

GEOLOGY

Physiographic Region

The Eleven Point Watershed lies within the Salem Plateau Subdivision of the Ozark Plateau. The Salem Plateau is a heavily dissected plateau with upland elevations of between 1,000 and 1,400 feet (MDNR 1986). Local relief on the uplands is between 100 to 200 feet. In areas of deeply entrenched valleys, local relief ranges between 200 to 500 feet (MDNR 1986). Elevations within the Eleven Point Watershed range between 1,500 feet above mean sea level (msl) in the uplands to less than 340 feet above msl in the lower portions of the watershed within Missouri, specifically the Eleven Point River near the state line. Karst features are prominent throughout this area (MDNR 1986 and Fenneman 1938).

Geology

Geologically, most of the Eleven Point Watershed is underlain by Ordovician age dolomites and sandstone/dolomites (Figure Ge01)(MSDIS 1998). Isolated areas of Mississippian age limestone and limestone/sandstone are also present. Most of the prominent bluffs and steep rugged hillsides along the Eleven Point River were formed in the predominantly light brownish-gray, cherty dolomite of the Gasconade Formation (Nigh 1988). These are capped by a thick layer of Roubidoux Sandstone on the ridges and upper slopes (MDC 1997). The Jefferson City-Cotter Formation, a cherty dolomite occurring along ridge tops, is a common Ordovician age formation in the uplands of the watershed (Nigh 1988 and MDC 1997).

Soils

The Eleven Point Watershed occurs within the Ozark Soils Region. Allgood and Persinger (1979) describe the Ozark Soils Region as "cherty limestone ridges that break sharply to steep side slopes of narrow valleys. Loess occurs in a thin mantle or is absent. Soils formed in the residuum from cherty limestone or dolomite range from deep to shallow and contain a high percentage of chert in most places. Some of the soils formed in a thin mantle of loess are on the ridges and have fragipans, which restrict root penetration. Soil mostly formed under forest vegetation with native, mid-tall and tall grasses common in open or glade area."

The following is a list of soil associations found in the Eleven Point Watershed in Missouri:

Captina-Macedonia-Doniphan-Poynor

Captina-Macedonia-Clarksville

Captina-Clarksville-Doniphan

Wilderness-Clarksville-Coulstone

Hartville-Ashton-Cedargap-Nolin (alluvial)

(Allgood and Persinger 1979)

Stream Mileage, Order and Permanency, Springs

Using United States Geological Survey (USGS) 7.5 minute topographic maps, a total of 139 third order

and larger streams were identified. Of the 139 third order and larger tributaries to the Eleven Point River, 106 are third order, 27 are fourth order, 4 are fifth order, and 1 is sixth order. The Eleven Point River is seventh order when it reaches the Arkansas state line (Table Ge01 and Figures Ge02, 03, and 04).

The Eleven Point Watershed is exceptional for the number and length of losing streams in the upper and middle portions of the watershed (Table Ge02)(MDNR 1994). Nearly all streams, with the exception of the lower two miles of Hurricane Creek and the Eleven Point River below Thomasville, lose substantial amounts of surface flow to the groundwater system (MDNR 1994). The losing streams, sink holes, and other karst features recharge many springs within the watershed as well as others outside the watershed (MDNR 1996; Vineyard and Feder 1974). Based on the United States Geological Survey Geographic Names Information System Data as well as Vineyard and Feder (1974), it has been determined that there are a total of 64 named springs within the watershed. Seventeen springs with records of discharge are listed by Vineyard and Feder (1974) (Table Ge03 and Figure Ge05). All the major springs in the watershed emerge on, or near, the Eleven Point River. Twelve of the major springs, including Greer Spring, emerge from the Gasconade Formation (Vineyard and Feder 1974; MDNR 1994). Greer Spring is the second largest spring in the state with an average flow of 289 cubic feet per second (cfs). Four other springs emerge from the Roubidoux Formation near the confluence of Frederick Creek and the Eleven Point River (also known as the Narrows) and have a combined flow of 110 cfs (MDNR 1994). These springs assist in maintaining base flows in the middle and lower portions of the Eleven Point River, while streams in the headwaters of the watershed, which lack significant spring input, are frequently dry (MDNR 1994).

Dye tracings have indicated that some surface water recharges Greer Spring and other springs within the Eleven Point Watershed, however, much of the flow from the Upper Eleven Point, Spring Creek, and Hurricane Creek is lost to ground water system which travels in an East-Northeast direction and emerges at Big Spring on the Current River (MDNR 1994; Adamski, Peterson, Freiwald, and Davis 1995; MDNR 1995, 1996). A positive dye trace indicated at least 2/3 of the watershed of Hurricane Creek is in the recharge area of Big Spring. This provides an excellent demonstration that ground water divisions must be determined before water management plans are made in karst topographies. Figure Ge06 displays the results of successful dye traces completed by various state and federal natural resource agencies (USDA-FS 1997 and MDNR 1995,1996).

Using United States Geographical Survey (USGS) 7.5 minute topographical maps permanence of stream flow was determined for third order and larger streams. The USGS identifies streams having water 12 months of the year during years of normal precipitation with a solid blue line. Intermittent streams were identified by a broken blue line and were defined as streams carrying water less than 12 months of a year. Approximately 9% (92.2miles) of the fourth order and larger streams have permanent flow (Table Ge04 and Figures Ge02, 03, and 04). This includes 53% (51.5 miles) of the Eleven Point River; 34% (12.0miles) of Frederick Creek; 16% (5.2 miles) of Spring Creek; and 14% (4.5miles) Hurricane Creek.

Drainage Area

Drainage areas were determined from digital raster graphic (drg) versions of USGS 1:100,000 and 1:24,000 scale topographic maps. The drainage area of the Eleven Point Watershed in Missouri is 655,802 acres or 1024.7 square miles. The Eleven Point Watershed was divided into six subwatersheds (not to be confused with the 14 digit hydrologic units or the drainage sections which are used in this document for analysis and display purposes) based on drainage areas accounting for $\geq 5\%$ of the total

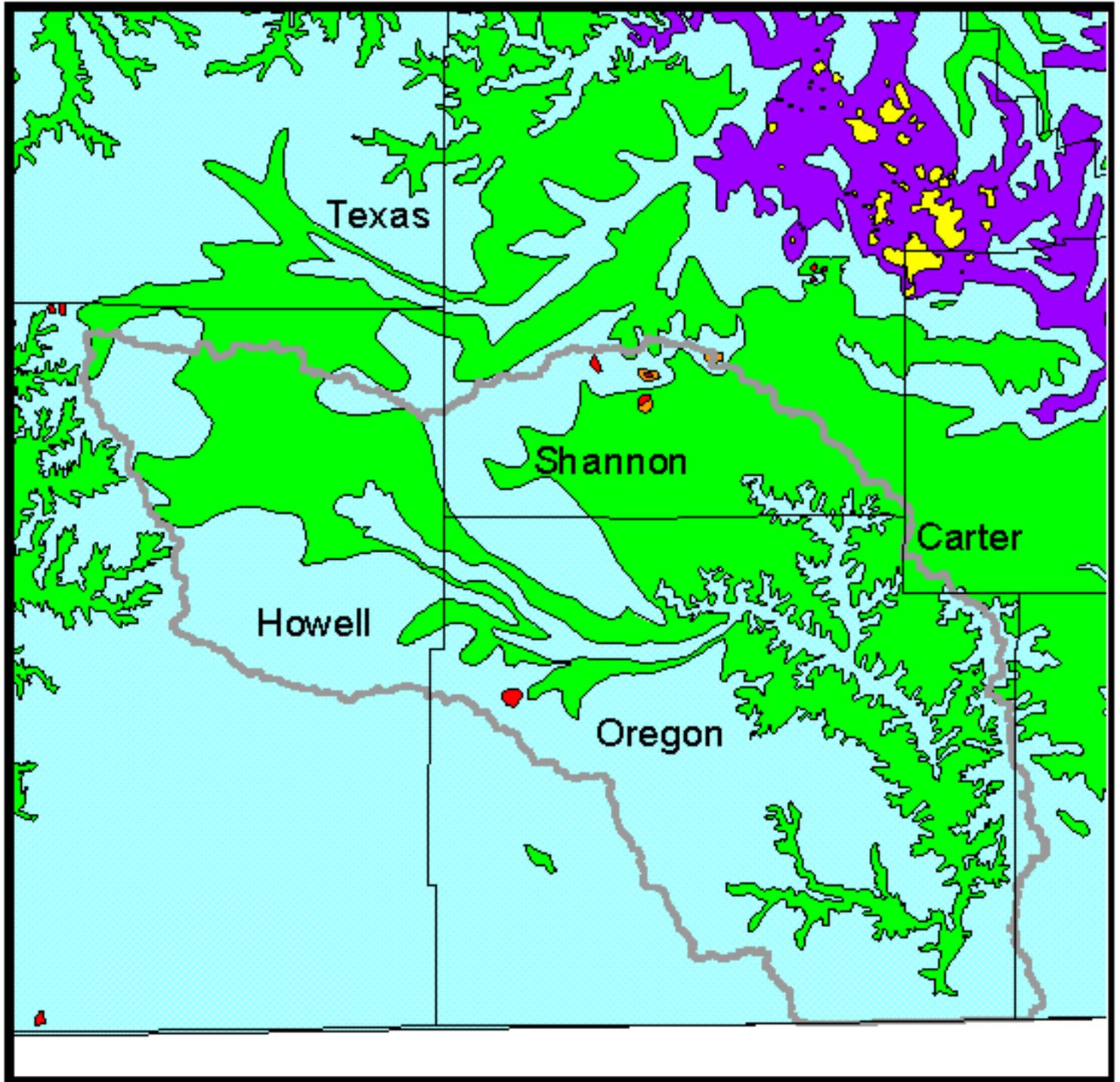
drainage area of the Eleven Point Watershed (Figure GE 07 and Table Ge04). In karst regions such as the Eleven Point River Watershed, it is of equal importance to understand the ground water divisions. As discussed earlier, much of the water produced by the Eleven Point Watershed emerges from springs within other watersheds. It is likely that springs within the Eleven Point Watershed contain ground water from other watersheds.

Channel Gradient

Gradient information for fourth-order-and-larger streams was obtained from USGS 1:24,000 scale topographical maps. Composite gradient plots were prepared for fifth order and larger stream channels. The Eleven Point River is a high gradient stream, averaging 11.2 feet per mile. The gradient of the Eleven Point River ranges from 5.8 feet per mile at Missouri/Arkansas State line to 98.0 feet per mile at its headwaters (Table Ge05). In general, gradients of the major tributaries to the South and West of the Eleven Point River (Middle Fork; Barren Fork, Fredrick Creek) are lower than those tributaries to the North (Spring Creek; Hurricane Creek). Drainages South and West of the Eleven Point River are characterized by high, relatively flat plains with local relief of 100 to 150 feet occurring near drainages. Long gentle slopes are separated by broad, rounded ridges and wide, flat valleys. Drainages north of the Eleven Point River are characterized by highly dissected hills with narrow ridges and steep side slopes. Local relief ranges from 250 to 500 feet.

Figure Ge01.

Eleven Point Watershed Geology



5 0 5 10 Miles

Legend

 Watershed Boundary

Geology*

-  Cambrian Dolomite
-  Ordovician Dolomite
-  Mississippian Limestone/Sandstone
-  Mississippian Limestone
-  Ordovician Sandstone/Dolomite
-  Precambrian Igneous

*Based on digitized version of 1979 1:500,000 scale state geologic map (Missouri Spatial Data Information Service-MSDIS 1998).



