USDA NRCS Montana Snow Survey
WATER SUPPLY REPORT
Governor's Drought Advisory Committee
October 13th, 2011

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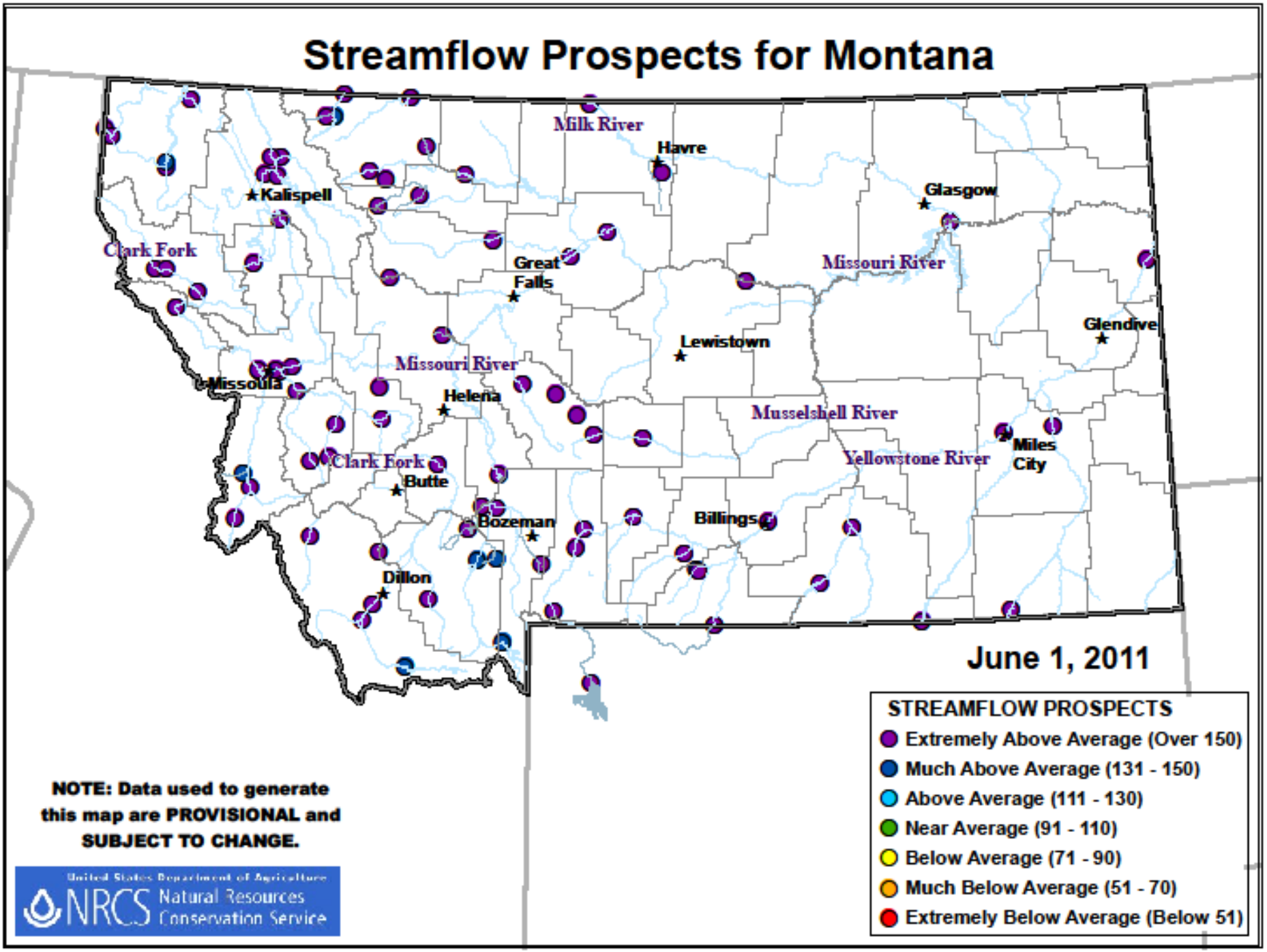
406-587-6991

www.mt.nrcs.usda.gov/snow/

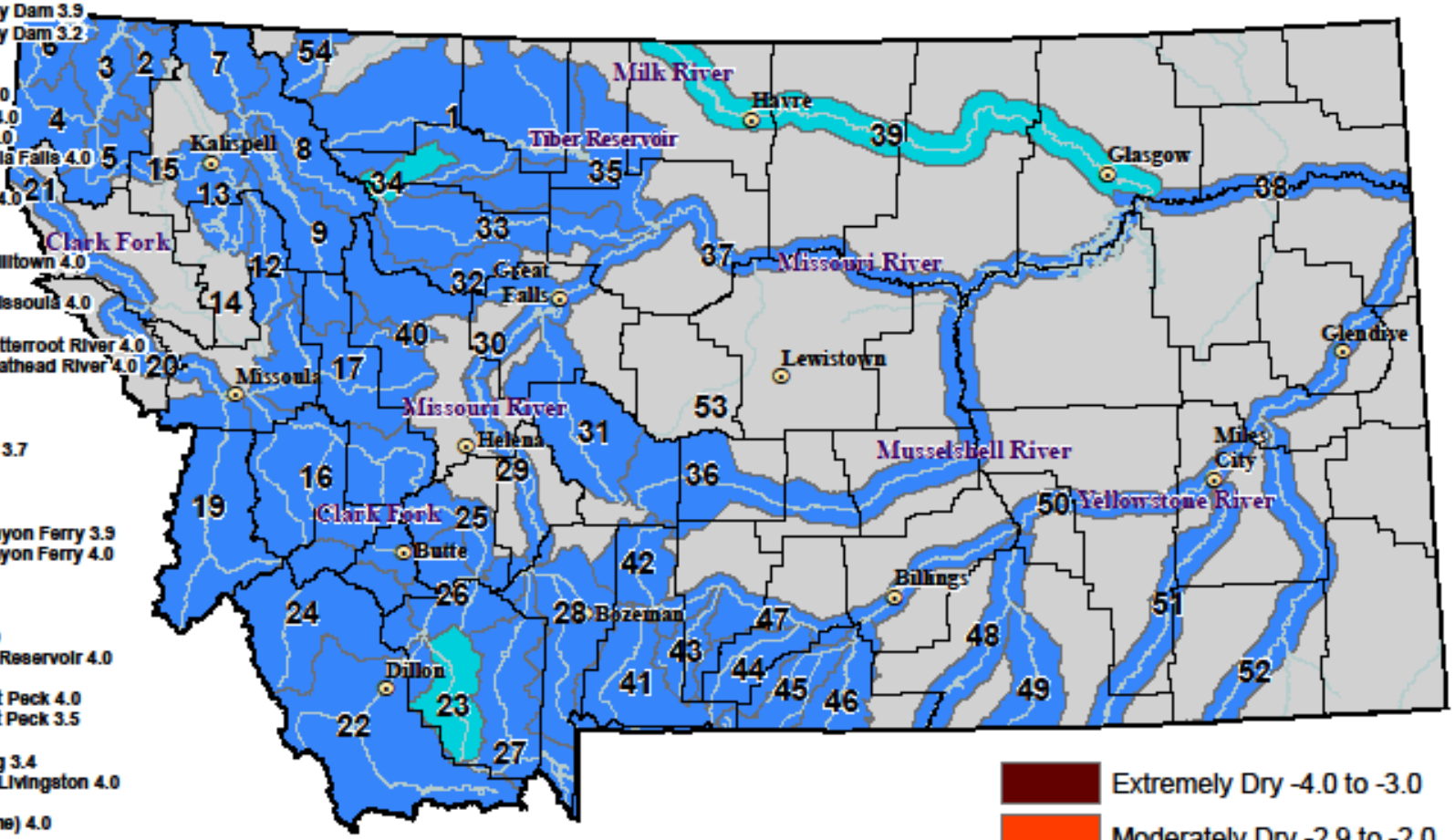
Streamflow Prospects for Montana



Surface Water Supply Index (SWSI) Values

RIVER INDEX & SWSI VALUES

1 Marias River above Tiber Reservoir 3.8
2 Tobacco River 4.0
3 Kootenai Ft. Steele to Libby Dam 3.9
4 Kootenai River below Libby Dam 3.2
5 Fisher River 3.9
6 Yaak River 4.0
7 North Fk. Flathead River 4.0
8 Middle Fk. Flathead River 4.0
9 South Fk. Flathead River 4.0
10 Flathead River at Columbia Falls 4.0
12 Swan River 4.0
13 Flathead River at Polson 4.0
14 Mission Valley
15 Little Bitterroot River
16 Clark Fork River above Milltown 4.0
17 Blackfoot River 4.0
18 Clark Fork River above Missoula 4.0
19 Bitterroot River 4.0
20 Clark Fork River below Bitterroot River 4.0
21 Clark Fork River below Flathead River 4.0
22 Beaverhead River 3.5
23 Ruby River 2.8
24 Big Hole River 4.0
25 Boulder River (Jefferson) 3.7
26 Jefferson River 4.0
27 Madison River 4.0
28 Gallatin River 4.0
29 Missouri River above Canyon Ferry 3.9
30 Missouri River below Canyon Ferry 4.0
31 Smith River 4.0
32 Sun River 4.0
33 Teton River 3.4
34 Birch/Dupuyer Creeks 2.9
35 Marias River below Tiber Reservoir 4.0
36 Musselshell River 3.1
37 Missouri River above Fort Peck 4.0
38 Missouri River below Fort Peck 3.5
39 Milk River 2.5
40 Dearborn River near Craig 3.4
41 Yellowstone River above Livingston 4.0
42 Shields River 3.8
43 Boulder River (Yellowstone) 4.0
44 Stillwater River 3.9
45 Rock/Red Lodge Creeks 3.6
46 Clarks Fork River 4.0
47 Yellowstone River above Bighorn River 4.0
48 Bighorn River below Bighorn Lake 4.0
49 Little Bighorn River 4.0
50 Yellowstone River below Bighorn River 4.0
51 Tongue River 4
52 Powder River 3.9
53 Upper Judith River
54 St. Mary 3.9



August 1, 2011

NOTE: Data used to generate this map are PROVISIONAL and SUBJECT TO CHANGE.

