Fernow Experimental Forest Metadata Report (FER)

Parsons, West Virginia

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on Tue May 20 10:30:11 2008

Research Area Information

Fernow Experimental Forest

Research Area Information

Harvest URL - Option 1

http://www.fs.fed.us/ne/parsons/webdata/FERhydro.txt

Harvest URL -Option 2

http://www.fs.fed.us/ne/parsons/webdata/FERhydro.txt

Site URL

http://www.fs.fed.us/ne/parsons

Site north bounding coordinate (decimal degree) 39.07841

Site west bounding coordinate (decimal degree) .....-79.71409

Site south bounding coordinate (decimal degree) 39.02686

Site east bounding coordinate (decimal degree) .....-79.64276

Site Climate URL

http://www.fs.fed.us/ne/parsons/

Site Watershed URL

http://www.fs.fed.us/ne/parsons/

Site Map URL

http://www.fs.fed.us/ne/parsons/webdata/images/fef_ws.jpg

Experimental Design

The experimental design consists of paired watershed studies with watershed 4 (WS4) desgnated as the undisturbed control. Manipulated watersheds were calibrated against the control watershed for 6-7 years before treatments were initiated.

Publications

http://www.fs.fed.us/ne/parsons/ne4353.htm#publications

USGS Harvest URL

http://gce-lter.marsci.uga.edu/harvest/usgs/fer_lter.txt

Meteorlogical Stations

Camp Hollow Station B

Meteorological Station

Latitude (decimal degrees) 39.05297
Longitude (decimal degrees) .....-79.68560
Elevation (meters; a.m.s.l.) 730
Exposure (degrees) .....31 degrees
Wind Exposure (degrees azimuth) .....31 degrees
Begin Date..... August 1951
End Date..... On-going

Topography

on a slope of ~20% facing southeast

Surface

within Belfort 5-970A louvered instrument shelter

Area Description

The station clearing is surrounded by mature forest on three sides. On the south/ southeast side approximately 5 m beyond the clearing edge are a permanently open skidroad and the access road to watershed 5 weir. On the northeast side approximately 20 m beyond the clearing edge is the access road for the watershed 3 and 4 weirs.

Photo URL

http://www.fs.fed.us/ne/parsons/webdata/images/stnb_instr1.jpg

Air Temperature

Begin Date..... August 1951
End Date..... On-going
Data Logger Sampling Interval..... 15 minute
Summary Interval .....hourly
Data Accuracy (degree celsius) .....+/- 1.8 degrees C
Instrument Height (meters) 1.67

Instrumentation Description

Omega NOMAD temperature sensor with integrated data logger (model OM-NOMAD-RH-32)

Methods Description

Two identical data loggers are rotated on a weekly basis. Data are downloaded to

PC using manufacturer provided interface software. Data are aggregated quarterly.

Sensor History

1951-August 1997: Belfort 594 hygrothermograph in conjunction with set of maximum and minimum thermometers August 1997-present: NOMAD temperature sensor and data logger

Minimum QC Threshold (degree celsius) ..... -40 degrees C

Maximum QC Threshold (degree celsius) ..... 70 degrees C

Precipitation

Begin Date..... January 1951

End Date..... On-going

Data Logger Sampling Interval..... continuous

Summary Interval ..... daily

Data Accuracy (millimeters) ..... +/- 0.25 mm

Instrument Height (meters) 1

Instrumentation Description

Belfort 780 recording rain gauge and Belfort 5-400 standard rain gauge

Methods Description

Data are collected weekly. Daily precipitation amounts are calculated as proportions of the weekly precipitation totals based on the recording rain gauge data. The Thiessen polygon method is used to calculate watershed-weighted daily precipitation.

Maximum QC Threshold (millimeters) 145

Watershed

Watershed 1

Watershed Spatial Characteristics

North bounding coordinate (decimal degrees) 39.06142
West bounding coordinate (decimal degrees) .....-79.67935
South bounding coordinate (decimal degrees) 39.05549
East bounding coordinate (decimal degrees) .....-79.67116
Area (hectares) 30.11
Aspect (degrees azmuth) 75
Minimum watershed elevation (meters; a.m.s.l) 635
Maximum watershed elevation (meters; a.m.s.l) 795

Watershed Ecological Characteristics

Mean annual precipitation (millimeters) 1468
Slope (Percent) 23
Slope description

Sampling of 15-m DEM

Channel length (meters) 1317
Channel length description

Intermittent/ephemeral. Channel head is defined as furthest point of visible scour and/or leaf movement, typically within a swale or crenulation. Channel was hip-chained from V-notch of weir to top of main channel and all tributaries.