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Figure Ge02

Upper Eleven Point Drainage Section

Third Order and Larger Streams

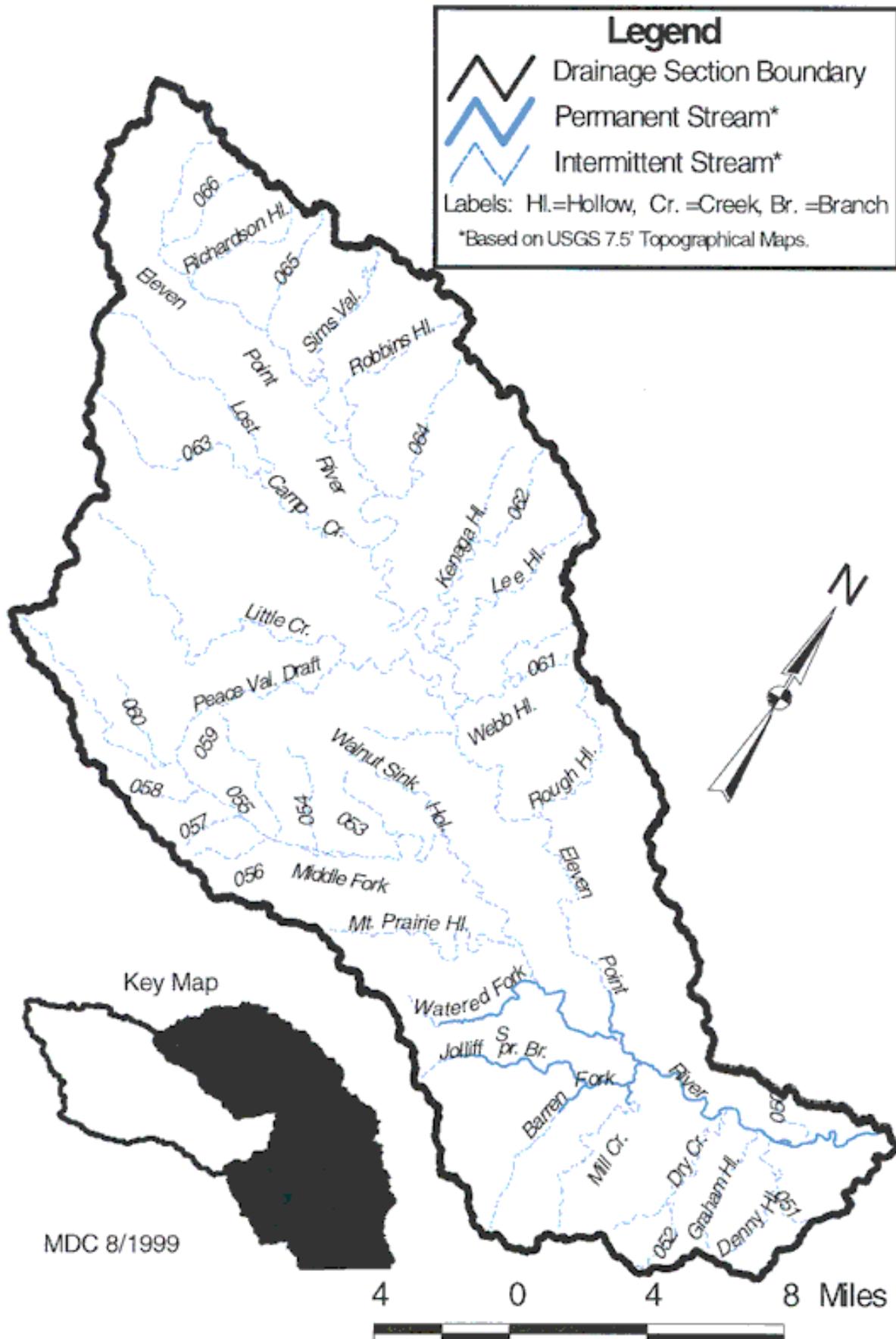
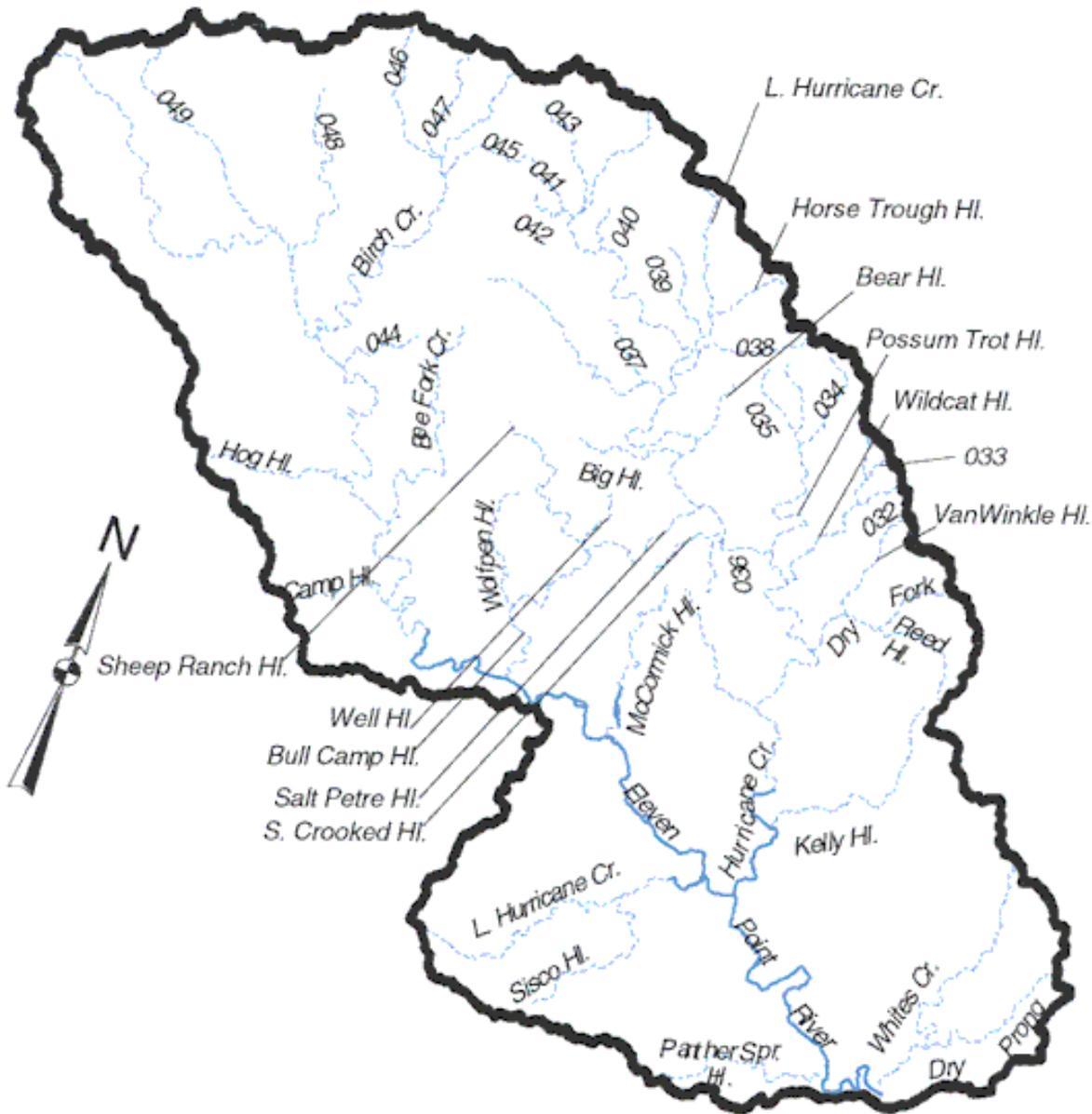


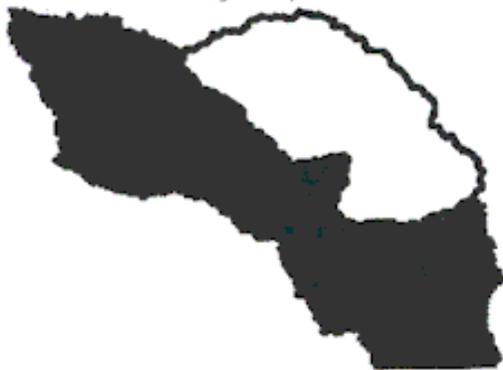
Figure Ge03

Middle Eleven Point Drainage Section

Third Order and Larger Streams



Key Map



3 0 3 6 Mles



Legend

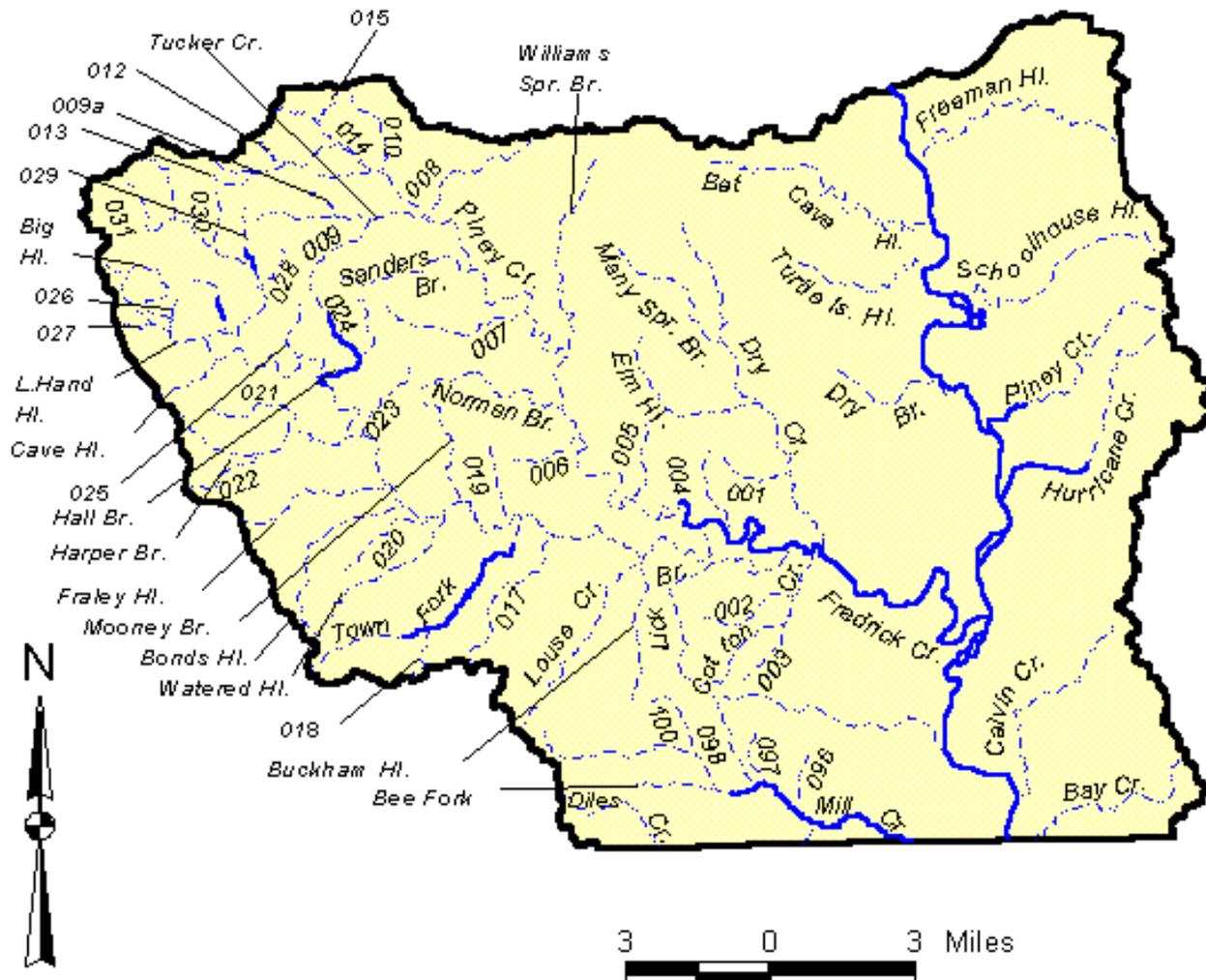
- Drainage Section Boundary
- Permanent Stream*
- Intermittent Stream*

Labels: Hl.=Hollow, Cr.=Creek, Br.=Branch

*Based on USGS 7.5' Topographical Maps.