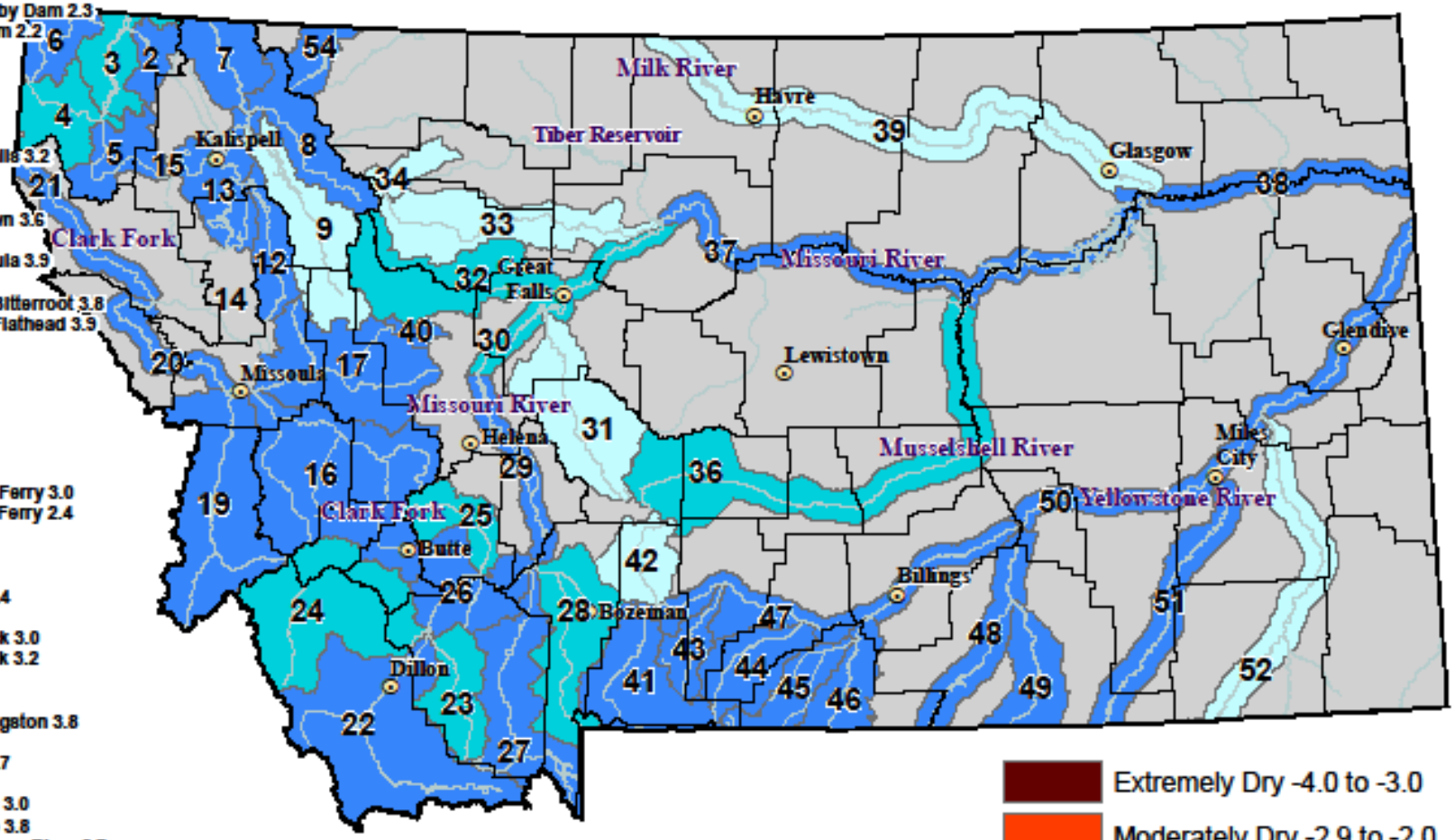
- Extremely Dry -4.0 to -3.0
- Moderately Dry -2.9 to -2.0
- Slightly Dry -1.9 to -1.0
- Near Average -0.9 to 0.9
- Slightly Wet 1.0 to 1.9
- Moderately Wet 2.0 to 2.9
- Extremely Wet 3.0 to 4.0
- SWSI Not Applicable

United States Department of Agriculture
NRCS Natural Resources Conservation Service

Surface Water Supply Index (SWSI) Values

RIVER INDEX & SWSI VALUES

2 Tobacco 4.0
3 Kootenai Ft. Steele to Libby Dam 2.3
4 Kootenai below Libby Dam 2.2
5 Fisher 3.8
6 Yaak 3.2
7 North FK. Flathead 3.8
8 Middle FK. Flathead 4.0
9 South FK. Flathead 1.9
10 Flathead at Columbia Falls 3.2
12 Swan 4.0
13 Flathead at Polson 4.0
16 Clark Fork above Milltown 3.6
17 Blackfoot 4.0
18 Clark Fork above Missoula 3.9
19 Bitterroot 3.5
20 Clark Fork River below Bitterroot 3.8
21 Clark Fork River below Flathead 3.9
22 Beaverhead 3.5
23 Ruby 2.0
24 Big Hole 2.9
25 Boulder (Jefferson) 2.6
26 Jefferson 3.2
27 Madison 3.0
28 Gallatin 2.8
29 Missouri above Canyon Ferry 3.0
30 Missouri below Canyon Ferry 2.4
31 Smith 1.8
32 Sun 2.4
33 Teton 1.6
34 Birch/Dupuyer Creeks 1.4
36 Musselshell 2.4
37 Missouri above Fort Peck 3.0
38 Missouri below Fort Peck 3.2
39 Milk 1.8
40 Dearborn near Craig 3.0
41 Yellowstone above Livingston 3.8
42 Shields 1.8
43 Boulder (Yellowstone) 3.7
44 Stillwater 3.1
45 Rock/Red Lodge Creeks 3.0
46 Clarks Fork Yellowstone 3.8
47 Yellowstone above Bighorn River 3.7
48 Bighorn below Bighorn Lake 3.8
49 Little Bighorn 3.3
50 Yellowstone below Bighorn 3.7
51 Tongue 4.0
52 Powder 1.5
54 Saint Mary 3.4



September 1, 2011

NOTE: Data used to generate this map are PROVISIONAL and SUBJECT TO CHANGE.

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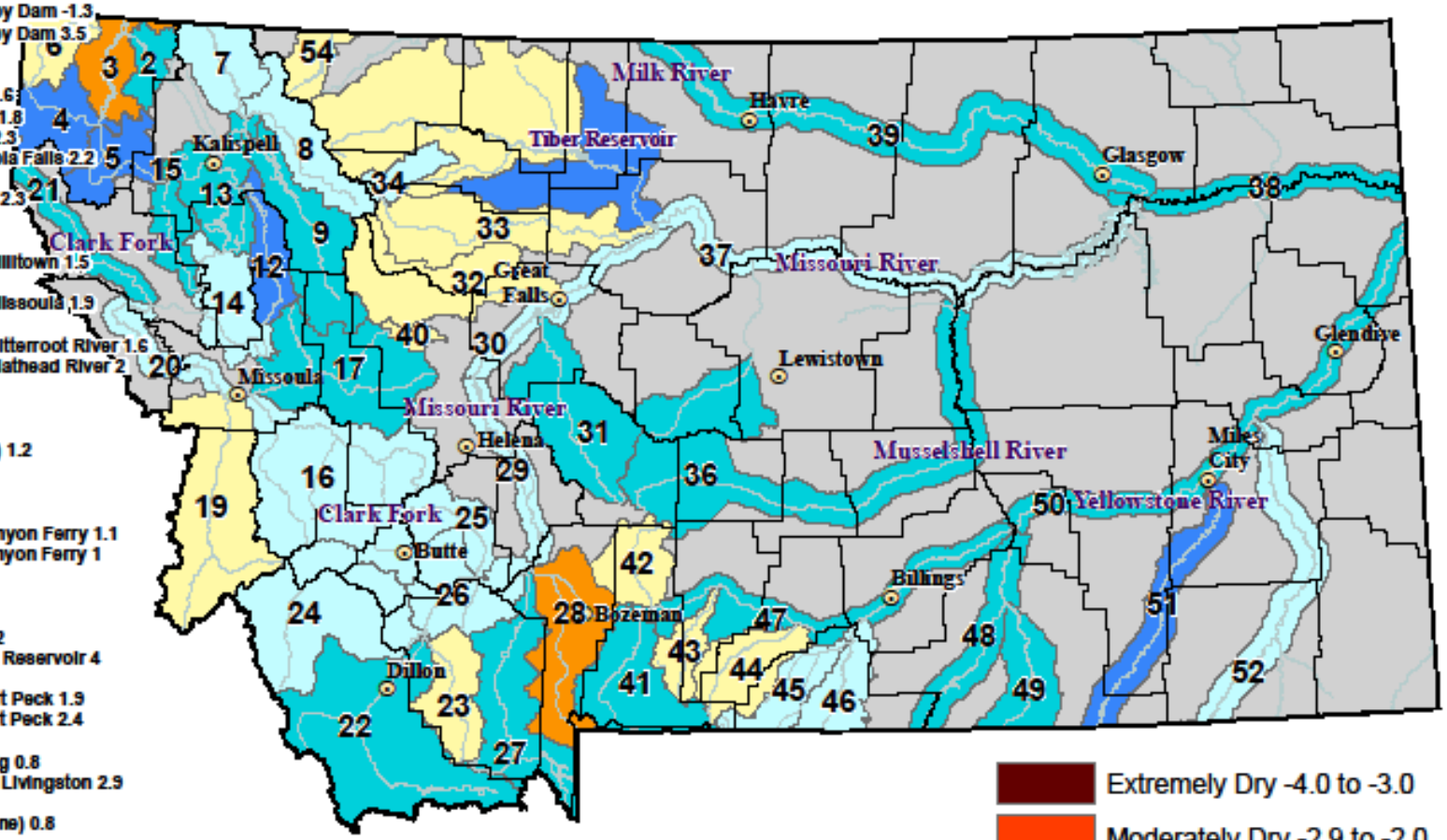
- Moderately Dry -2.9 to -2.0
- Slightly Dry -1.9 to -1.0
- Near Average -0.9 to 0.9
- Slightly Wet 1.0 to 1.9
- Moderately Wet 2.0 to 2.9
- Extremely Wet 3.0 to 4.0
- SWSI Not Applicable