Drainage density (km/km2) 4.37
Mean snowpack description

Intermittent lasting few days-2 weeks; rain on snow common; 14% of ppt as snow.

Watershed Descriptions

Pre-treatment vegetation

Cover type: oak - hickory. Dominant species: Northern red oak (Quercus rubra L.) 14.9%; Sugar maple (Acer saccharum Marsh.) 13.8%; Chestnut oak (Quercus prinus L.) 11.6%; Yellow-poplar (Liriodendron tulipifera L.) 10.2%. (%=percent of all stems >11.5 cm in diameter)

Pre-treatment description

Total basal area: 19.9 m2/ha. Dominant species: Northern red oak (Quercus rubra L.) 2.98 m2/ha; Sugar maple (Acer saccharum Marsh.) 2.75 m2/ha; Chestnut oak

(Quercus prinus L.) 2.32 m2/ha; Yellow-poplar (Liriodendron tulipifera L.) 2.04 m2/ha.

Soil description

Calvin channery silt loam (loamy-skeletal, mixed, active, mesic Typic Dystrudepts). Soils are reddish-brown, weathered from sandstones and shales, and generally <1 m in depth. Soils are moderately well-drained, moderately permeable, and strongly acid. The erosion hazard is moderate.

Geology description

Bedrock geology: Fractured red sandstones and shales of the Hampshire Formation with resistant sandstone knobs of the Price (Pocono) Formation occurring on about 1.7 ha of the south/southeast bounding ridge. Surficial geology: Veneer--cobble to boulder diamict, silty loam matrix along ridges and sideslopes; Veneer--cobble-boulder diamict nearer streams.

Treatment History

Watershed 1 was clearcut during May 1957-June 1958. All trees except culls >15 cm in diameter were cut; 74% of the basal area was removed. No BMPs or pre-harvest planning were used. In May 1971, urea fertilizer (560 kg/ha) was applied aerially. In May 1992, Dimilin (0.03 kg/ha a.e.) was applied aerially.

Comparison description

Weir is approximately 1530 m from weir of the control watershed (WS4). WS1 is a second order stream draining into fourth order Elklick Run.

Watershed 2

Watershed Spatial Characteristics

North bounding coordinate (decimal degrees) 39.05937
West bounding coordinate (decimal degrees) .....-79.68517
South bounding coordinate (decimal degrees) 39.05377
East bounding coordinate (decimal degrees) .....-79.68084
Area (hectares) 15.50
Aspect (degrees azmuth) 180
Minimum watershed elevation (meters; a.m.s.l) 710
Maximum watershed elevation (meters; a.m.s.l) 815

Watershed Ecological Characteristics

Mean annual precipitation (millimeters) 1431
Slope (Percent) 24

Slope description

Sampling of 15-m DEM

Channel length (meters) 525

Channel length description

Intermittent/ephemeral. Channel head is defined as furthest point of visible scour and/or leaf movement, typically within a swale or crenulation. Channel was hip-chained from V-notch of weir to top of main channel and all tributaries.

Drainage density (km/km2) 3.39

Mean snowpack description

Intermittent lasting few days-2 weeks; rain on snow common; 14% of ppt as snow.

Watershed Descriptions

Pre-treatment vegetation

Cover type: oak - hickory. Dominant species: Chestnut oak (Quercus prinus L.) 25.8%; Northern red oak (Quercus rubra L.) 23.6%; White oak (Quercus alba L.) 11.3%; Bitternut hickory (Carya cordiformis (Wangenh.) K. Koch.) 5.8%. (%=percent of all stems >11.5 cm in diameter)

Pre-treatment description

Total basal area: 21.0 m2/ha. Dominant species: Chestnut oak (Quercus prinus L.) 5.42 m2/ha; Northern red oak (Quercus rubra L.) 4.94 m2/ha; White oak (Quercus alba L.) 2.36 m2/ha; Bitternut hickory (Carya cordiformis (Wangenh.) K. Koch.) 1.22 m2/ha.

Soil description

Calvin channery silt loam (loamy-skeletal, mixed, active, mesic Typic Dystrudepts). Soils are reddish-brown, weathered from sandstones and shales, and generally <1 m in depth. Soils are moderately well-drained, moderately permeable, and strongly acid. The erosion hazard is moderate.

Geology description

Bedrock geology: Fractured red sandstones and shales of the Hampshire Formation. Surficial geology: Veneer--cobble to boulder diamict, silty loam matrix along ridges and sideslopes; Veneer--cobble-boulder diamict nearer streams.