Figure Ge04.

Lower Eleven Point Drainage Section Third Order and Larger Streams

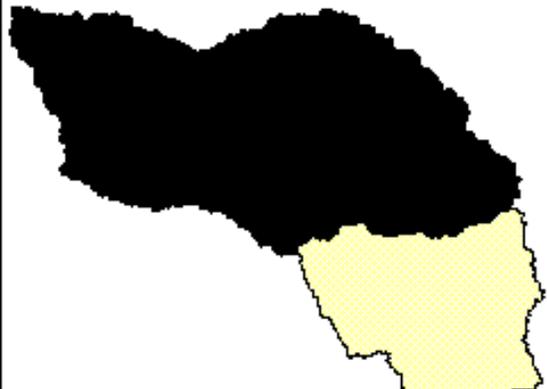


Legend

-  Drainage Section Boundary
-  Permanent Stream*
-  Intermittent Stream*

Labels: Hl.=Hollow, Cr. =Creek, Br. =Branch

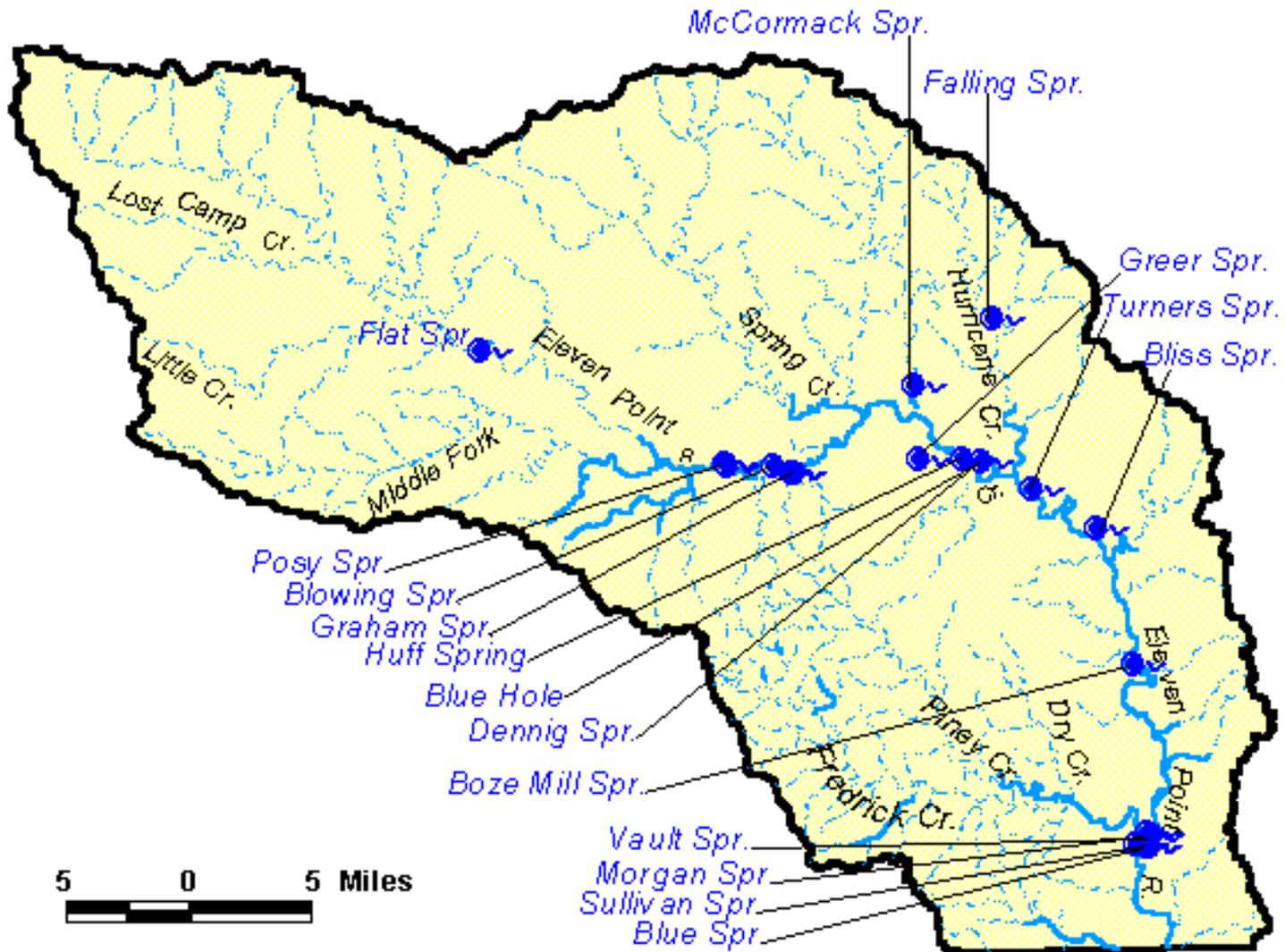
*Based on USGS 7.5' Topographical Maps.



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Figure Ge05.

Eleven Point Watershed Springs



5 0 5 Miles

Legend

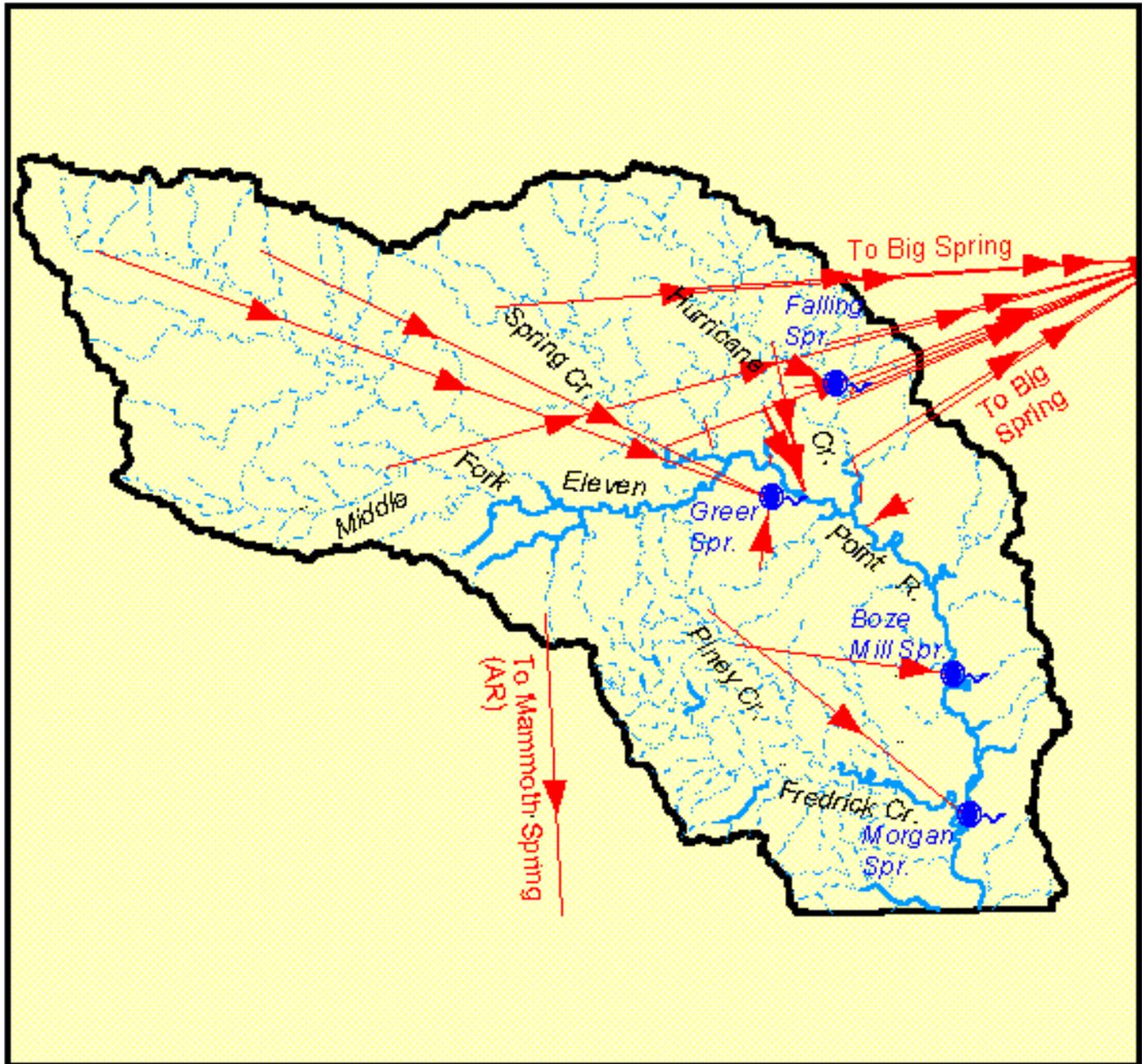
 Spring

Only springs listed by Vineyard and Feder (1974) are displayed.



Figure Ge06.

Eleven Point Watershed Ground Water Movement



5 0 5 10 Miles

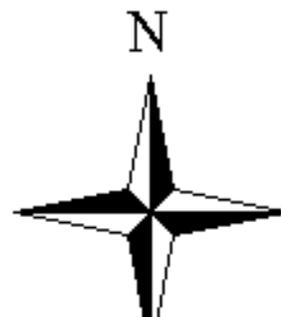
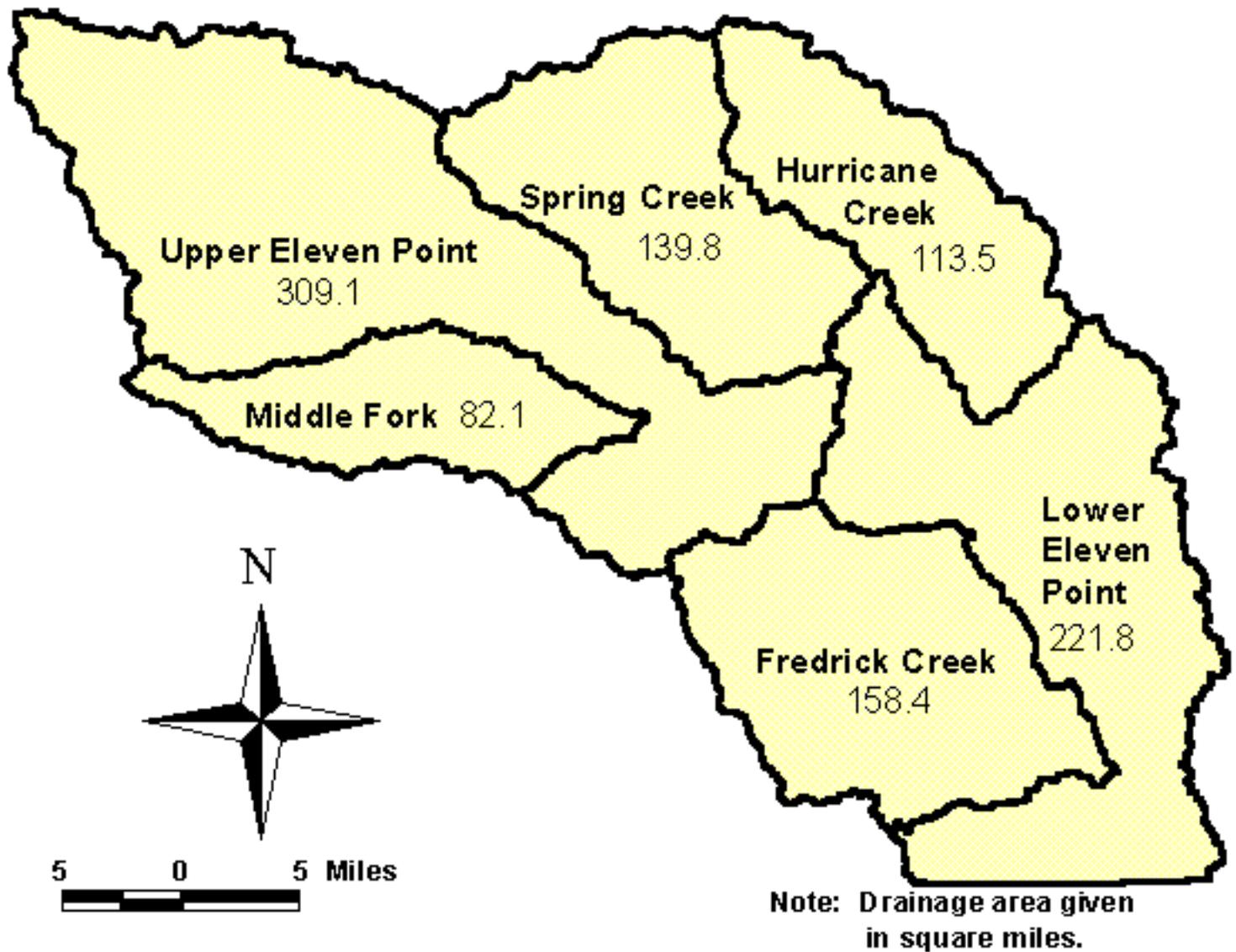