United States Department of Agriculture
NRCS Natural Resources Conservation Service

Surface Water Supply Index (SWSI) Values

RIVER INDEX & SWSI VALUES

1 Marias River above Tiber Reservoir 0.6
2 Tobacco River 2.3
3 Kootenai Ft. Steele to Libby Dam -1.3
4 Kootenai River below Libby Dam 3.5
5 Fisher River 3.7
6 Yaak River -0.1
7 North Fk. Flathead River 1.6
8 Middle Fk. Flathead River 1.8
9 South Fk. Flathead River 2.3
10 Flathead River at Columbia Falls 2.2
12 Swan River 3.5
13 Flathead River at Polson 2.3
14 Mission Valley 1.2
15 Little Bitterroot River 2.1
16 Clark Fork River above Milltown 1.5
17 Blackfoot River 2.7
18 Clark Fork River above Missoula 1.9
19 Bitterroot River 0.7
20 Clark Fork River below Bitterroot River 1.6
21 Clark Fork River below Flathead River 2
22 Beaverhead River 2.7
23 Ruby River 0.8
24 Big Hole River 1.2
25 Boulder River (Jefferson) 1.2
26 Jefferson River 1.7
27 Madison River 2.3
28 Gallatin River -1.2
29 Missouri River above Canyon Ferry 1.1
30 Missouri River below Canyon Ferry 1
31 Smith River 2.8
32 Sun River 0
33 Teton River 0.1
34 Birch/Dupuyer Creeks 1.2
35 Marias River below Tiber Reservoir 4
36 Musselshell River 2
37 Missouri River above Fort Peck 1.9
38 Missouri River below Fort Peck 2.4
39 Milk River 2.3
40 Dearborn River near Craig 0.8
41 Yellowstone River above Livingston 2.9
42 Shields River -0.1
43 Boulder River (Yellowstone) 0.8
44 Stillwater River 0.7
45 Rock/Red Lodge Creeks 1.2
46 Clarks Fork River 1.7
47 Yellowstone River above Bighorn River 2.2
48 Bighorn River below Bighorn Lake 2
49 Little Bighorn River 2.6
50 Yellowstone River below Bighorn River 2.1
51 Tongue River 3.7
52 Powder River 1.1
53 Upper Judith River 2.4
54 St. Mary 0.6



October 1, 2011

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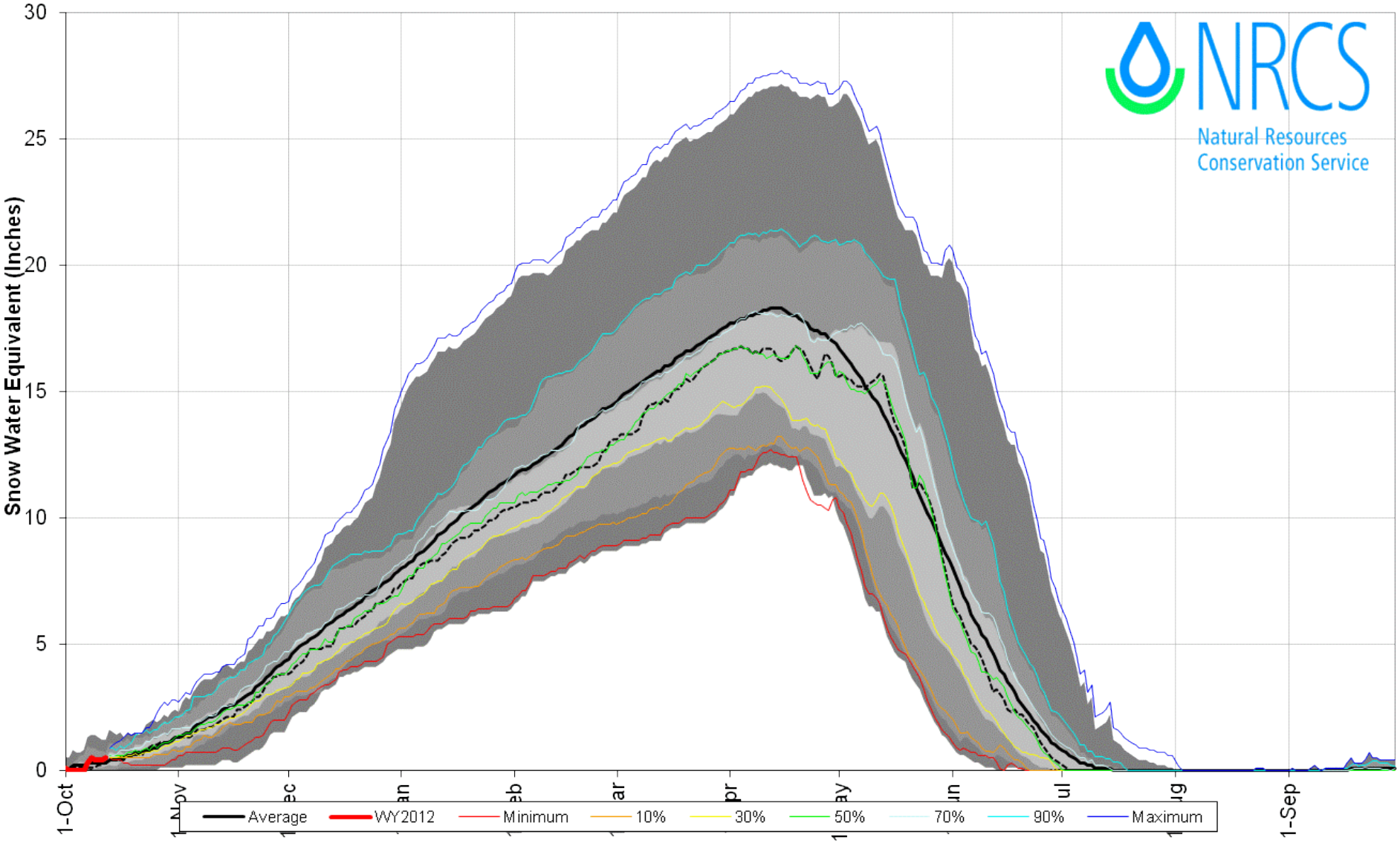
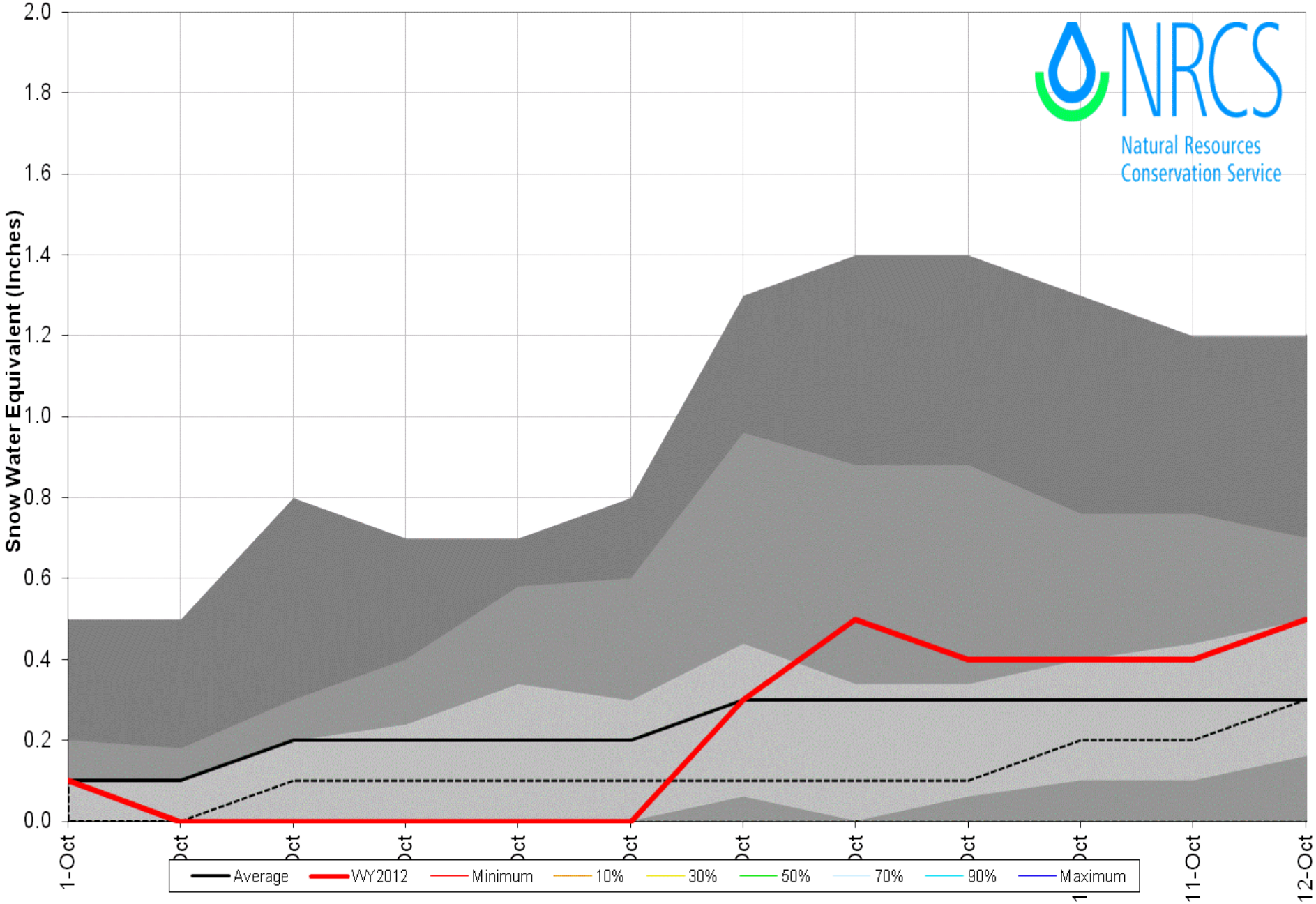
- Slightly Dry -1.9 to -1.0
- Near Average -0.9 to 0.9
- Slightly Wet 1.0 to 1.9
- Moderately Wet 2.0 to 2.9
- Extremely Wet 3.0 to 4.0
- SWSI Not Applicable