Treatment History

Treatment began on watershed 2 in the summer of 1958. All harvests were diameter-limit cuts with all trees including culls >42 cm in diameter removed. The watershed was divided into 2 cutting units based on site index (see http://www.fs.fed.us/ne/parsons/webdata/images/ws2clr.jpg for boundary). Area A (site index 75) had 43% of its basal area removed in a 1958 harvest, 23% of its basal area removed in a 1972 harvest, and 34% of its basal area removed in a 1988 harvest. Area B (site index 59) had 22% of its basal area removed in a 1958 havest, 10% of its basal area removed in a 1978 harvest, and 34% of its basal area removed in a 1996 harvest. The riparian zone on WS2 was treated with approxim-

ately 6730 kg/ha of limestone in October 1990 and again in November 1992; 4.55 ha were treated each application.

Comparison description

Weir is approximately 395 m from weir of the control watershed (WS4). WS2 is a first order stream draining into third order Camp Hollow Run.

Watershed 3

Watershed Spatial Characteristics

North bounding coordinate (decimal degrees) 39.06225
West bounding coordinate (decimal degrees) .....-79.69053
South bounding coordinate (decimal degrees) 39.05406
East bounding coordinate (decimal degrees) .....-79.68314
Area (hectares) 34.27
Aspect (degrees azmuth) 185
Minimum watershed elevation (meters; a.m.s.l) 730
Maximum watershed elevation (meters; a.m.s.l) 860

Watershed Ecological Characteristics

Mean annual precipitation (millimeters) 1440
Slope (Percent) 19
Slope description

Sampling of 15-m DEM

Channel length (meters) 1374
Channel length description

Intermittent/ephemeral. Channel head is defined as furthest point of visible scour and/or leaf movement, typically within a swale or crenulation. Channel was hip-chained from V-notch of weir to top of main channel and all tributaries.

Drainage density (km/km2) 4.01
Mean snowpack description

Intermittent lasting few days-2 weeks; rain on snow common; 14% of ppt as snow.

Watershed Descriptions

Pre-treatment vegetation

Cover type: oak - hickory. Dominant species: Northern red oak (Quercus rubra L.)

19.8%; Chestnut oak (Quercus prinus L.) 17.1%; White oak (Quercus alba L.) 9.0%; Red maple (Acer rubrum L.) 8.4%. (%=percent of all stems >11.5 cm in diameter)

Pre-treatment description

Total basal area: 22.5 m2/ha. Dominant species: Northern red oak (Quercus rubra L.) 4.45 m2/ha; Chestnut oak (Quercus prinus L.) 3.83 m2/ha; White oak (Quercus alba L.) 2.02 m2/ha; Red maple (Acer rubrum L.) 1.88 m2/ha.

Soil description

Watershed sideslope and riparian area soils (~87% of WS3) are Calvin channery silt loam (loamy-skeletal, mixed, active, mesic Typic Dystrudepts). Soils are reddish-brown, weathered from sandstones and shales, and generally <1 m in depth. Soils are moderately well-drained, moderately permeable, and strongly acid. The erosion hazard is moderate. Ridge area soils along Fork Mountain in the northwest part of the watershed (~13%) are Dekalb loams (loamy-skeletal, siliceous, active, mesic Typic Dystrudepts). Soils are weathered from gray and brown sandstones interbedded with shale and graywacke, and generally <1 m in depth. Soils are well-drained, moderately permeable, and strongly acid. The erosion hazard is moderate.

Geology description

Bedrock geology: Fractured red sandstones and shales of the Hampshire Formation. Surficial geology: Veneer--cobble to boulder diamict, silty loam matrix along ridges and sideslopes; Veneer--cobble-boulder diamict nearer streams.

Treatment History

Watershed 3 initially was part of a patch cutting study. In 1958 and 1963, WS3 was treated with patch cuts which removed 13% and 8% of the basal area, respectively. All trees >15 cm in diameter were harvested within the patches. In July 1969-May 1970, WS3 was clearcut except for a 20-m buffer strip on either side of the stream. All trees >2.5 cm in diameter were harvested with 91% of the basal area removed. The buffer strip was cut in 1972 and all wood was removed from the stream channel. A whole watershed acidification study was begun on WS3 in 1989. Ammonium sulfate fertilizer (35.5 kg/ha N and 40.6 kg/ha S) is applied aerially three times annually (March, July, and November). The study is on-going.