Figure Ge07.

Eleven Point Watershed Subwatersheds



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Figure Ge08. Gradient Plot for Upper Eleven Point and Major tributaries.

Upper Eleven Point

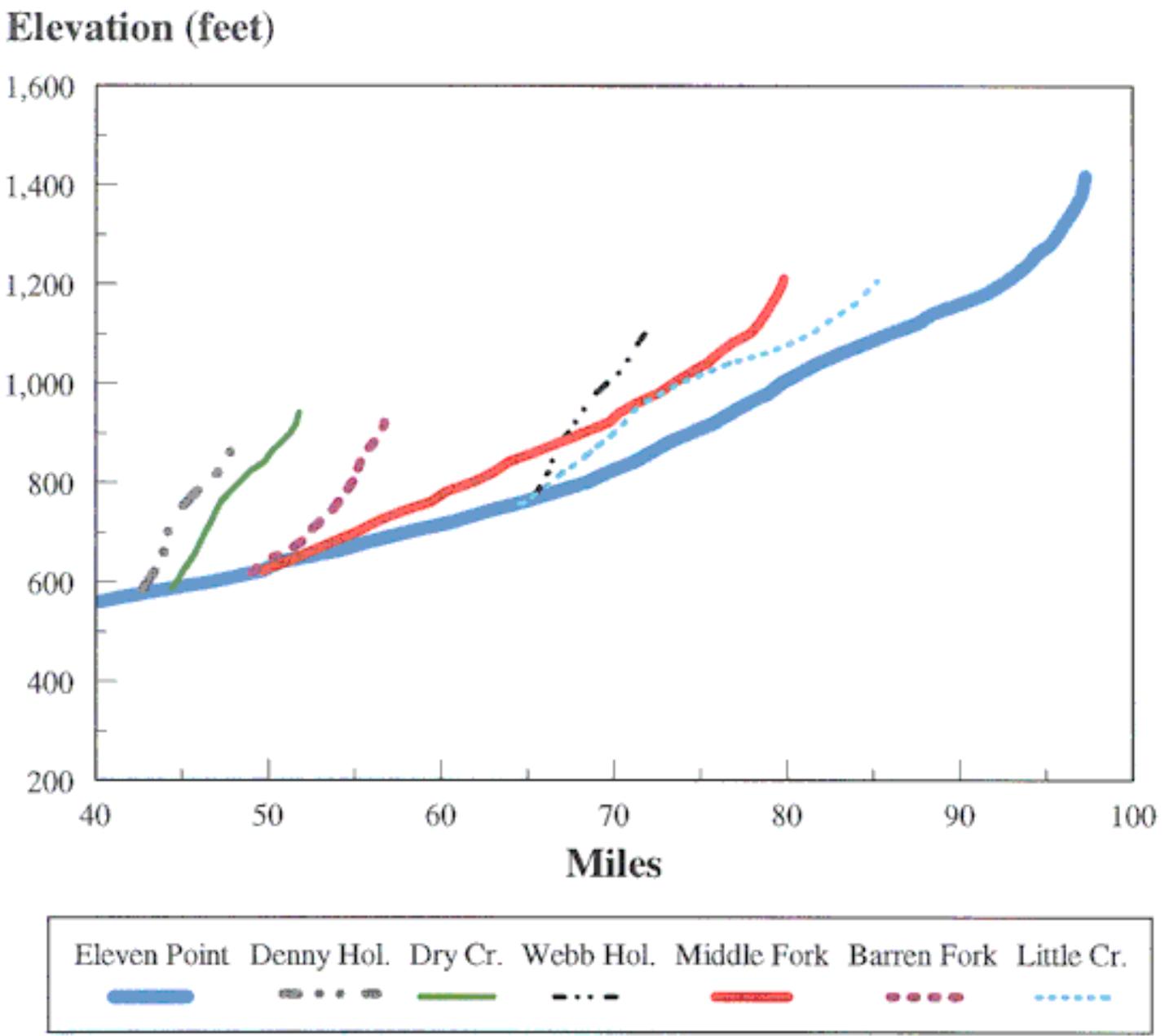


Figure Ge09. Gradient Plot for Middle Eleven Point and Major tributaries.

Middle Eleven Point

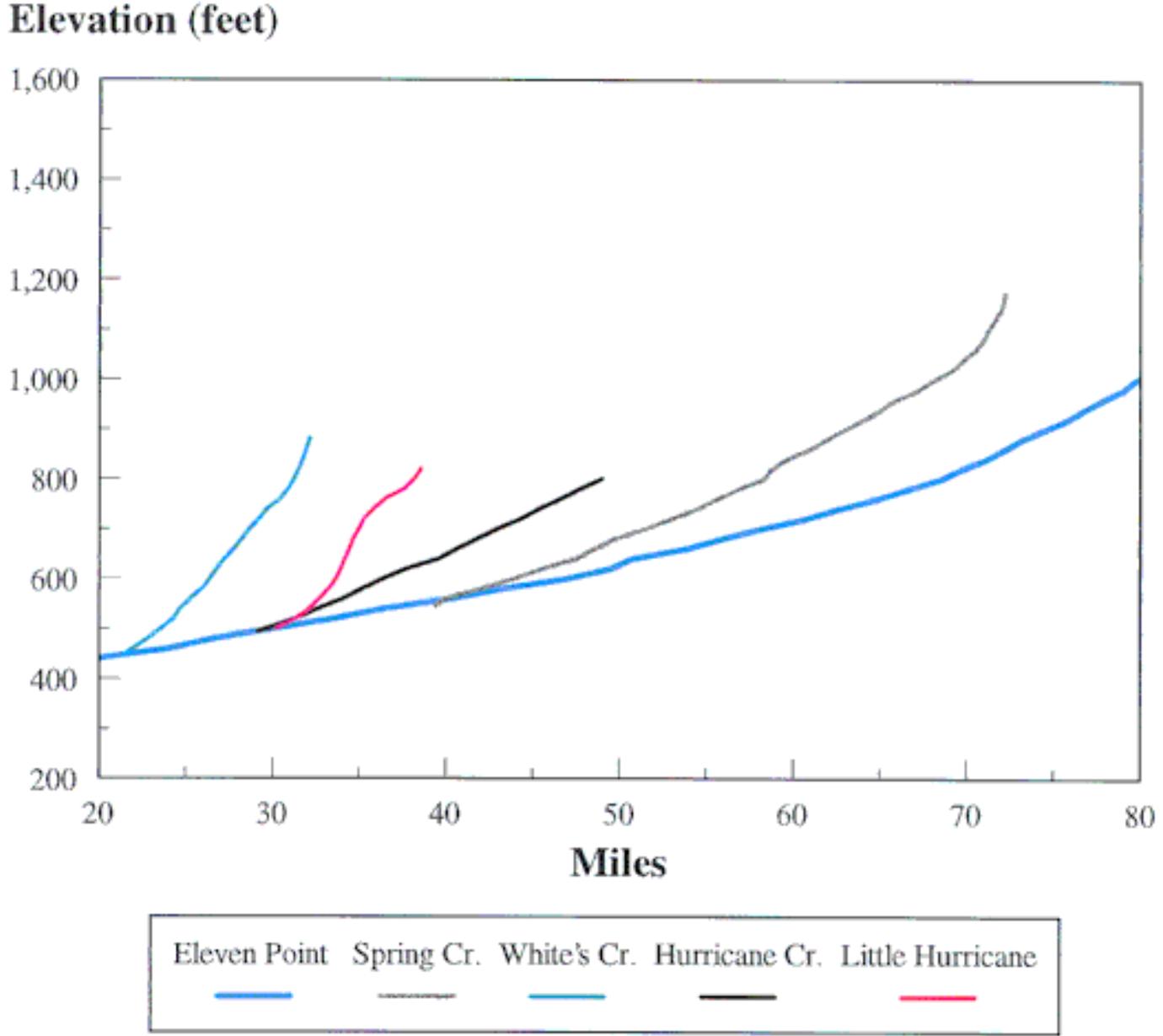


Figure Ge10. Gradient Plot for Lower Eleven Point and major tributaries.

Lower Eleven Point

Elevation (feet)