United States Department of Agriculture
NRCS Natural Resources Conservation Service

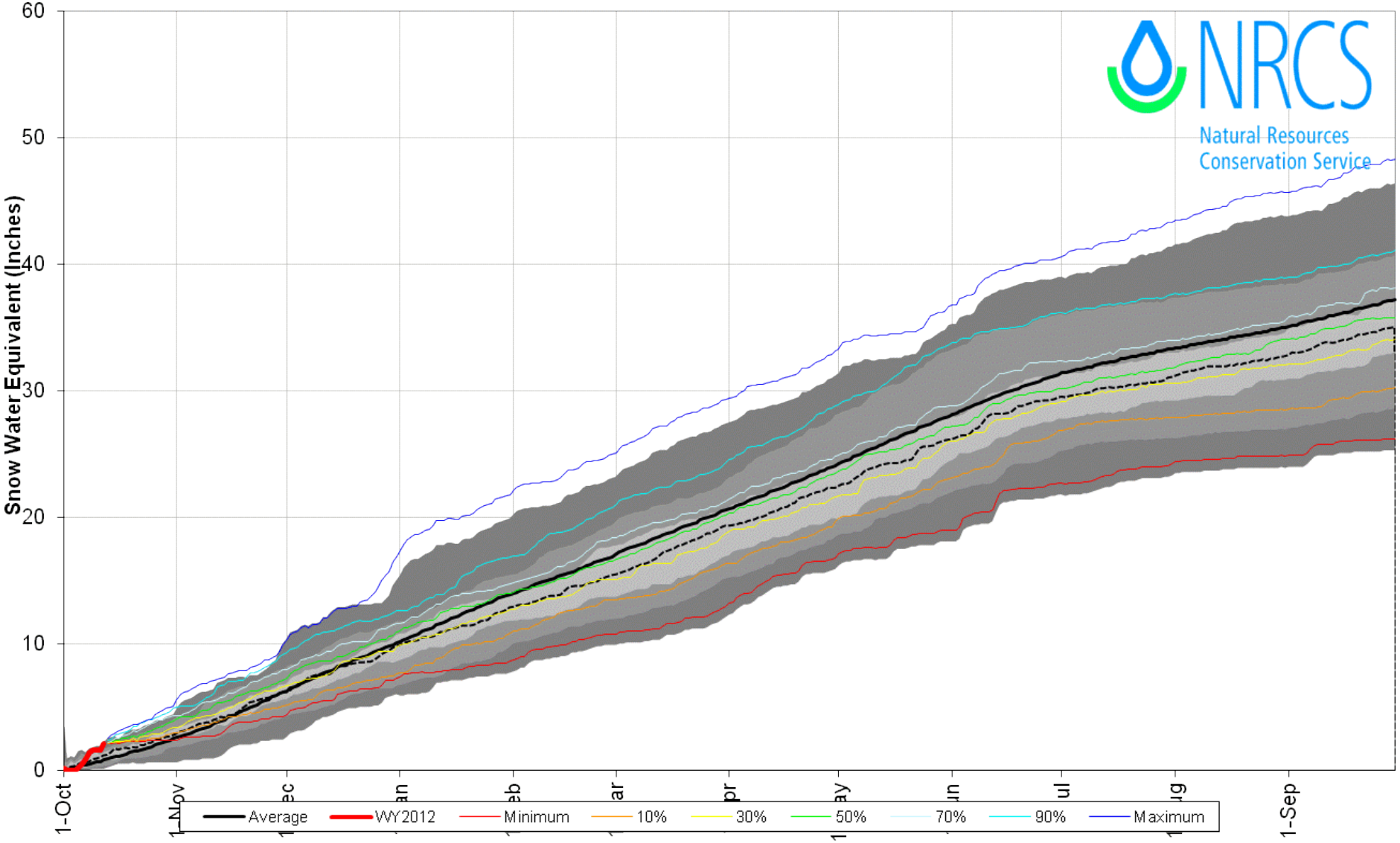
Montana Watersheds with Non-Exceedence Projections
Based on Provisional SNOTEL Data as of Oct 12, 2011



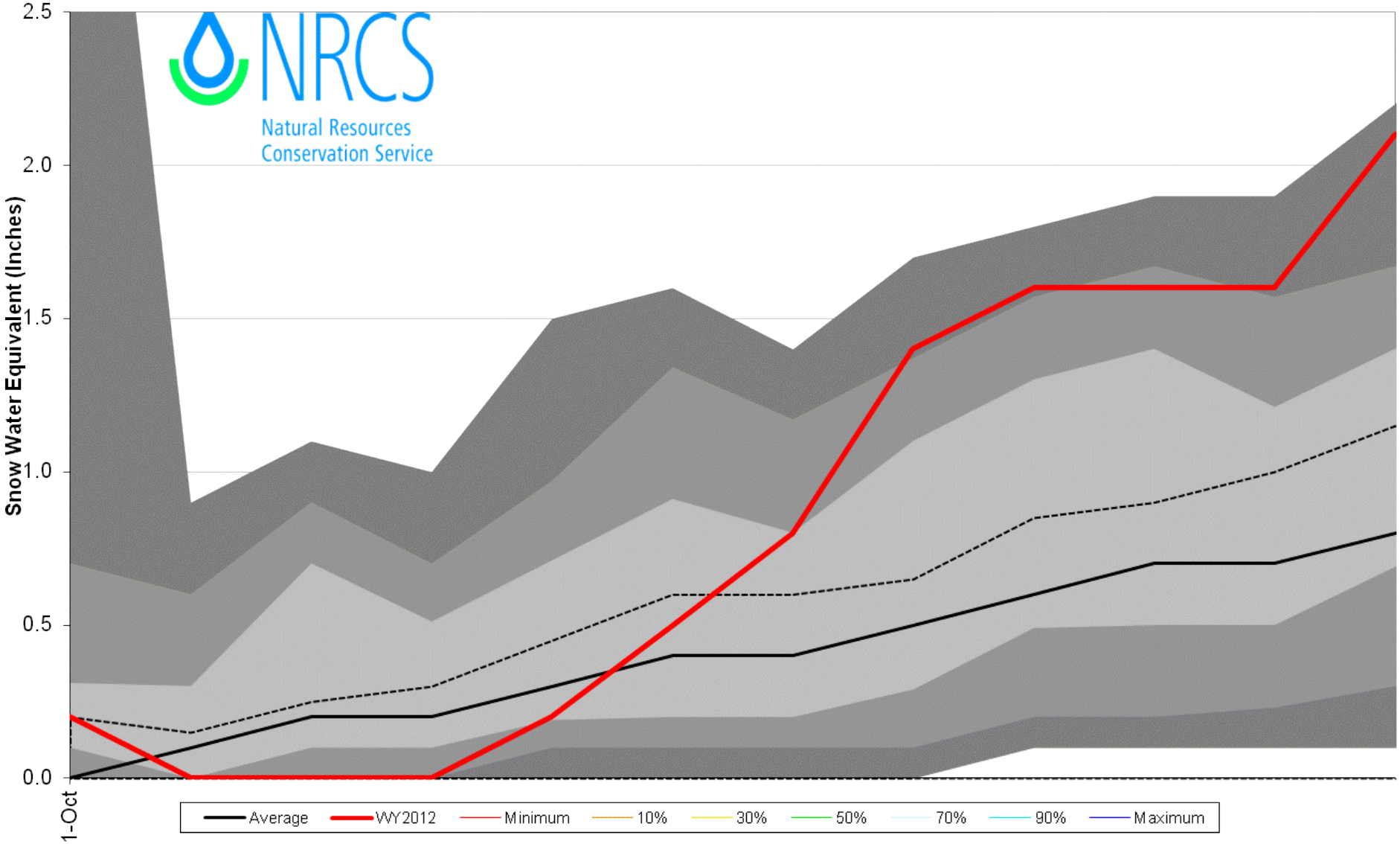
Montana Watersheds with Non-Exceedence Projections
Based on Provisional SNOTEL Data as of Oct 12, 2011