Comparison description

WS3 is adjacent to the control watershed (WS4) with the weirs approximately 80 m apart. Both WS3 and WS4 are second order streams draining into third order Camp Hollow Run.

Watershed 4

Watershed Spatial Characteristics

North bounding coordinate (decimal degrees) 39.06109

West bounding coordinate (decimal degrees) .....-79.69552

South bounding coordinate (decimal degrees) 39.05259
East bounding coordinate (decimal degrees) .....-79.68707
Area (hectares) 38.73
Aspect (degrees azmuth) 110
Minimum watershed elevation (meters; a.m.s.l) 740
Maximum watershed elevation (meters; a.m.s.l) 865

Watershed Ecological Characteristics

Mean annual precipitation (millimeters) 1420
Slope (Percent) 43
Slope description

Sampling of 15-m DEM

Channel length (meters) 1270
Channel length description

Intermittent/ephemeral. Channel head is defined as furthest point of visible scour and/or leaf movement, typically within a swale or crenulation. Channel was hip-chained from V-notch of weir to top of main channel and all tributaries.

Drainage density (km/km2) 3.28
Mean snowpack description

Intermittent lasting few days-2 weeks; rain on snow common; 14% of ppt as snow.

Watershed Descriptions

Pre-treatment vegetation

Cover type: oak - hickory. Dominant species: Northern red oak (Quercus rubra L.) 24.0%; Sugar maple (Acer saccharum Marsh.) 14.8%; Black cherry (Prunus serotina Ehrh.) 7.7%; Chestnut oak (Quercus prinus L.) 7.4%. (%=percent of all stems >11.5 cm in diameter)

Pre-treatment description

Total basal area: 22.7 m2/ha. Dominant species: Northern red oak (Quercus rubra L.) 5.44 m2/ha; Sugar maple (Acer saccharum Marsh.) 3.35 m2/ha; Black cherry (Prunus serotina Ehrh.) 1.74 m2/ha; Chestnut oak (Quercus prinus L.) 1.68 m2/ha.

Soil description

Lower sideslope and riparian area soils (~51% of WS4) are Calvin channery silt loam (loamy-skeletal, mixed, active, mesic Typic Dystrudepts). Soils are reddish-brown, weathered from sandstones and shales, and generally <1 m in depth. Soils are moderately well-drained, moderately permeable, and strongly acid. The erosion hazard is moderate. Ridge area soils along Fork Mountain in the northwest part of the watershed (~37%) are Dekalb loams (loamy-skeletal, siliceous, active, mesic Typic Dystrudepts). Soils are weathered from gray and brown sandstones interbed-

ded with shale and graywacke, and generally <1 m in depth. Soils are well-drained, moderately permeable, and strongly acid. The erosion hazard is moderate. Riparian area soils along the tributary in the north-central section of the watershed (~12%) are Ernest extremely stony silt loam (fine-loamy, mixed, superactive, mesic Aquic Fragiudults). Soils are formed from shale, siltstone, and sandstone, and generally <1 m in depth. Soils are moderately well-drained and strongly acid. Permeability is affected by a fragipan layer which often occurs below 45-60 cm. The erosion hazard is moderate.

Geology description

Bedrock geology: Fractured red sandstones and shales of the Hampshire Formation with ~1.2 ha of the northwest ridge of Fork Mountain underlain by olive-gray interbedded sandstones and shales of the Foreknobs (Chemung) Formation. Surficial geology: Veneer--cobble to boulder diamict, silty loam matrix along ridges and sideslopes; Veneer--cobble-boulder diamict nearer streams.

Treatment History

Several trees were uprooted along Fork Mountain (northwest ridge) during a March 1993 windstorm. Downed trees were removed by truck crane from Fork Mountain Road. Approximately 48 m3 of wood was removed. Species removed were: northern red oak, yellow-poplar, black cherry, sugar maple, red maple, American basswood, white ash, and black locust.

Comparison description

This is the control watershed (WS4).

Watershed 5

Watershed Spatial Characteristics

North bounding coordinate (decimal degrees) 39.05322
West bounding coordinate (decimal degrees) .....-79.69242
South bounding coordinate (decimal degrees) 39.04547
East bounding coordinate (decimal degrees) .....-79.68301
Area (hectares) 36.41
Aspect (degrees azmuth) 40
Minimum watershed elevation (meters; a.m.s.l) 720
Maximum watershed elevation (meters; a.m.s.l) 830

Watershed Ecological Characteristics

Mean annual precipitation (millimeters) 1435
Slope (Percent) 20

Slope description

Sampling of 15-m DEM

Channel length (meters) 983

Channel length description

Intermittent/ephemeral. Channel head is defined as furthest point of visible scour and/or leaf movement, typically within a swale or crenulation. Channel was hip-chained from V-notch of weir to top of main channel and all tributaries.