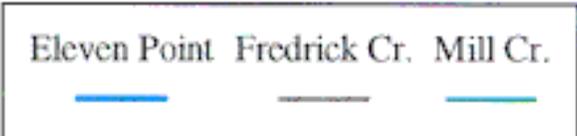
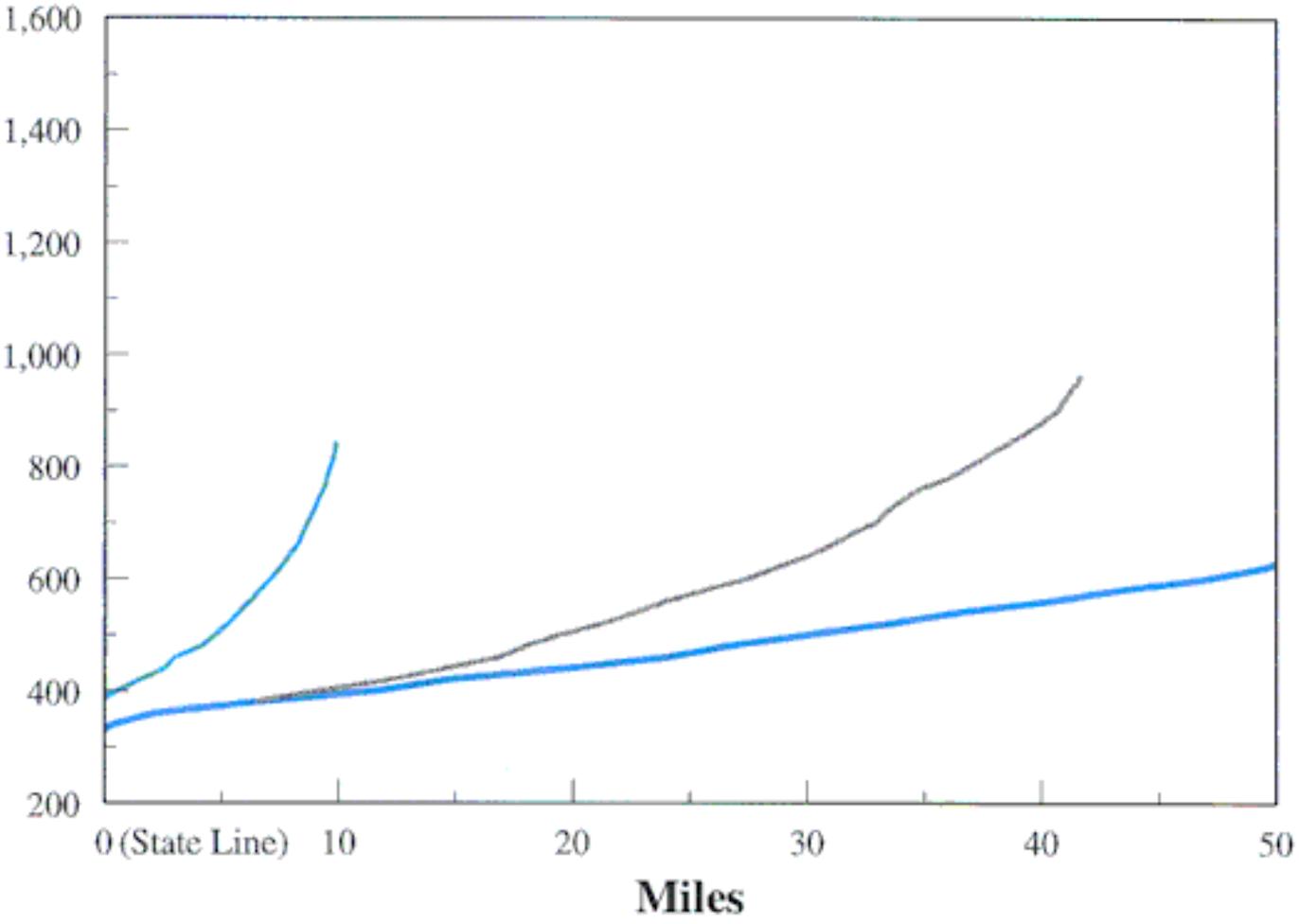


Figure Ge11. Gradient Plot for Fredrick Creek and major tributaries.

Fredrick Creek

Elevation (feet)

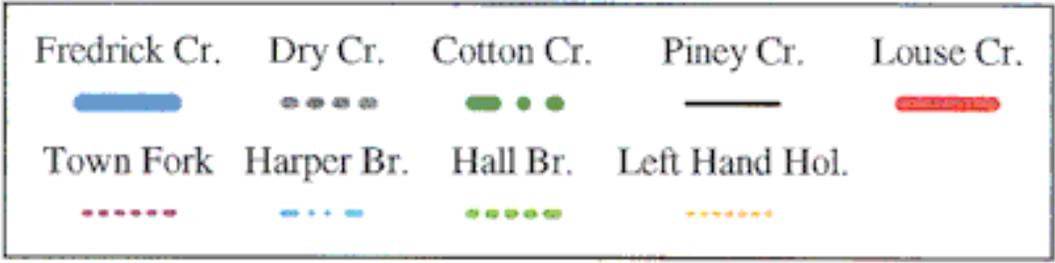
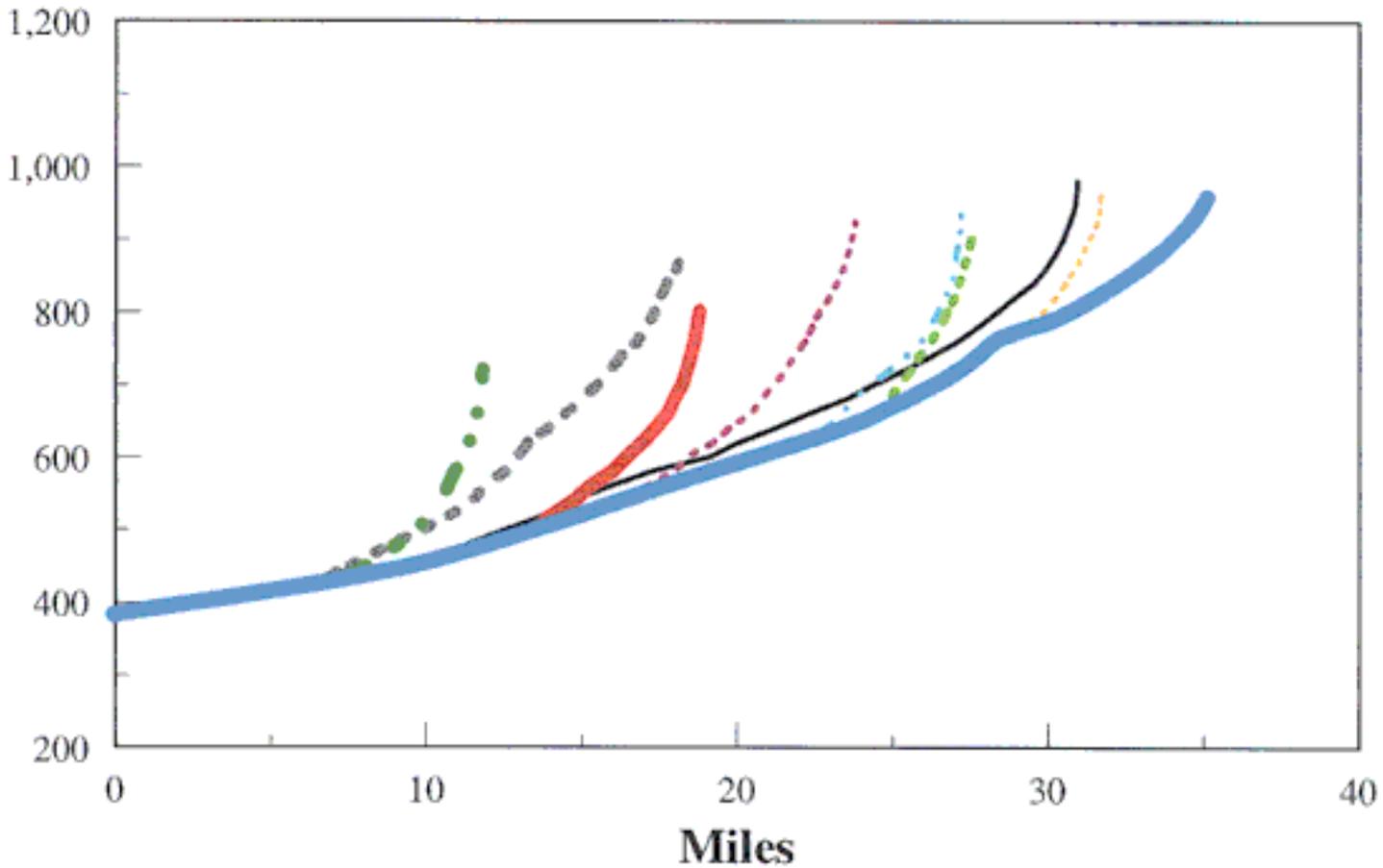


Figure Ge12. Gradient Plot for Left Hand Hollow and major tributary.

Left Hand Hollow

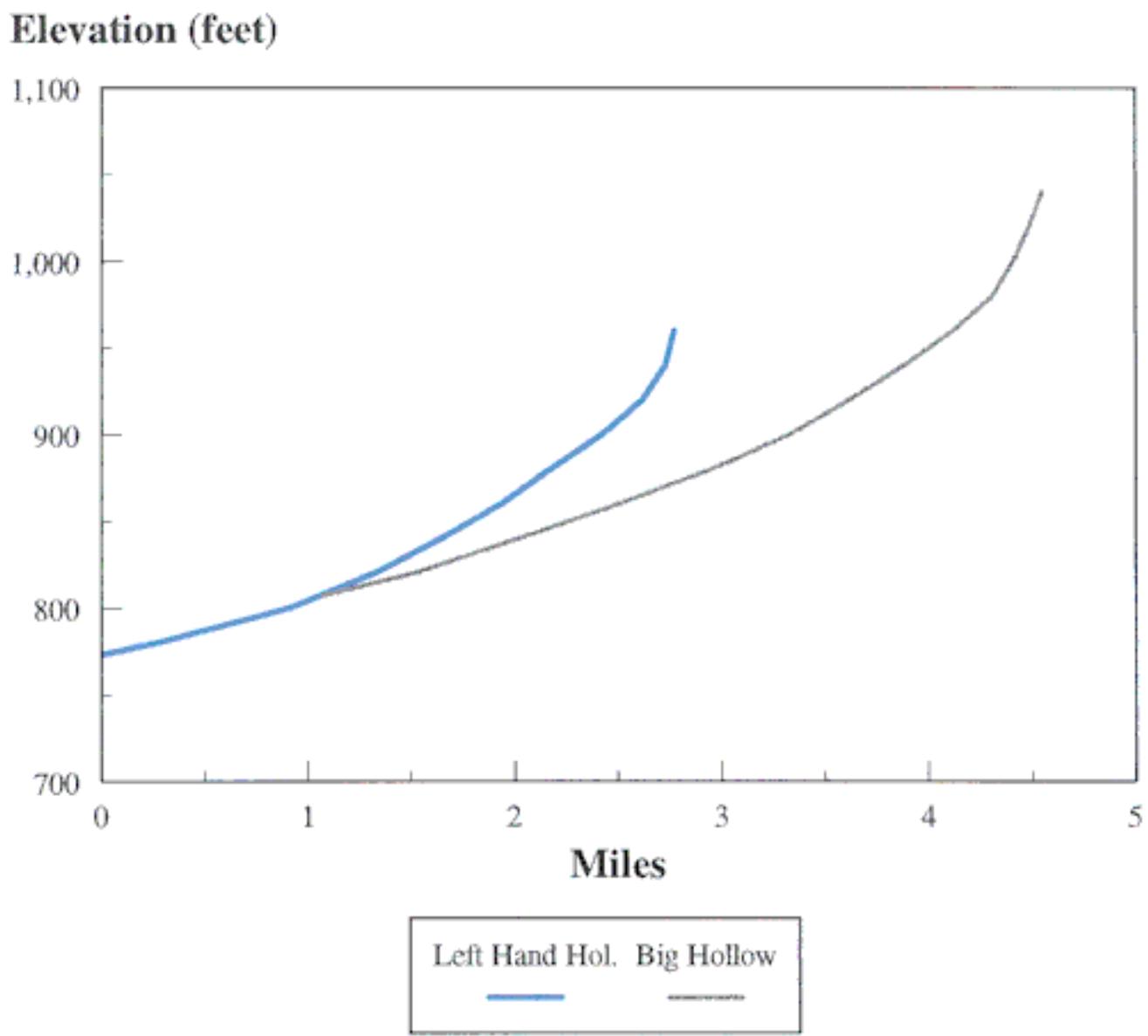


Figure Ge13. Gradient Plot for Piney and major tributary.