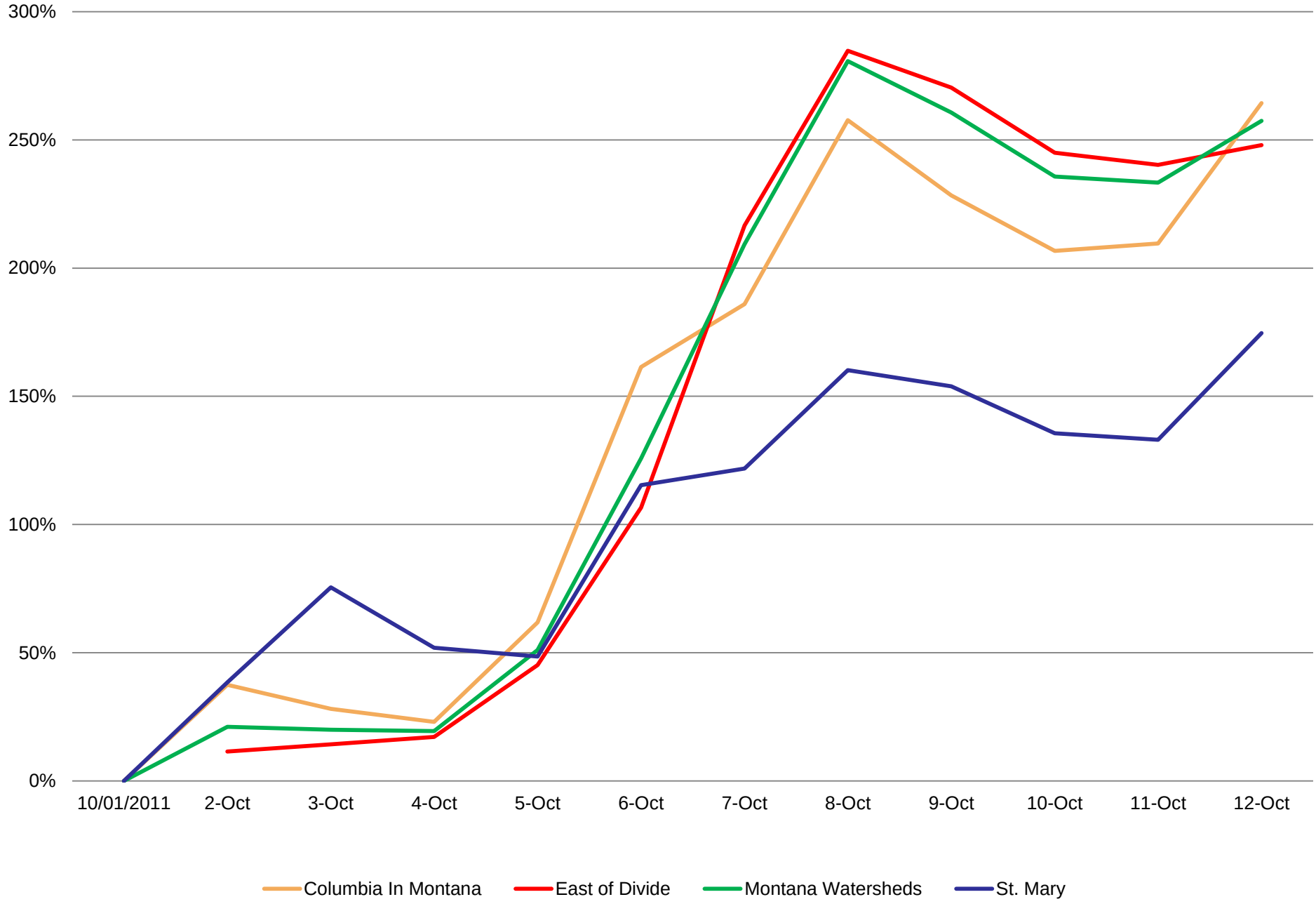
Montana Watersheds with Non-Exceedence Projections
Based on Provisional SNOTEL Data as of Oct 12, 2011