Drainage density (km/km2) 2.70

Mean snowpack description

Intermittent lasting few days-2 weeks; rain on snow common; 14% of ppt as snow.

Watershed Descriptions

Pre-treatment vegetation

Cover type: oak - hickory. Dominant species: Northern red oak (Quercus rubra L.) 15.4%; American beech (Fagus grandifolia Ehrh.) 14.3%; Black cherry (Prunus serotina Ehrh.) 11.3%; Sugar maple (Acer saccharum Marsh.) 10.5%. (%=percent of all stems >11.5 cm in diameter)

Pre-treatment description

Total basal area: 23.5 m2/ha. Dominant species: Northern red oak (Quercus rubra L.) 3.60 m2/ha; American beech (Fagus grandifolia Ehrh.) 3.35 m2/ha; Black cherry (Prunus serotina Ehrh.) 2.64 m2/ha; Sugar maple (Acer saccharum Marsh.) 2.46 m2/ha.

Soil description

Watershed sideslope and riparian area soils (~86% of WS5) are Calvin channery silt loam (loamy-skeletal, mixed, active, mesic Typic Dystrudepts). Soils are reddish-brown, weathered from sandstones and shales, and generally <1 m in depth. Soils are moderately well-drained, moderately permeable, and strongly acid. The erosion hazard is moderate. Small areas along ridges of the watershed (~6%) are Dekalb channery loam (loamy-skeletal, siliceous, active, mesic Typic Dystrudepts). Soils are weathered from gray and brown sandstones interbedded with shale and gray-wacke, and generally <1 m in depth. Soils are well-drained, moderately permeable, and strongly acid. The erosion hazard is moderate. Riparian area soils along the tributary in the south-central section of the watershed (~8%) are Ernest silt loam (fine-loamy, mixed, superactive, mesic Aquic Fragiudults). Soils are formed from shale, siltstone, and sandstone, and generally <1 m in depth. Soils are moderately well-drained and strongly acid. Permeability is affected by a fragipan layer which often occurs below 45-60 cm. The erosion hazard is moderate.

Geology description

Bedrock geology: Fractured red sandstones and shales of the Hampshire Formation with resistant sandstone knobs of the Price (Pocono) Formation occurring on ~0.3 ha of the south/southeast bounding ridge. Surficial geology: Veneer--cobble to boulder diamict, silty loam matrix along ridges and sideslopes; Veneer-

-cobble-boulder diamict nearer streams.

Treatment History

Treatment began on watershed 5 in the summer of 1958. All harvests were single tree selection (uneven age management) cuts. Trees including culls >27 cm in diameter were marked for removal to achieve a target residual stand basal area. The watershed was divided into 2 cutting units based on site index (see http://www.fs.fed.us/ne/parsons/webdata/images/ws5clr.jpg for boundary). Area A (site index 75) had 21% of its basal area removed in a 1958 harvest, 14% of its basal area removed in a 1968 harvest, 19% of its basal area removed in a 1978 harvest, 27% of its basal area removed in a 1988 harvest, and 20% of its basal area removed in a 1998 harvest. Area B (site index 64) had 24% of its basal area removed in a 1958 havest, 15% of its basal area removed in a 1968 harvest, 31% of its basal area removed in a 1983 harvest, and 33% of its basal area removed in a 1998 harvest.

Comparison description

WS5 is adjacent to the control watershed (WS4) with the weirs approximately 225 m apart. Both WS5 and WS4 are second order streams draining into third order Camp Hollow Run.

Watershed 6

Watershed Spatial Characteristics

North bounding coordinate (decimal degrees) 39.07049
West bounding coordinate (decimal degrees) .....-79.68016
South bounding coordinate (decimal degrees) 39.06602
East bounding coordinate (decimal degrees) .....-79.67379
Area (hectares) 22.34
Aspect (degrees azmuth) 200
Minimum watershed elevation (meters; a.m.s.l) 730
Maximum watershed elevation (meters; a.m.s.l) 830

Watershed Ecological Characteristics

Mean annual precipitation (millimeters) 1373
Slope (Percent) 27
Slope description

Sampling of 15-m DEM

Channel length (meters) 468

Channel length description

Intermittent/ephemeral. Channel head is defined as furthest point of visible scour and/or leaf movement, typically within a swale or crenulation. Channel was hip-chained from V-notch of weir to top of main channel and all tributaries.