Piney Creek

Elevation (feet)

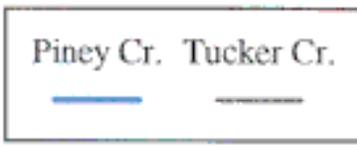
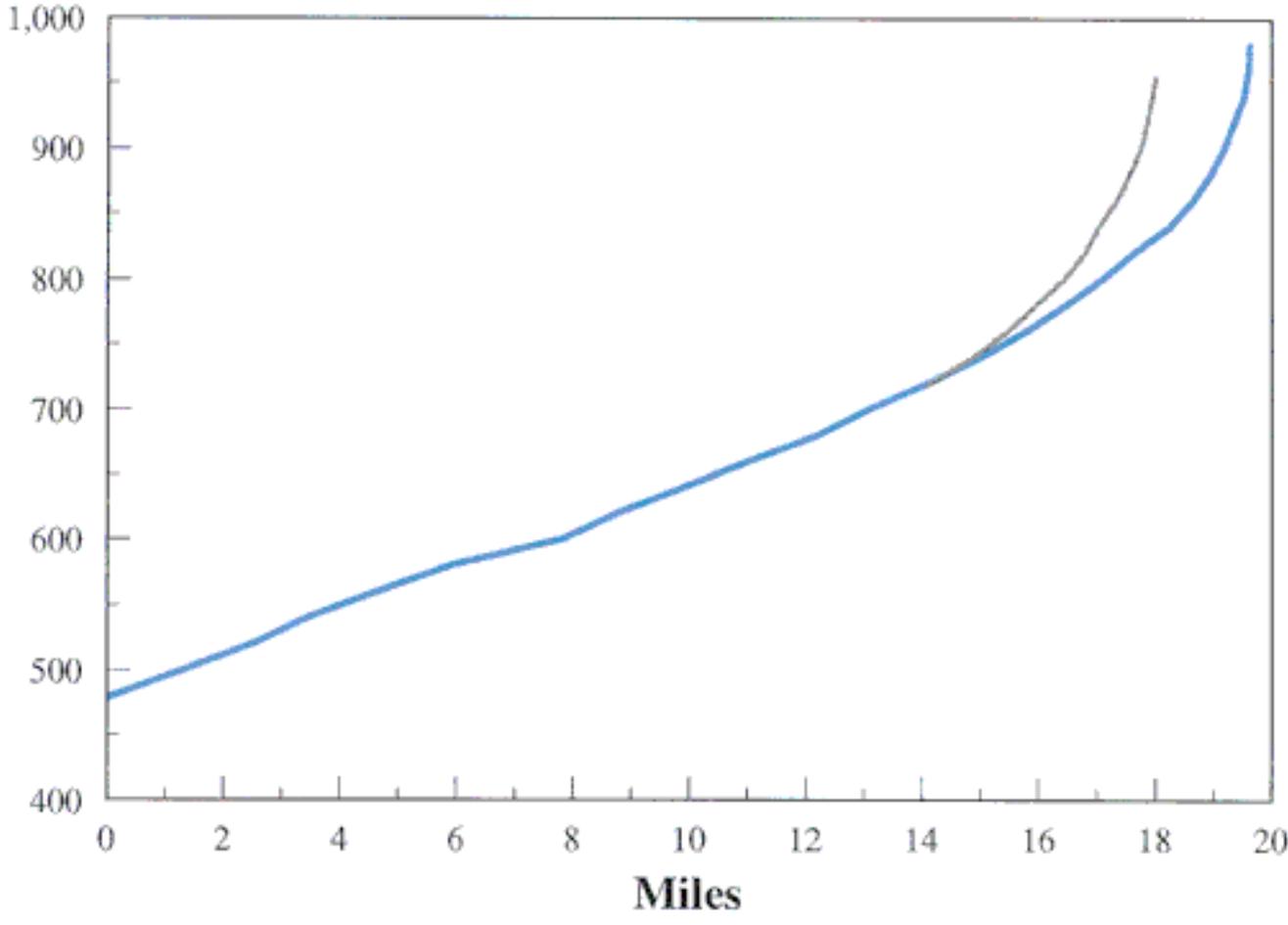


Figure Ge14. Gradient Plot for Hurricane Creek and major tributaries.

Hurricane Creek

Elevation (feet)

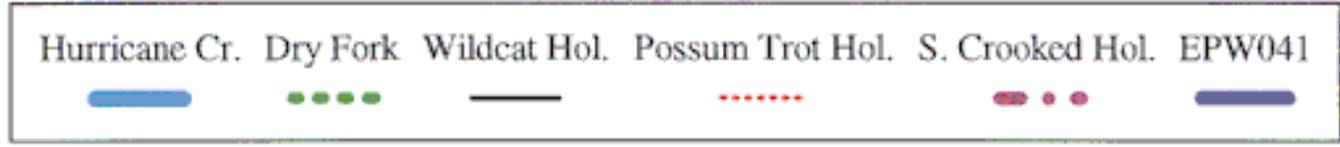
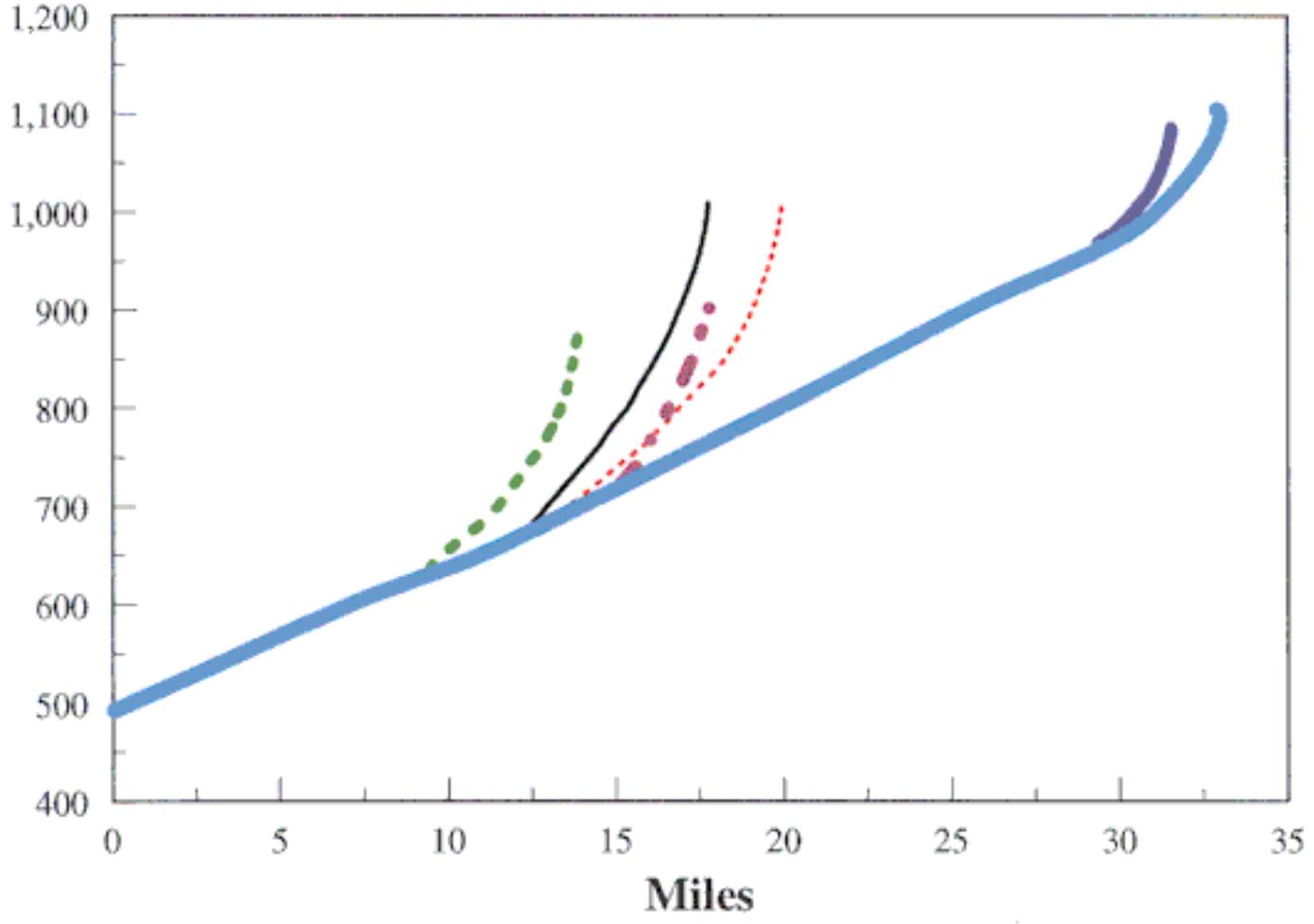


Figure Ge15. Gradient Plot for Spring Creek and major tributaries.

Spring Creek

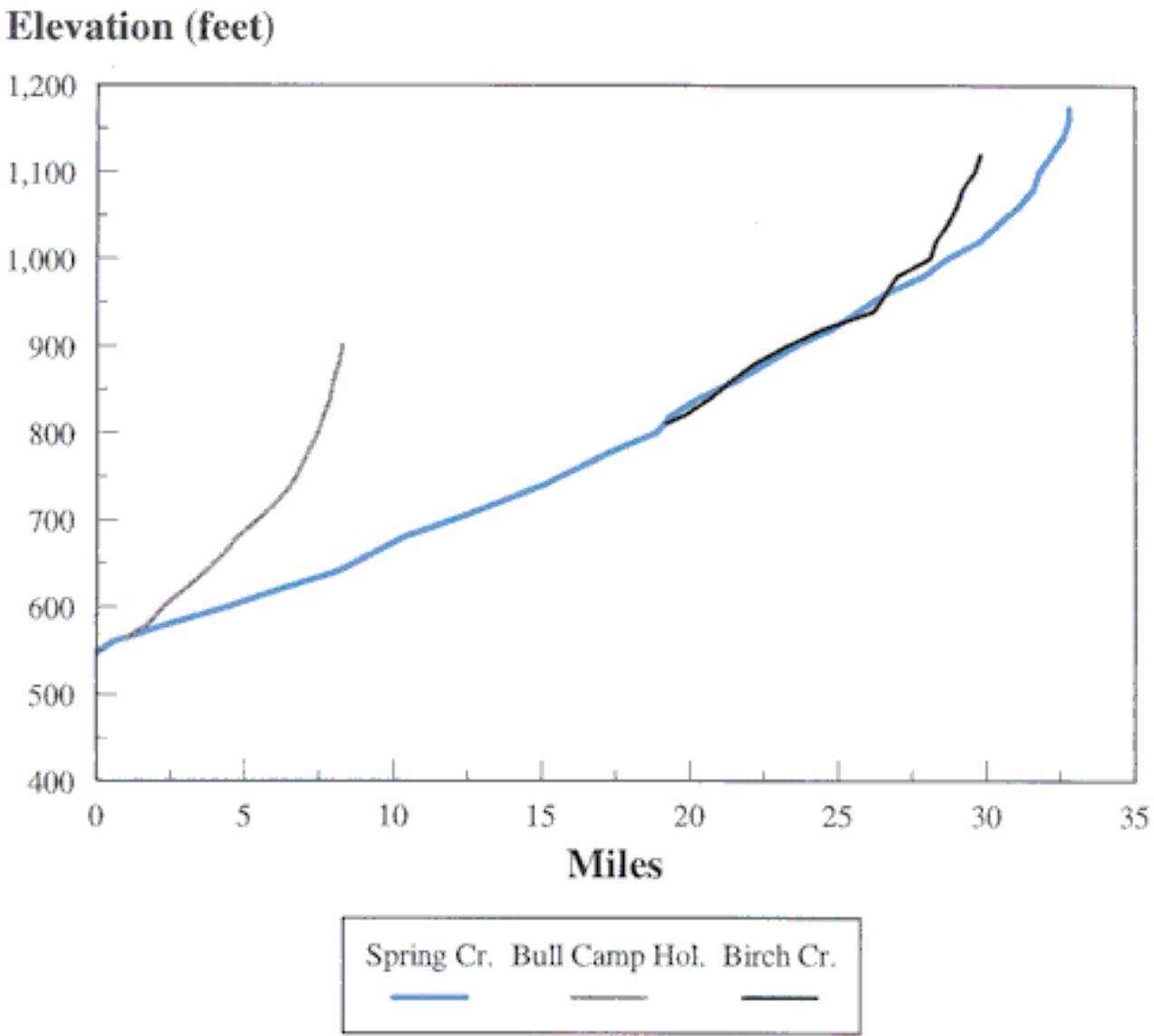


Table Ge01. Third order and larger streams of the Eleven Point Watershed.