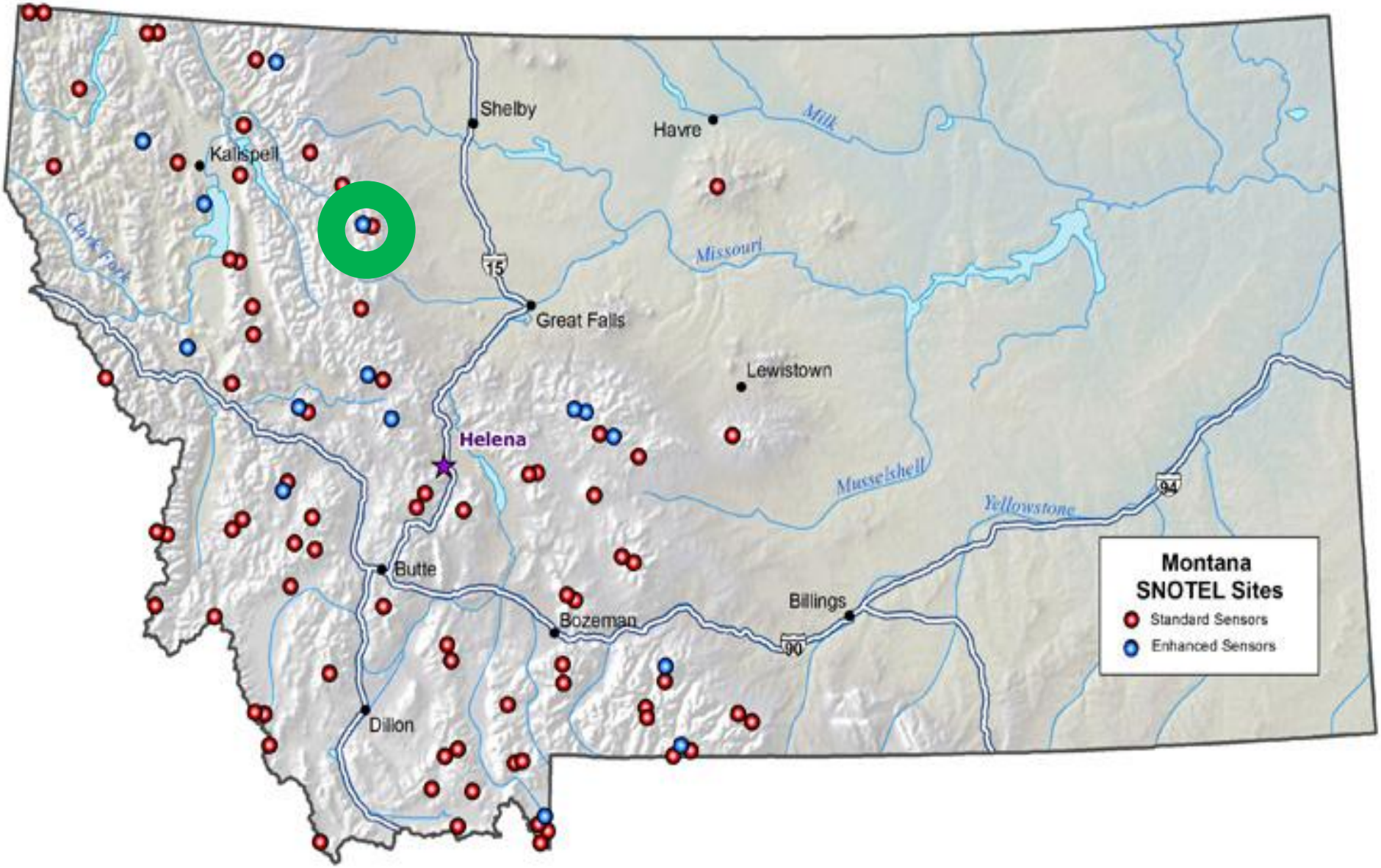


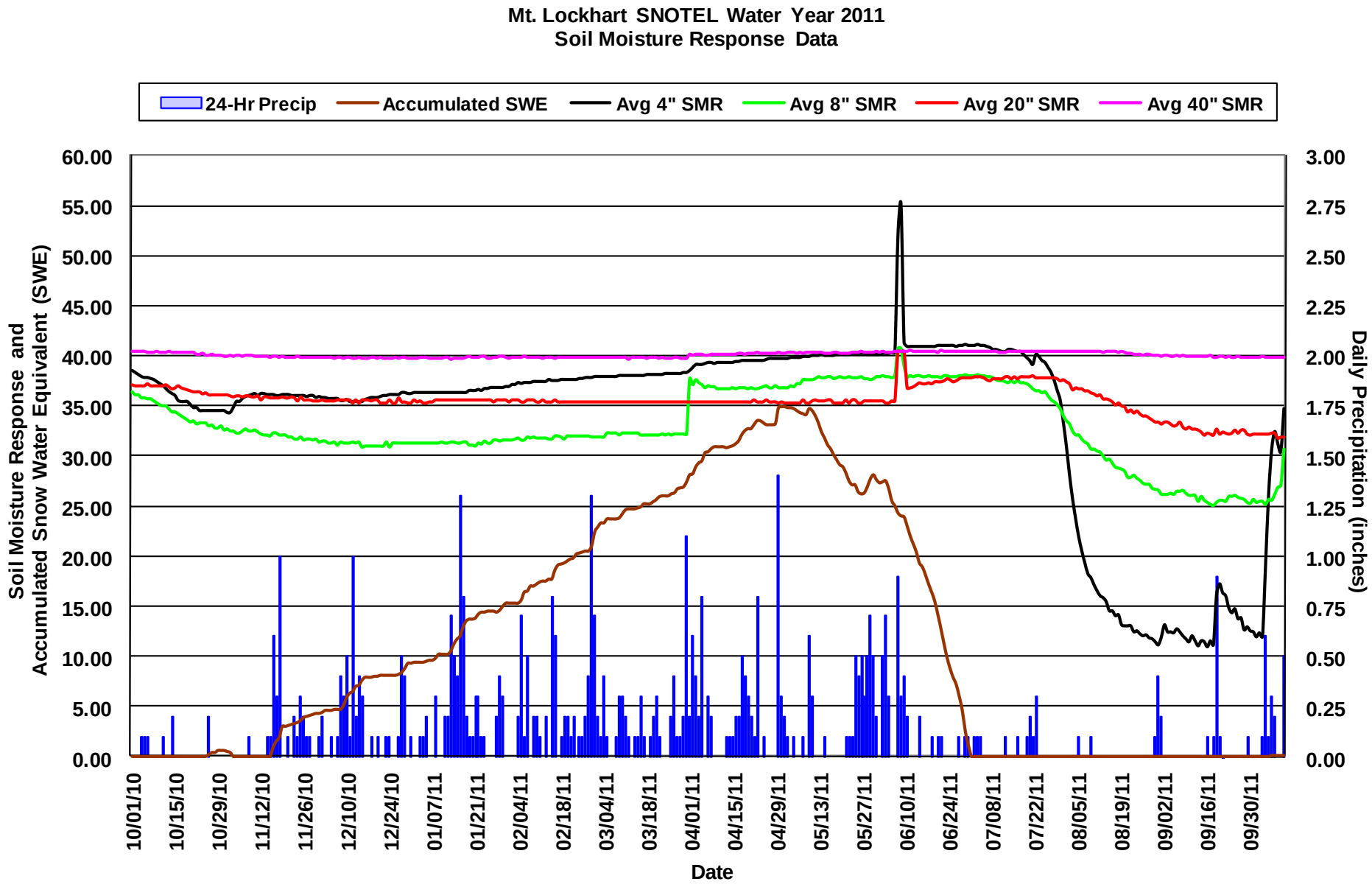
Montana Watersheds with Non-Exceedence Projections
Based on Provisional SNOTEL Data as of Oct 12, 2011

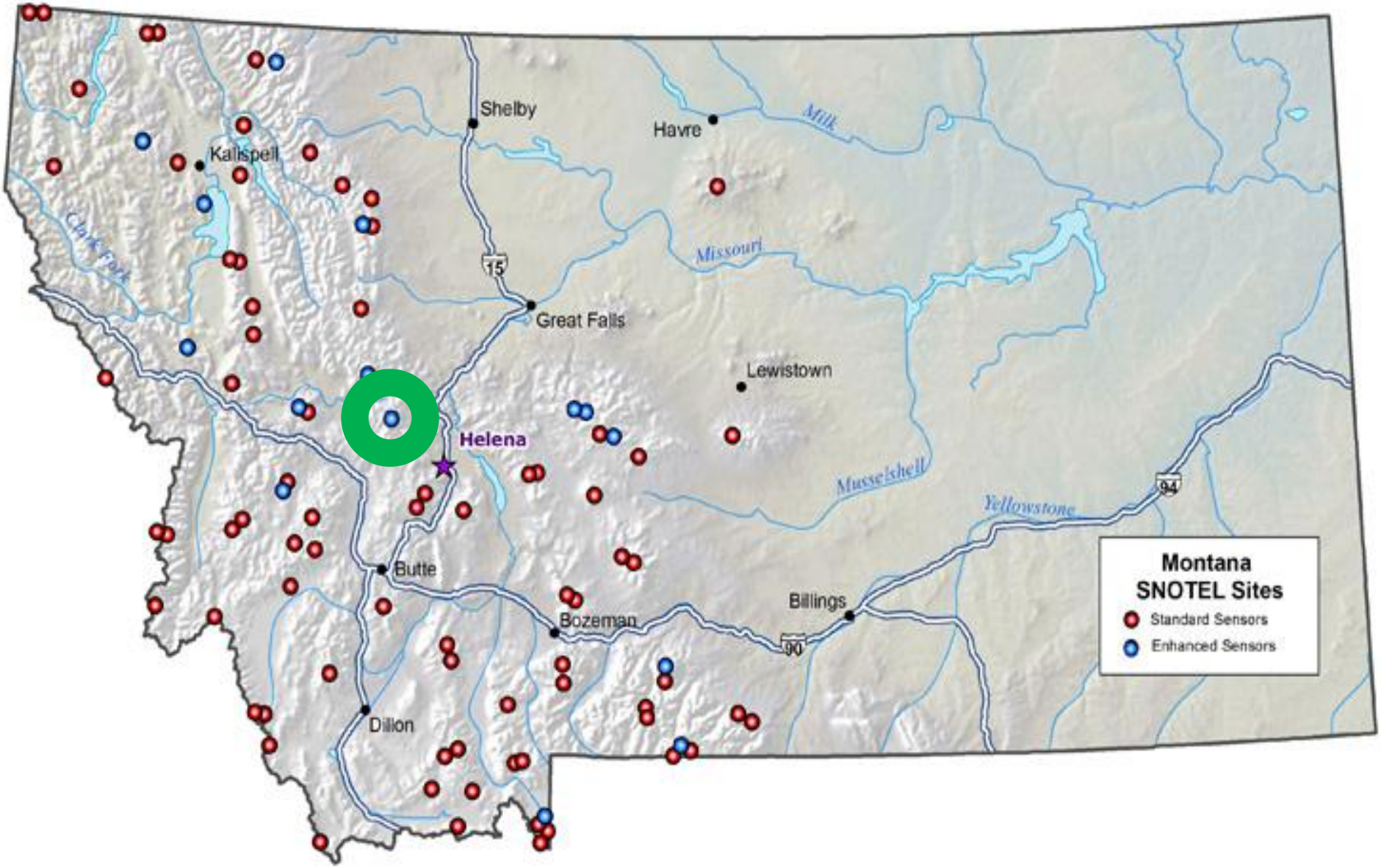


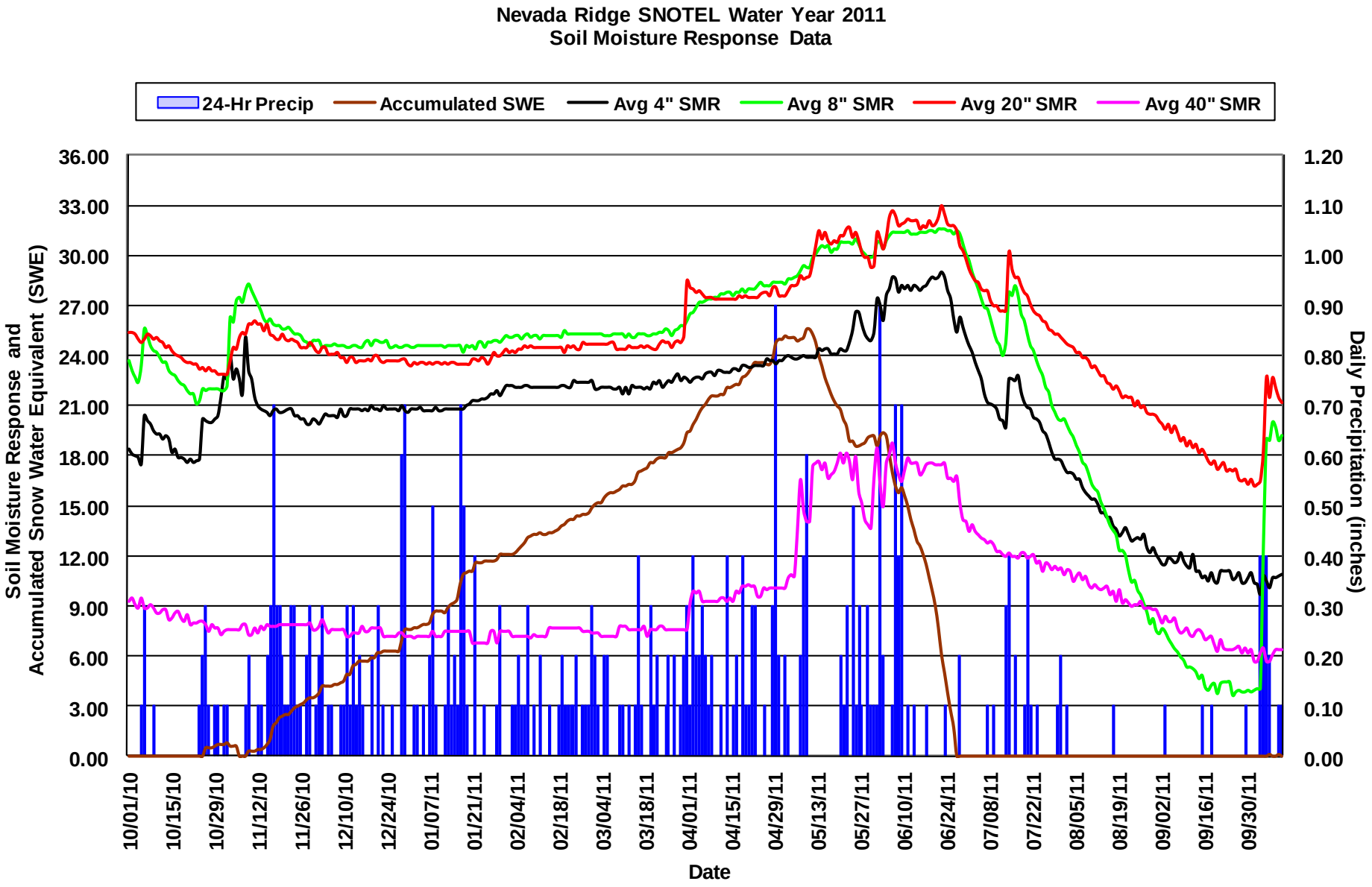
Percent of Average SNOTEL Precipitation for Select Basins