Drainage density (km/km2) 2.09

Mean snowpack description

Intermittent lasting few days-2 weeks; rain on snow common; 14% of ppt as snow.

Watershed Descriptions

Pre-treatment vegetation

Cover type: oak - hickory. Dominant species: Chestnut oak (Quercus prinus L.) 28.9%; Northern red oak (Quercus rubra L.) 17.0%; White oak (Quercus alba L.) 10.9%; Red maple (Acer rubrum L.) 5.8%. (%=percent of all stems >11.5 cm in diameter)

Pre-treatment description

Total basal area: 24.8 m2/ha. Dominant species: Chestnut oak (Quercus prinus L.) 7.14 m2/ha; Northern red oak (Quercus rubra L.) 4.22 m2/ha; White oak (Quercus alba L.) 2.69 m2/ha; Red maple (Acer rubrum L.) 1.49 m2/ha.

Soil description

Calvin channery silt loam (loamy-skeletal, mixed, active, mesic Typic Dystrudepts). Soils are reddish-brown, weathered from sandstones and shales, and generally <1 m in depth. Soils are moderately well-drained, moderately permeable, and strongly acid. The erosion hazard is moderate.

Geology description

Bedrock geology: Fractured red sandstones and shales of the Hampshire Formation. Surficial geology: Veneer--cobble to boulder diamict, silty loam matrix along ridges and sideslopes; Veneer--cobble-boulder diamict nearer streams.

Treatment History

The lower half of watershed 6 was clearcut in 1964 and then maintained barren with herbicides through October 1969. The upper half of the watershed was clearcut in October 1967-February 1968 and then maintained barren with herbicides through October 1969. In the spring of 1973, WS6 was planted with Norway spruce (Picea abies (L.) Karst.). An aerial application of 2,4,5-T (2.2 kg/ha a.e.) was made in August 1975. An aerial application of Glyphosate (1.7 kg/ha a.e.) was made in September 1980.

Succession description

WS6 has been converted from a mixed hardwood stand to Norway spruce (Picea abies (L.) Karst.). The watershed was planted in 1973. The stand contained 1.79 m2/ha of spruce basal area when remeasured in 1992.

Comparison description

Weir is approximately 1610 m from weir of the control watershed (WS4). WS6 is a

second order stream draining into third order Wilson Hollow Run.

Watershed 7

Watershed Spatial Characteristics

North bounding coordinate (decimal degrees) 39.06588
West bounding coordinate (decimal degrees) .....-79.68917
South bounding coordinate (decimal degrees) 39.05980
East bounding coordinate (decimal degrees) .....-79.68027
Area (hectares) 24.22
Aspect (degrees azmuth) 75
Minimum watershed elevation (meters; a.m.s.l) 730
Maximum watershed elevation (meters; a.m.s.l) 860

Watershed Ecological Characteristics

Mean annual precipitation (millimeters) 1369
Slope (Percent) 24
Slope description

Sampling of 15-m DEM

Channel length (meters) 821
Channel length description

Intermittent/ephemeral. Channel head is defined as furthest point of visible scour and/or leaf movement, typically within a swale or crenulation. Channel was hip-chained from V-notch of weir to top of main channel and all tributaries.

Drainage density (km/km2) 3.39
Mean snowpack description

Intermittent lasting few days-2 weeks; rain on snow common; 14% of ppt as snow.

Watershed Descriptions

Pre-treatment vegetation

Cover type: oak - hickory. Dominant species: Northern red oak (Quercus rubra L.) 16.3%; Sugar maple (Acer saccharum Marsh.) 15.4%; Yellow-poplar (Liriodendron tulipifera L.) 10.3%; Red maple (Acer rubrum L.) 8.1%. (%=percent of all stems >11.5 cm in diameter)

Pre-treatment description

Total basal area: 25.9 m2/ha. Dominant species: Northern red oak (Quercus rubra L.) 4.22 m2/ha; Sugar maple (Acer saccharum Marsh.) 3.99 m2/ha; Yellow-poplar (Liriodendron tulipifera L.) 2.66 m2/ha; Red maple (Acer rubrum L.) 2.09 m2/ha.