Stream Name	Order	USGS 7.5' Quad at Stream Mouth	Name and Order Downstream Link
Bay Creek	3*	Dalton AR	Eleven Point R. AR
Mill Creek	4*	Dalton AR	Eleven Point R. AR
EPW095	3	Billmore	Mill Cr. 4
EPW096	3	Billmore	Mill Cr. 4
EPW097	3	Billmore	Mill Cr. 4
EPW098	3	Myrtle	Mill Cr.
Bee Fork	3	Myrtle	Mill Cr. 4
Eleven Point River	7	Billmore	Spring R. AR
Diles Creek	3*	Dalton AR	Eleven Point R. AR
Calvin Creek	3	Billmore	Eleven Point R. 7
Spring Valley Cr.	3	Billmore	Eleven Point R. 7
Fredrick Creek	6	Billmore	Eleven Point R. 7
Dry Creek	4	Billmore	Fredrick Cr. 6

EPW001	3	Myrtle	Dry Cr. 4
Elm Hollow	3	Many Springs	Dry Cr. 4
Many Springs Br.	3	Many Springs	Dry Cr. 4
Cotton Creek	4	Billmore	Fredrick Cr. 6
EPW002	3	Myrtle	Cotton Cr. 4
EPW003	3	Myrtle	Cotton Cr. 4
Lick Branch	3	Myrtle	Fredrick Cr.6
EPW004	3	Myrtle	Fredrick Cr. 6
Piney Creek	5	Myrtle	Fredrick Cr. 6
EPW006	3	Myrtle	Piney Cr. 5
EPW005	3	Myrtle	Piney Cr. 5

Stream Name	Order	USGS 7.5' Quad at Stream Mouth	Name and Order Downstream Link
Norman Branch	3	Many Springs	Piney Cr. 5
Williams Spring Br.	3	Many Springs	Piney Cr. 5

EPW007	3	Many Springs	Piney Cr. 5
Sanders Branch	3	Many Springs	Piney Cr. 5
EPW008	3	Alton	Piney Cr. 5
Tucker Creek	4	Alton	Piney Cr. 5
EPW009	3	Alton	Tucker Cr. 4
EPW0009a	3	Alton	Tucker Cr. 4
EPW010	3	Alton	Piney Cr. 5
EPW011	3	Alton	Piney Cr. 5
EPW012	3	Alton	Piney Cr. 4
EPW013	3	Alton	Piney Cr. 4
EPW014	4	Alton	Piney Cr. 5
EPW015	3	Alton	EPW014, 4
EPW016	3	Alton	Piney Cr. 4
Louse Creek	4	Myrtle	Fredrick Cr. 5
Buckham Hollow	3	Myrtle	Louse Cr. 4

EPW017	3	Myrtle	Fredrick Cr. 5
Town Fork	4	Myrtle	Fredrick Cr. 5
EPW018	3	Couch	Town Fork 4
EPW019	3	Myrtle	Fredrick Cr. 5
Mooney Branch	3	Myrtle	Fredrick Cr. 3
Watered Hollow	3	Couch	Fredrick Cr. 5

Stream Name	Order	USGS 7.5' Quad at Stream Mouth	Name and Order Downstream Link
Bonds Hollow	3	Couch	Fredrick Cr. 5
EPW023	3	Couch	Fredrick Cr. 5
Harper Branch	4	Couch	Fredrick Cr. 5
EPW021	3	Couch	Harper Br. 4
EPW022	3	Couch	Harper Br. 4
Hall Branch	4	Alton	Fredrick Cr. 5
EPW024	3	Alton	Hall Br. 4

EPW025	3	Alton	Fredrick Cr. 5
Cave Hollow	3	Alton	Fredrick Cr. 5
Left Hand Hollow	5	Alton	Fredrick Cr. 4
Big Hollow	4	Alton	Left Hand Hol. 5
EPW026	3	Alton	Big Hol. 4
EPW027	3	Alton	Left Hand Hol. 5
Cow Hollow	3	Alton	Fredrick Cr. 4
EPW028	3	Alton	Fredrick Cr. 4
EPW029	3	Alton	Fredrick Cr. 4
EPW030	3	Alton	Fredrick Cr. 4
EPW031	3	Alton	Fredrick Cr. 4
Hurricane Creek	3	Billmore	Eleven Point R. 6
Piney Creek	3	Billmore	Eleven Point R. 6
Dry Branch	3	Riverton	Eleven Point R. 6
Schoolhouse Hol.	3	Riverton	Eleven Point R. 6

Stream Name	Order	USGS 7.5' Quad at Stream Mouth	Name and Order Downstream Link
Freeman Hollow	3	Riverton	Eleven Point R. 6
Whites Creek	4	Riverton	Eleven Point R. 6
Dry Prong	3	Wilderness	Whites Cr. 4
Panther Spr. Hol.	3	Riverton	Eleven Point R. 6
Hurricane Creek	5	Greer	Eleven Point R. 6
Kelly Hollow	3	Greer	Hurricane Cr. 5
Cook Hollow	3	Greer	Hurricane Cr. 5
Dry Fork	4	Greer	Hurricane Cr. 5
Van Winkle Hol.	3	Low Wassie	Dry Fork 4
Reed Hollow	3	Low Wassie	Dry Fork 4
Wildcat Hollow	4	Low Wassie	Hurricane Cr. 5
EPW032	3	Low Wassie	Wildcat Hol. 4
EPW033	3	Low Wassie	Wildcat Hol. 4
Possum Trot Hol.	4	Low Wassie	Hurricane Cr. 5

EPW034	3	Low Wassie	Possum Trot Hol. 4
EPW035	3	Low Wassie	Possum Trot Hol. 4
S. Crooked Hollow	4	Low Wassie	Hurricane Cr. 5
EPW036	3	Low Wassie	S. Crooked Hol. 4
Salt Petre Hollow	3	Low Wassie	Hurricane Cr. 5
Big Hollow	3	Low Wassie	Hurricane Cr. 5
Bear Hollow	3	Low Wassie	Hurricane Cr. 5

S. Fork Hurricane Cr.	4	Birch Tree	Hurricane Cr. 5
EPW037	3	Birch Tree	S.F. Hurricane Cr.
Little Hurricane Creek	4	Birch Tree	Hurricane Cr. 5

Stream Name	Order	USGS 7.5' Quad at Stream Mouth	Name and Order Downstream Link
EPW038	3	Low Wassie	L. Hurricane C.r 4
EPW039	3	Low Wassie	L. Hurricane Cr. 4
Horse Trough Hollow	3	Low Wassie	L. Hurricane Cr. 4

EPW040	3	Birch Tree	Hurricane Cr. 5
EPW041	4	Birch Tree	Hurricane Cr. 5
EPW042	3	Birch Tree	EPW041, 4
EPW043	3	Birch Tree	Hurricane Cr. 4
Little Hurricane Cr.	4	Greer	Eleven Point R. 6
Sisco Hollow	3	Greer	L. Hurricane Cr. 4
McCormack Hollow	3	Greer	Eleven Point R. 6
Spring Creek	5	Piedmont Hollow	Eleven Point R. 6
Bull Camp Hollow	4	Piedmont Hollow	Spring Cr. 5
Sheep Ranch Hollow	4	Piedmont Hollow	Bull Camp Hol. 4
Well Hollow	3	Piedmont Hollow	Sheep Ranch Hol. 4
Wolfpen Hollow	3	Piedmont Hollow	Bull Camp Hol. 4
Camp Hollow	3	Piedmont Hollow	Spring Cr. 5
Bee Fork Creek	3	Piedmont Hollow	Spring Cr. 5
Hog Hollow	3	Piedmont Hollow	Spring Cr. 5

EPW044	3	Montier	Spring Cr. 5
Birch Creek	4	Montier	Spring Cr 5
EPW045	3	Birch Tree	Birch Cr. 4
EPW046	3	Montier	Birch Cr. 4
EPW047	3	Montier	Birch Cr. 4
EPW048	3	Montier	Spring Cr. 4

Stream Name	Order	USGS 7.5' Quad at Stream Mouth	Name and Order Downstream Link
EPW049	3	Montier	Spring Cr. 4
EPW050	3	Piedmont Hollow	Eleven Point R. 5
Denny Hollow	4	Piedmont Hollow	Eleven Point R. 5
EPW051	3	Piedmont Hollow	Denny Hol. 4
Graham Hollow	3	Piedmont Hollow	Eleven Point R. 5
Dry Creek	4	Piedmont Hollow	Eleven Point R. 5
EPW052	3	Alton	Dry Cr. 4

Barren Fork	4	Thomasville	Eleven Point R. 5
Jolliff Spring Br.	3	Thomasville	Barren Fork 4
Thayer Hollow	3	Rover	Barren Fork 4
Mill Creek	3	Thomasville	Barren Fork 4
Middle Fork	4	Thomasville	Eleven Point R. 5
Watered Fork	3	Thomasville	Middle Fork 4
Mt. Prarie Hollow	3	Thomasville	Middle Fork 4
Walnut Sink Hol.	3	Peace Valley	Middle Fork 4
EPW053	3	Peace Valley	Middle Fork 4
EPW 054	3	Peace Valley	Middle Fork 4
EPW055	3	Peace Valley	Middle Fork 4
EPW056	3	Peace Valley	Middle Fork 4
EPW057	3	White Church	Middle Fork 4
EPW058	3	White Church	Middle Fork 4
EPW059	3	White Church	Middle Fork 4

EPW060	3	White Church	Middle Fork 4
Rough Hollow	3	Thomasville	Eleven Point R. 5

Stream Name	Order	USGS 7.5' Quad at Stream Mouth	Name and Order Downstream Link
County Hollow	3	Peace Valley	Eleven Point R. 5
Little Creek	4	Peace Valley	Eleven Point R. 5
Peace Valley Draft	3	White Church	Little Cr. 4
Webb Hollow	4	Mountain View	Eleven Point
EPW061	3	Mountain View	Webb Hol. 4
Lee Hollow	3	Mountain View	Eleven Point R. 5
Kenaga Hollow	4	Mountain View	Eleven Point R. 5
EPW062	3	Mountain View	Kenaga Hol. 4
Lost Camp Creek	4	Trask	Eleven Point R. 5
EPW063	3	Trask	Lost Camp Cr. 4
EPW064	3	Trask	Eleven Point R. 4

Robbins Hollow	3	Trask	Eleven Point R. 4
Sims Valley	3	Trask	Eleven Point R. 4
EPW065	3	Willow Springs S.	Eleven Point R. 4
Richardson Hollow	3	Willow Springs S.	Eleven Point R. 4
EPW066	3	Willow Springs S.	Eleven Point R. 4

Table Ge02. Eleven Point Watershed stream reaches designated as losing in Table J Rules of Department of Natural Resources Division 20-Clean Water Commission Chapter 7-Water Quality. Code of State Regulations (MDNR 1996).