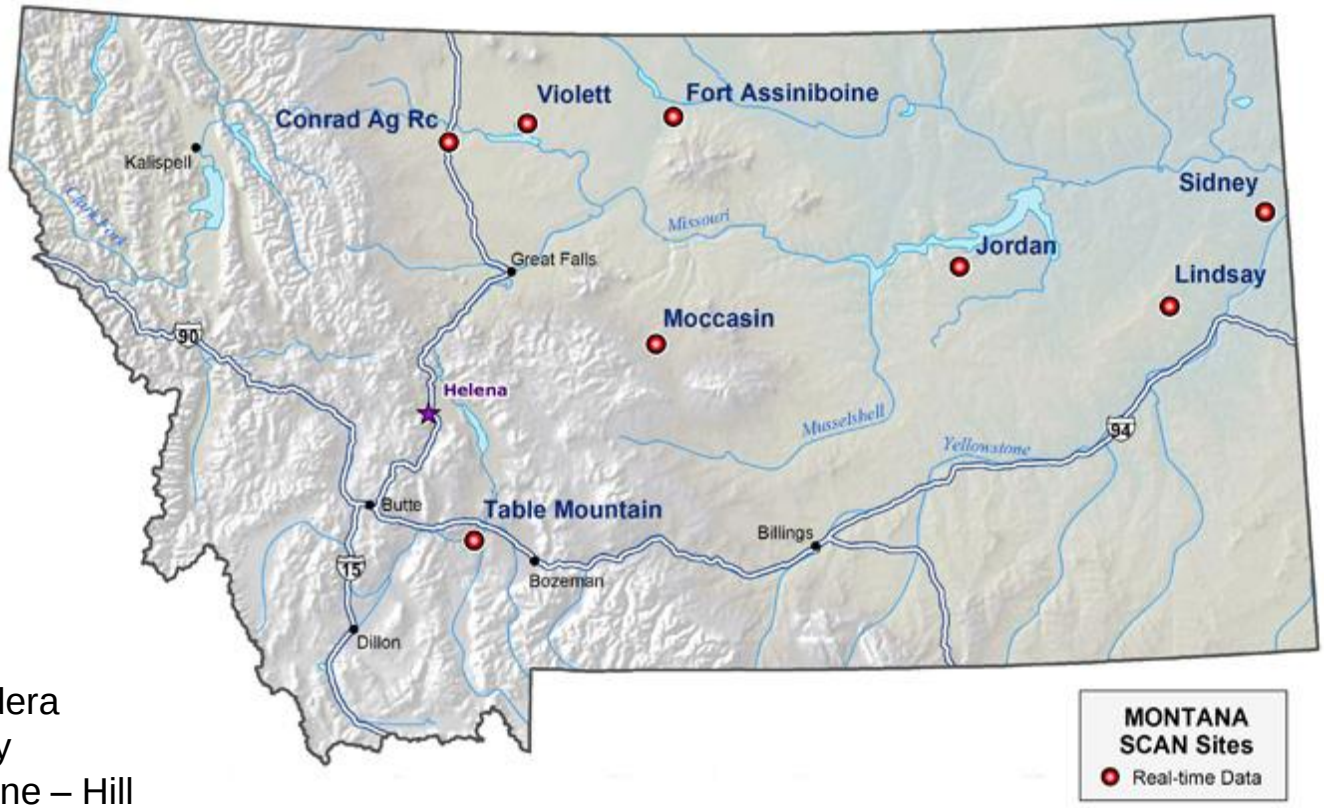

Montana
SNOTEL Sites
Standard Sensors
Enhanced Sensors
Shelby
Havre
Milk
Kalispell
Clark Fork
Missouri
15
Great Falls
Lewistown
Helena
Musselshell
Yellowstone
94
Butte
Billings
Bozeman
90
Dillon


Mt. Lockhart SNOTEL Water Year 2011
Soil Moisture Response Data
24-Hr Precip
Accumulated SWE
Avg 4" SMR
Avg 8" SMR
Avg 20" SMR
Avg 40" SMR
Soil Moisture Response and Accumulated Snow Water Equivalent (SWE)
Daily Precipitation (inches)
60.00
55.00
50.00
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
3.00
2.75
2.50
2.25
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
10/01/10
10/15/10
10/29/10
11/12/10
11/26/10
12/10/10
12/24/10
01/07/11
01/21/11
02/04/11
02/18/11
03/04/11
03/18/11
04/01/11
04/15/11
04/29/11
05/13/11
05/27/11
06/10/11
06/24/11
07/08/11
07/22/11
08/05/11
08/19/11
09/02/11
09/16/11
09/30/11
Date


Shelby
Havre
Milk
Kalispell
Clark Fork
Missouri
15
Great Falls
Lewistown
Helena
Musselshell
Yellowstone
94
Butte
Billings
Bozeman
90
Dillon
Montana
SNOTEL Sites
Standard Sensors
Enhanced Sensors

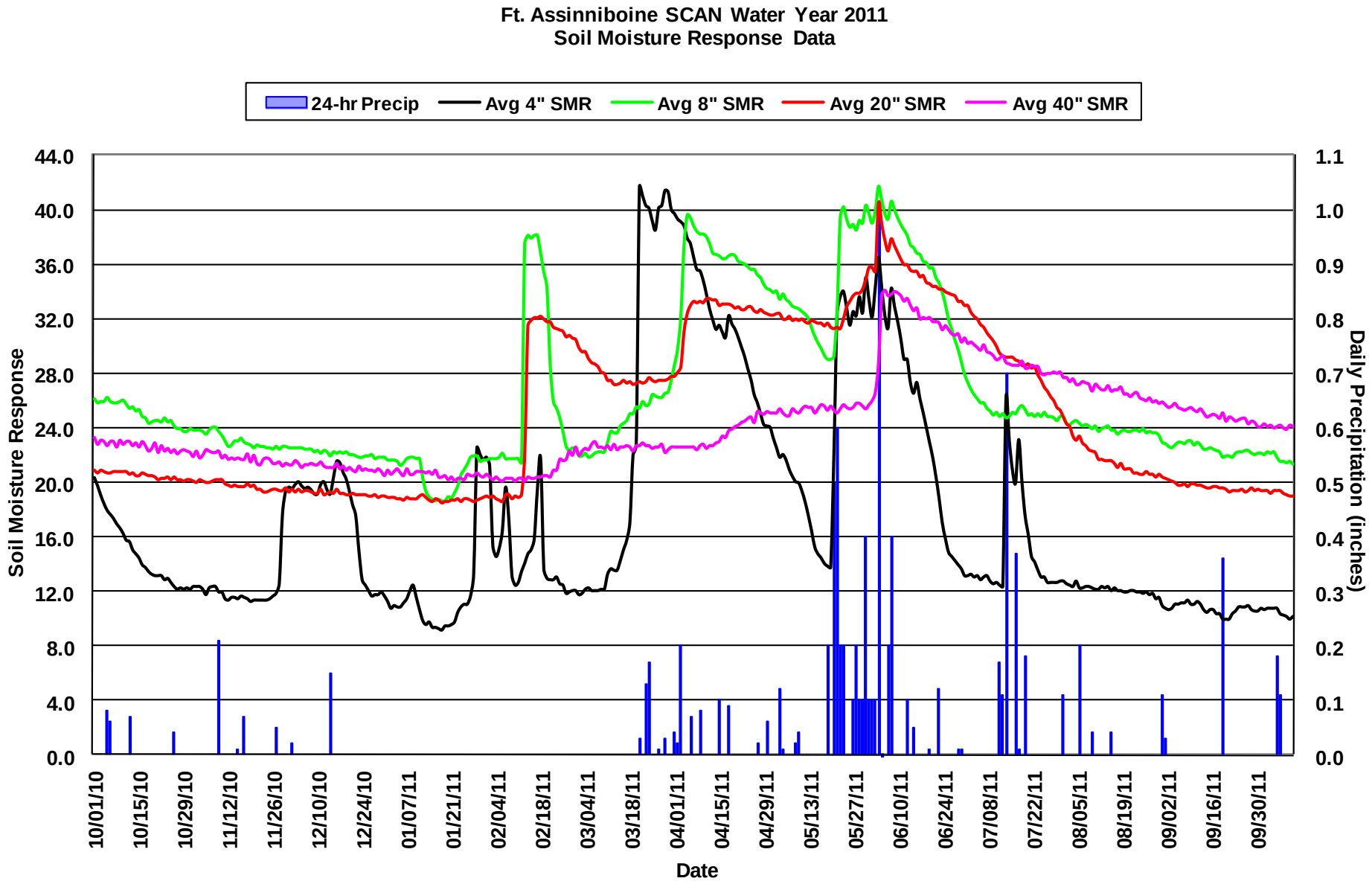

Nevada Ridge SNOTEL Water Year 2011
Soil Moisture Response Data
24-Hr Precip
Accumulated SWE
Avg 4" SMR
Avg 8" SMR
Avg 20" SMR
Avg 40" SMR
Soil Moisture Response and Accumulated Snow Water Equivalent (SWE)
Daily Precipitation (inches)
36.00
33.00
30.00
27.00
24.00
21.00
18.00
15.00
12.00
9.00
6.00
3.00
0.00
1.20
1.10
1.00
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
10/01/10
10/15/10
10/29/10
11/12/10
11/26/10
12/10/10
12/24/10
01/07/11
01/21/11
02/04/11
02/18/11
03/04/11
03/18/11
04/01/11
04/15/11
04/29/11
05/13/11
05/27/11
06/10/11
06/24/11
07/08/11
07/22/11
08/05/11
08/19/11
09/02/11
09/16/11
09/30/11
Date