Soil description

Watershed sideslope and riparian area soils (~62% of WS7) are Calvin channery silt loam (loamy-skeletal, mixed, active, mesic Typic Dystrudepts). Soils are reddish-brown, weathered from sandstones and shales, and generally <1 m in depth. Soils are moderately well-drained, moderately permeable, and strongly acid. The erosion hazard is moderate. Ridge area soils along Fork Mountain in the northwest part of the watershed (~38%) are Dekalb loams (loamy-skeletal, siliceous, active, mesic Typic Dystrudepts). Soils are weathered from gray and brown sandstones interbedded with shale and graywacke, and generally <1 m in depth. Soils are well-drained, moderately permeable, and strongly acid. The erosion hazard is moderate.

Geology description

Bedrock geology: Fractured red sandstones and shales of the Hampshire Formation. Surficial geology: Veneer--cobble to boulder diamict, silty loam matrix along ridges and sideslopes; Veneer--cobble-boulder diamict nearer streams.

Treatment History

The upper half of watershed 7 was clearcut in November 1963-March 1964 and then maintained barren with herbicides through October 1969. The lower half of the watershed was clearcut in October 1966-March 1967 and then maintained barren with herbicides through October 1969. Beginning in November 1969, WS7 was allowed to revegetate naturally.

Comparison description

Weir is approximately 1250 m from weir of the control watershed (WS4). WS7 is a second order stream draining into third order Wilson Hollow Run.

Gauging Stations

Watershed 1

Hydrologic Gauging Station

Latitude (decimal degrees) 39.06007
Longitude (decimal degrees) .....-79.67132
Elevation (meters; a.m.s.l.) 635
Begin Date..... July 1951
End Date..... On-going
Watershed Area (hectares) 30.11
Associated meteorological station

STATIONB

Photo URL

http://www.fs.fed.us/ne/parsons/webdata/images/ws1weir.jpg

History

Recorder charts are changed weekly. Ending stage is measured by hook gauge. Charts are marked and corrected weekly by standard operating procedures. Recorder charts are digitized annually. Stream discharge (cubic feet per second) is calculated from stage using a standard format equation calibrated to the weir. The WS1 equation is: discharge=4.3939*(stage^2.449).

Weir Description

120-deg V-notch weir instrumented with Belfort FW-1 water level recorder with 7-day stripchart

Stream Discharge

Data Logger Sampling Interval..... continuous
Summary Interval ..... daily
Data Accuracy (liters per second) ..... 0.002 ft (0.61 mm)
Maximum QC Threshold (liters per second) 5597

Watershed 2

Hydrologic Gauging Station

Latitude (decimal degrees) 39.05387

Longitude (decimal degrees) .....-79.68258
Elevation (meters; a.m.s.l.) 710
Begin Date..... July 1951
End Date..... On-going
Watershed Area (hectares) 15.50
Associated meteorological station

STATIONB

Photo URL

http://www.fs.fed.us/ne/parsons/webdata/images/ws2weir.jpg

History

Recorder charts are changed weekly. Ending stage is measured by hook gauge. Charts are marked and corrected weekly by standard operating procedures. Recorder charts are digitized annually. Stream discharge (cubic feet per second) is calculated from stage using a standard format equation calibrated to the weir. The WS2 equation is: discharge=4.3963*(stage^2.449).

Weir Description

120-deg V-notch weir instrumented with Belfort FW-1 water level recorder with 7-day stripchart

Weir Calibration and Modification History

Weir inactive from November 1979 through April 1988

Stream Discharge

Data Logger Sampling Interval..... continuous
Summary Interval ..... daily
Data Accuracy (liters per second) ..... 0.002 ft (0.61 mm)
Maximum QC Threshold (liters per second) 5012

Watershed 3

Hydrologic Gauging Station

Latitude (decimal degrees) 39.05413
Longitude (decimal degrees) .....-79.68625
Elevation (meters; a.m.s.l.) 730
Begin Date..... May 1951
End Date..... On-going
Watershed Area (hectares) 34.27

Associated meteorological station

STATIONB

Photo URL

http://www.fs.fed.us/ne/parsons/webdata/images/ws3weir.jpg

History

Recorder charts are changed weekly. Ending stage is measured by hook gauge. Charts are marked and corrected weekly by standard operating procedures. Recorder charts are digitized annually. Stream discharge (cubic feet per second) is calculated from stage using a standard format equation calibrated to the weir. The WS3 equation is: discharge=4.4298*(stage^2.449).