Stream	Miles	From	To
Trib to Little Cr.	2.0	nw,ne,04,25n,08w	sw,ne,ne,10,25n,08w
Lee Hollow	6.0	sw,se,nw,35,27n,07w	nw,sw,nw,34,26n,07w
Kenaga Hollow	8.0	ne,se,nw,28,27n,07w	se,nw,ne,33,26n,07w
Middle Fork	10.0	nw,nw,sw,35,25n,07w	nw,nw,ne,05,24n,05w
Lost Camp Cr.	12.0	sw,sw,se,08,26n,09w	se,nw,se,24,26n,08w
Trib. to Lost Camp Cr.	6.0	nw,ne,nw,28,26n,09w	ne,nw,se,20,26n,08w
Eleven Point R.	32.0	nw,se,sw,29,27n,09w	sw,se,se,31,25n,05w
Trib to Eleven Point R.	2.5	se,sw,sw,36,27n,08w	se,nw,nw,13,26n,08w
Gunters Valley	8.0	sw,sw,nw,03,24n,08w	ne,ne,se,34,25n,07w
Little Cr.	9.0	nw,sw,sw,16,25n,08w	se,nw,sw,02,25n,07w
Trib to Lost Camp Cr.	12.8	sw,sw,se,27,26n,09w	se,sw,sw,19,26n,07w
Fredrick Cr.	6.5	ne,sw,sw,02,22n,03w	sw,nw,nw,15,22n,02w
Fredrick Cr.	20.0	se,ne,sw,26,24n,05w	ne,sw,sw,02,22n,03w
Dry Cr.	9.0	sw,sw,nw,28,24n,03w	se,sw,se,01,22n,03w
School House Hollow	3.0	sw,se,se,36,24n,02w	sw,sw,sw,10,23n,02w
Greenbriar Hollow	4.0	se,nw,ne,36,24n,02w	ne,se,se,32,24n,02w
Freeman Hollow	3.0	sw,nw,ne,14,24n,02w	ne,nw,ne,32,24n,02w
Unnamed Trib.	1.5	se,nw,se,14,24n,02w	nw,sw,sw,22,24n,02w
Sitton Valley	4.0	ne,sw,ne,17,25n,02w	sw,ne,se,04,24n,02w
Dry Prong	2.0	se,ne,nw,02,24n,02w	sw,ne,se,09,24n,02w

Whites Cr.	7.0	ne,se,ne,21,25n,02w	ne,sw,nw,20,24n,02w
Watered Fork	4.0	se,se,nw,16,24n,06w	sw,se,sw,35,25n,06w
L. Hurricane Cr.	4.5	sw,sw,ne,22,24n,04w	se,se,nw,07,24n,03w

Stream	Miles	From	To
Piney Cr.	15.0	nw,sw,sw,20,24n,04w	se,sw,nw,03,22n,03w
Birch Creek	7.0	se,se,21,27n,05w	sw,ne,sw,20,26n,05w
Birch Creek	6.0	nw,ne,sw,32,27n,05w	sw,ne,sw,20,26n,05w
Unnamed Trib.	3.0	nw,se,se,31,27n,05w	nw,sw,nw,18,26n,05w
Unnamed Trib.	4.0	ne,nw,nw,34,27n,06w	ne,se,nw,12,26n,06w
Spring Cr.	18.0	ne,se,nw,08,26n,06w	ne,nw,nw,27,25n,04w
L. Hurricane Cr.	4.5	se,nw,nw,21,27n,04w	sw,nw,se,10,26n,04w
Hurricane Cr.	15.0	sw,nw,se,10,26n,04w	ne,ne,sw,34,25n,03w
Bee Fork Cr.	7.0	sw,sw,sw,11,26n,05w	se,se,nw,11,25n,05w
Total	249.3	-	-

Note: This table is not a final authority. Data subject to change.

Table Ge03. Location and discharge of selected springs in the Eleven Point Watershed (Vineyard and Feder 1974).

					Flow Rate
			Quad	UTM	(cfs)
No.	Spring	County	Name	Cordinates	Date Rec.
1	Bliss	Oregon	Riverton	658890	.8040675909-20-64
2	Blowing	Howell	Peace	617420	.98Valley40796206-6-66
3	Blue	Oregon	Billmore	662140	72.040470201925-66
4	Blue Hole	Oregon	Greer	651300	8.84407220010-18-46
5	Boze Mill	Oregon	Riverton	661400	23.040587001925-66
6	Dennig	Oregon	Greer	651320	7.38(lower)407218010-18-46
7	Dennig	Oregon	Greer	651320	3.06(upper)407220010-18-46
8	Falling	Oregon	Greer	652000	0.1440813009-8-44
9	Flat	Howell	Peace	619000	0.31Valley40792806-6-66
10	Graham	Oregon	Piedmont	639180	0.30Hollow40712308-15-25
11	Greer	Oregon	Greer	647465	344.040722701921-95
12	Huff	Oregon	Greer	650160	0.78407230010-18-46

					Flow Rate
			Quad	UTM	(cfs)
No.	Spring	County	Name	Cordinates	Date Rec.
13	McCormack	Oregon	Greer	647970	.16407792510-12-65
14	Morgan	Oregon	Billmore	662600	32.040476801925-66
15	Posy	Oregon	Piedmont	634825	1.89Hollow40717101950-63

16	Sullivan	Oregon	Billmore	662480	5.23404704011-6-63
17	Turner Mill	Oregon	Greer	654470	2.3040702501924-65
18	Vault	Oregon	Billmore	662150	<u>0.4040478458-11-25</u>

Table Ge04. Total length and length of permanent stream of third order and larger (1 of 7) streams as well as drainage area of streams draining $\geq 5\%$ of the Eleven Point Watershed.

Stream Name	Length (Miles)	Miles Permanent	Drainage Area (mi²)
Bay Creek	4.5	0	-
Mill Creek	9.6	5.1	-
EPW095	0.6	0	-
EPW096	1.4	0	-
EPW097	1.4	0	-
EPW098	2.3	0	-
Bee Fork	1.8	0	-
Eleven Point River	97.3	51.5	1014.4
Diles Creek	2.8	0	-
Calvin Creek	5.23	0	-
Spring Valley Cr.	5.47	0	-
Fredrick Creek	35.1	12	158.4
Dry Creek	11.6	0	-

EPW001	1.7	0	-
Elm Hollow	3.8	0	-
Many Springs Br.	3.5	0	-
Cotton Creek	4.6	0	-
EPW002	2.2	0	-
EPW003	1.5	0	-
Lick Branch	5.6	0	-
EPW004	2.0	0	-
Piney Creek	19.6	0	-
EPW005	1.9	0	-

Stream Name	Length (Miles)	Miles Permanent	Drainage Area (mi²)
Norman Branch	3.7	0	-
Williams Spring Br.	5.1	0	-
EPW007	3.4	0	-

Sanders Branch	3.1	0	-
EPW008	3.5	0	-
Tucker Creek	3.9	0	-
EPW009	1.9	0	-
EPW0009a	0.9	0	-
EPW010	2.2	0	-
EPW011	1.1	0	-
EPW012	0.9	0	-
EPW013	1.2	0	-
EPW014	2.2	0	-
EPW015	0.9	0	-
Louse Creek	5.0	0	-
Buckham Hollow	3.1	0	-
EPW017	3.7	0	-
Town Fork	6.8	3	-

EPW018	1.3	0	-
EPW019	1.8	0	-
Mooney Branch	2.5	0	-
Watered Hollow	3.5	0	-

Stream Name	Length (Miles)	Miles Permanent	Drainage Area (mi²)
Fraley Hollow	3.5	0	-
EPW023	1.9	0	-
Harper Branch	4.6	0	-
EPW021	2.7	0	-
EPW022	1.8	0	-
Hall Branch	3.2	1	-
EPW024	1.5	0	-
EPW025	1.4	0	-
Cave Hollow	1.6	0	-

Left Hand Hollow	2.8	0	-
Big Hollow	3.4	0	-
EPW026	0.7	0	-
EPW027	0.7	0	-
Cow Hollow	1.8	0.4	-
EPW028	1.1	0	-
EPW029	1.5	.01	-
EPW030	1.4	0	-
EPW031	2.03	0	-
Hurricane Creek	4.0	2.6	113.5
Piney Creek	0.8	0.8	-
Dry Branch	3.5	0	-

Stream Name	Length (Miles)	Miles Permanent	Drainage Area (mi²)
Freeman Hollow	6.1	0	-

Whites Creek	10.8	2.6	-
Dry Prong	4.3	0	-
Panther Spr. Hol.	5.3	0	-
Hurricane Creek	32.9	4.5	-
Kelly Hollow	6.1	0	-
Cook Hollow	3.9	0	-
Dry Fork	4.6	0	-
Van Winkle Hol.	3.1	0	-
Reed Hollow	3.0	0	-
Wildcat Hollow	5.1	0	-
EPW032	1.3	0	-
EPW033	1.1	0	-
Possum Trot Hol.	6.6	0	-
EPW034	3.1	0	-
EPW035	1.9	0	-

S. Crooked Hollow	2.9	0	-
EPW036	1.5	0	-
Salt Petre Hollow	1.9	0	-
Big Hollow	3.0	0	-

Stream Name	Length (Miles)	Miles Permanent	Drainage Area (mi²)
EPW038	2.9	0	-
EPW039	2.5	0	-
Horse Trough Hollow	2.2	0	-
EPW040	1.15	0	-
EPW041	2.0	0	-
EPW042	1.1	0	-
EPW043	3.1	0	-
Little Hurricane Cr.	9.3	1.3	-
Sisco Hollow	5.1	0	-

McCormack Hollow	5.4	0.6	-
Spring Creek	32.8	5.2	139.8
Bull Camp Hollow	7.3	0	-
Sheep Ranch Hollow	5.2	0	-
Well Hollow	1.5	0	-
Wolfpen Hollow	3.8	0	-
Camp Hollow	3.1	0	-
Bee Fork Creek	7.3	0	-
Hog Hollow	3.9	0	-
EPW044	2.3	0	-

Birch Creek	10.7	0	-
EPW045	2.4	0	-
EPW046	4.1	0	-
EPW047	3.4	0	-
EPW048	3.4	0	-

Stream Name	Length (Miles)	Miles Permanent	Drainage Area (mi²)
EPW049	6.7	4.8	-
EPW050	2.5	0	-
Denny Hollow	5.8	0	-
EPW051	1.5	0	-
Graham Hollow	4.5	0	-
Dry Creek	7.4	0	-
EPW052	2.9	0	-
Barren Fork	8.4	3.5	-
Jolliff Spring Br.	6.0	5.1	-
Thayer Hollow	2.8	0	-
Mill Creek	7.16	2.13	-
Middle Fork	30.1	4.0	82.1
Watered Fork	5.3	3.9	-

Mt. Prarie Hollow	8.7	5.1	-
Walnut Sink Hol.	4.9	0	-
EPW053	3.0	0	-
EPW054	3.7	0	-
EPW055	4.9	0	-

Stream Name	Length (Miles)	Miles Permanent	Drainage Area (mi²)
County Hollow	3.3	0	-
Little Creek	20.9	14.6	-
Peace Valley Draft	4.8	0	-
Webb Hollow	6.6	0	-
EPW061	1.8	0	-
Lee Hollow	7.8	5.3	-
Kenaga Hollow	9.5	6.2	-
EPW062	4.5	1.7	-

Lost Camp Creek	13.6	8.1	-
EPW063	7.6	2.8	-
EPW064	6.1	0	-
Robbins Hollow	6.6	4.5	-
Sims Valley	7.0	4.7	-
EPW065	4.2	0	-
Richardson Hollow	4.5	0	-
EPW066	4.0	0	-

Table Ge05. Stream gradient for order as well as average gradient for entire stream for fifth order and larger streams within the Eleven Point Watershed.

Stream Name	Gradient for Order (ft/mi)							Average Gradient (ft/mi)
	7	6	5	4	3	2	1	
-	-	-	-	-	-	-	-	-
Left Hand Hol.	-	-	32.0	46.3	56.9	89.2	300.7	63.5
Eleven Point R.	7.4	5.1	10.2	16.8	20.7	61.5	98.0	11.2
Fredrick Cr.	-	9.5	17.1	20.0	33.3	25.0	66.7	16.3
Hurricane Cr.	-	-	16.1	10.0	28.6	25.0	77.8	18.4
Piney Cr.	-	-	1.1	31.8	56.3	50.0	225.0	25.7
Spring Cr.	-	-	14.1	18.5	35.3	43.3	30.9	19.0