan, pp. III-16 and III-39).

The primary reason that collector and local roads are used for these density guidelines is that these are the roads that the Forest has the most influence over in terms of road construction or decommissioning. Arterial roads are the main conduits of traffic across the Forest, often linking one community to another or to a state/federal highway. It is therefore assumed that arterial roads will be used for public access over the long term. It is also assumed that woods roads will not be used over the long term, and that they will typically be allowed to return to productivity, or they will be converted to a classified road, based on project-level decisions. Table RD-4 shows the current road densities of collector and local roads by Management Prescription area.

Table RD-4. Collector and Local Road Density for MP Areas 3.0, 4.1, and 6.1

MP Area	MP Acres	Road Miles	Road Density (miles/square mile)
3.0	32,300	77.7	1.54
4.1	16,690	41.2	1.58
6.1	4240	10.3	1.55

Table RD-4 indicates that combined collector and local road densities are likely well below the 2.5 or 4 mile/square mile limit suggested by Forest Plan guidelines for the relevant Management Prescription areas. Collector and local road densities are currently at 0.99 mi/mi^2 for MP 6.2, and 1.86 mi/mi^2 for MP 8.0. Table RD-5 shows the current road densities of collector roads only by Management Prescription area.

Table RD-5. Collector Road Density for Management Prescription Areas 3.0, 4.1, and 6.1

MP Area	MP Acres	Road Miles	Road Density (miles/square mile)
3.0	32,300	32.0	0.63
4.1	16,690	14.7	0.56
6.1	4240	1.5	0.23

Table RD-5 indicates that collector road densities are likely well below the 1,0 mi/mi^2 limit suggested by Forest Plan guidelines for these Management Prescription areas. Collector road densities are currently at 0.42 mi/mi^2 for MP 6.2, and 0.32 mi/mi^2 for MP 8.0.

Please note that these road densities are only for existing collector and local classified roads within the watershed. Road densities will need to be recalculated for future projects in the watershed, incorporating any proposed roads in the projects and existing roads in matching contiguous Management Prescription areas adjacent to the watershed.

Conclusions and Recommendations

A number of conclusions can be drawn from the information in the road tables above. First, there is an abundance of roads in the Upper Greenbrier Watershed, which means that there should be a solid transportation infrastructure from which to manage resources and provide public access in the future. Furthermore, this abundance means that there should be ample opportunities and options to manage the road transportation system. For example:

- Opportunities for retiring or improving woods roads
- Opportunities for adjusting current road system based on needs, values, and impacts (see Appendix D tables for Maintenance Level 3, 4, 5 roads)
- Needs related to improving road conditions (see range, watershed sections)
- Discrepancies in road data need to be investigated and corrected.

The following recommendations can be made based on the conclusions above:

- It is recommended that an on-the-ground inventory of roads be made within the project area of any major federal action proposal. Special attention should be given to identifying unclassified roads and the condition of classified roads.

- It is recommended that project planning and analysis identify as many opportunities as applicable to move the road transportation system toward Forest Plan desired conditions (see below).

- It is recommended the Roads Transportation database and maps be updated to reflect new information gained from this assessment or from subsequent projects. Additional road-specific information gained from this assessment is included in Appendix D.

<u>Desired Conditions</u>

The road network matches the level of management activities occurring on the Forest and supplies the transportation system needed for recreation, special uses, timber harvest, range management, minerals development, fire protection, and other resource management needs. The transportation network is managed, using a variety of tools, to reduce adverse effects to resources. Roads needed for long-term objectives are maintained to provide for user safety and resource protection. Roads not needed for long-term objectives are decommissioned and stabilized (Forest Plan, p. II-54).