Weir Description

120-deg V-notch weir instrumented with Belfort FW-1 water level recorder with 7-day stripchart

Stream Discharge

Data Logger Sampling Interval..... continuous
Summary Interval ..... daily
Data Accuracy (liters per second) ..... 0.002 ft (0.61 mm)
Maximum QC Threshold (liters per second) 5463

Watershed 4

Hydrologic Gauging Station

Latitude (decimal degrees) 39.05397
Longitude (decimal degrees) .....-79.68714
Elevation (meters; a.m.s.l.) 740
Begin Date..... May 1951
End Date..... On-going
Watershed Area (hectares) 38.73

Associated meteorological station

STATIONB

Photo URL

http://www.fs.fed.us/ne/parsons/webdata/images/ws4weir.jpg

History

Recorder charts are changed weekly. Ending stage is measured by hook gauge. Charts are marked and corrected weekly by standard operating procedures.

Recorder charts are digitized annually. Stream discharge (cubic feet per second) is calculated from stage using a standard format equation calibrated to the weir. The WS4 equation is: discharge=4.4178*(stage^2.449).

Weir Description

120-deg V-notch weir instrumented with Belfort FW-1 water level recorder with 7-day stripchart

Stream Discharge

Data Logger Sampling Interval..... continuous
Summary Interval ..... daily
Data Accuracy (liters per second) ..... 0.002 ft (0.61 mm)
Maximum QC Threshold (liters per second) 4818

Watershed 5

Hydrologic Gauging Station

Latitude (decimal degrees) 39.05239
Longitude (decimal degrees) .....-79.68560
Elevation (meters; a.m.s.l.) 720
Begin Date..... June 1951
End Date..... On-going
Watershed Area (hectares) 36.41

Associated meteorological station

STATIONB

Photo URL

http://www.fs.fed.us/ne/parsons/webdata/images/ws5weir.jpg

History

Recorder charts are changed weekly. Ending stage is measured by hook gauge. Charts are marked and corrected weekly by standard operating procedures. Recorder charts are digitized annually. Stream discharge (cubic feet per second) is calculated from stage using a standard format equation calibrated to the weir. The WS5 equation is: discharge=4.4398*(stage^2.449).

Weir Description

120-deg V-notch weir instrumented with Belfort FW-1 water level recorder with 7-day stripchart

Weir Calibration and Modification History

Weir inactive from November 1973 through September 1990

Stream Discharge

Data Logger Sampling Interval..... continuous
Summary Interval ..... daily
Data Accuracy (liters per second) ..... 0.002 ft (0.61 mm)
Maximum QC Threshold (liters per second) 4771

Watershed 6

Hydrologic Gauging Station

Latitude (decimal degrees) 39.06612
Longitude (decimal degrees) .....-79.67698
Elevation (meters; a.m.s.l.) 730
Begin Date..... November 1956
End Date..... On-going
Watershed Area (hectares) 22.34
Associated meteorological station

STATIONB

Photo URL

http://www.fs.fed.us/ne/parsons/webdata/images/ws6weir.jpg

History

Recorder charts are changed weekly. Ending stage is measured by hook gauge. Charts are marked and corrected weekly by standard operating procedures. Recorder charts are digitized annually. Stream discharge (cubic feet per second) is calculated from stage using a standard format equation calibrated to the weir. The WS6 equation is: discharge=4.5239*(stage^2.449).

Weir Description

120-deg V-notch weir instrumented with Belfort FW-1 water level recorder with 7-day stripchart

Stream Discharge

Data Logger Sampling Interval..... continuous
Summary Interval ..... daily
Data Accuracy (liters per second) ..... 0.002 ft (0.61 mm)

Maximum QC Threshold (liters per second) 5377

Watershed 7

Hydrologic Gauging Station

Latitude (decimal degrees) 39.06388
Longitude (decimal degrees) .....-79.68029
Elevation (meters; a.m.s.l.) 730
Begin Date..... November 1956
End Date..... On-going
Watershed Area (hectares) 24.22
Associated meteorological station

STATIONB

Photo URL

http://www.fs.fed.us/ne/parsons/webdata/images/ws7weir.jpg

History

Recorder charts are changed weekly. Ending stage is measured by hook gauge. Charts are marked and corrected weekly by standard operating procedures. Recorder charts are digitized annually. Stream discharge (cubic feet per second) is calculated from stage using a standard format equation calibrated to the weir. The WS7 equation is: discharge=4.5217*(stage^2.449).

Weir Description

120-deg V-notch weir instrumented with Belfort FW-1 water level recorder with 7-day stripchart

Stream Discharge

Data Logger Sampling Interval..... continuous
Summary Interval ..... daily
Data Accuracy (liters per second) ..... 0.002 ft (0.61 mm)
Maximum QC Threshold (liters per second) 4999