MONTANA SOIL CLIMATE ANALYSIS NETWORK (SCAN)



Site/County:
Conrad – Pondera
Violett – Liberty
Fort Assinniboine – Hill
Moccasin – Judith
Jordan – Garfield
Sidney – Richland
Lindsay – Dawson
Table Mountain - Gallatin

For more information on the SCAN project contact:
Chuck Gordon, State Soil Scientist
Email address charles.gordon@mt.usda.gov
Phone 406.587.6818


Ft. Assinniboine SCAN Water Year 2011
Soil Moisture Response Data
24-hr Precip
Avg 4" SMR
Avg 8" SMR
Avg 20" SMR
Avg 40" SMR
Soil Moisture Response
Daily Precipitation (inches)
Date
44.0
40.0
36.0
32.0
28.0
24.0
20.0
16.0
12.0
8.0
4.0
0.0
1.1
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
10/01/10
10/15/10
10/29/10
11/12/10
11/26/10
12/10/10
12/24/10
01/07/11
01/21/11
02/04/11
02/18/11
03/04/11
03/18/11
04/01/11
04/15/11
04/29/11
05/13/11
05/27/11
06/10/11
06/24/11
07/08/11
07/22/11
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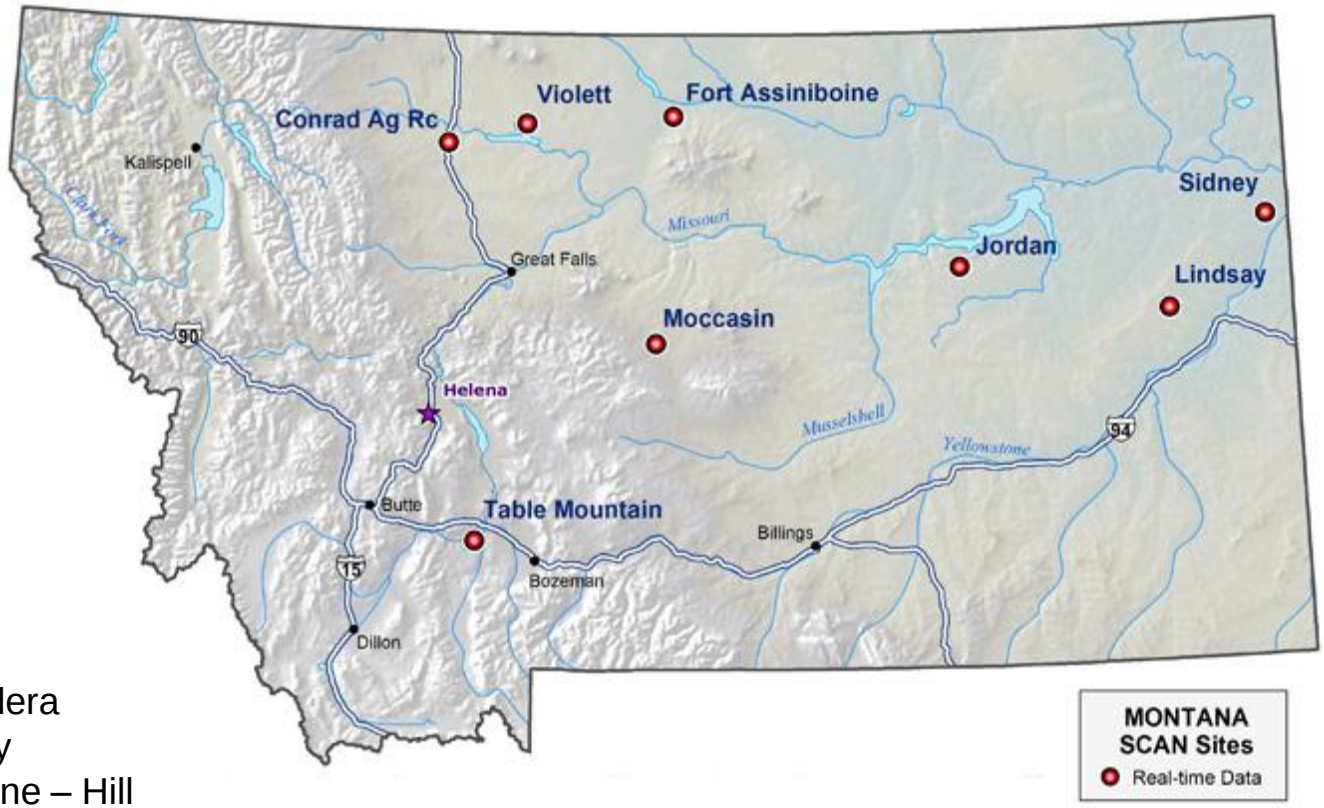
08/19/11
09/02/11
09/16/11
09/30/11

MONTANA SOIL CLIMATE ANALYSIS NETWORK (SCAN)



Site/County:
Conrad – Pondera
Violett – Liberty
Fort Assinniboine – Hill
Moccasin – Judith
Jordan – Garfield
Sidney – Richland
Lindsay – Dawson
Table Mountain - Gallatin

For more information on the SCAN project contact:
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Email address charles.gordon@mt.usda.gov
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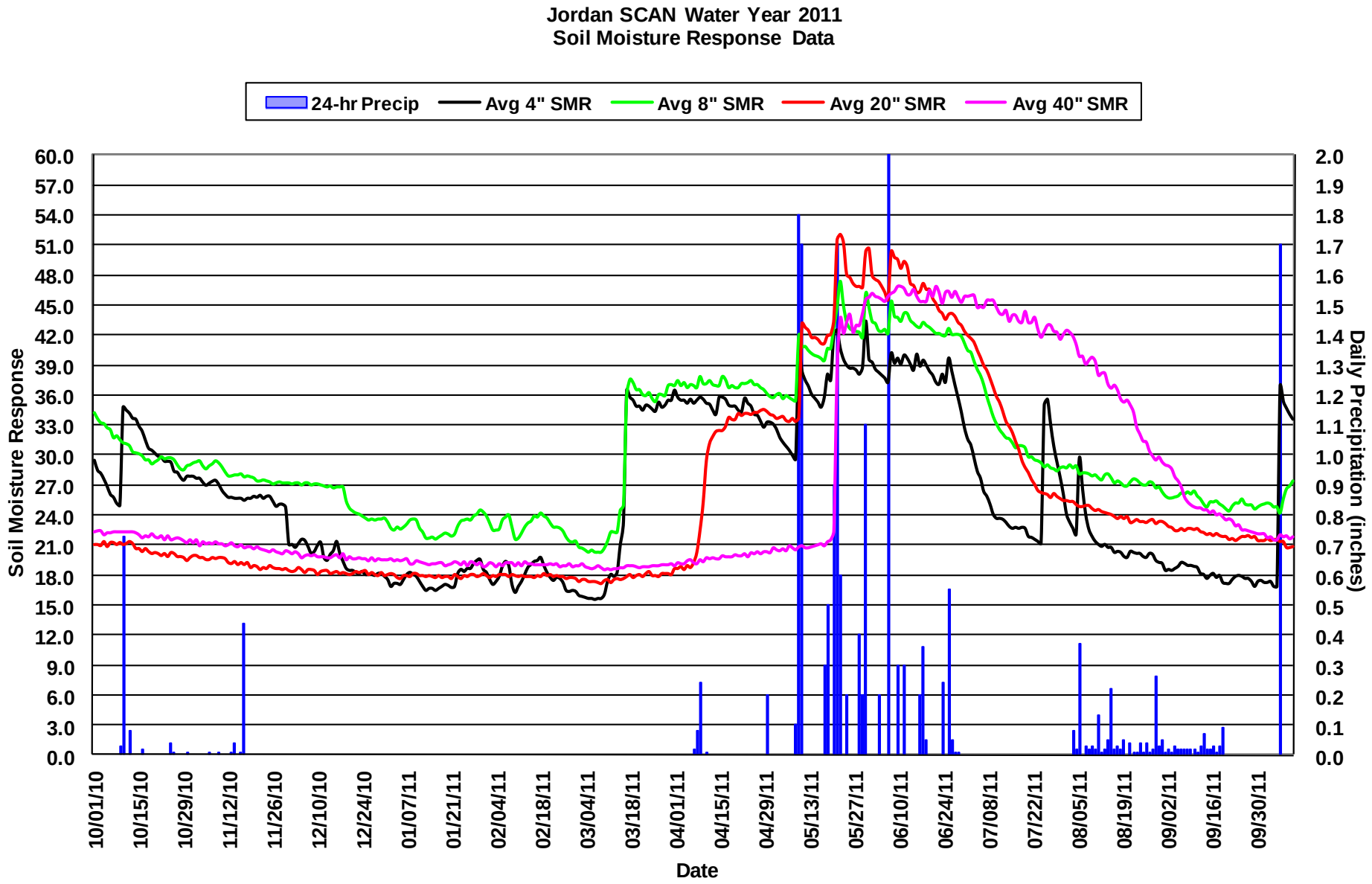
Jordan SCAN Water Year 2011
Soil Moisture Response Data
24-hr Precip
Avg 4" SMR
Avg 8" SMR
Avg 20" SMR
Avg 40" SMR
Soil Moisture Response
Daily Precipitation (inches)
Date
60.0
57.0
54.0
51.0
48.0
45.0
42.0
39.0
36.0
33.0
30.0
27.0
24.0
21.0
18.0
15.0
12.0
9.0
6.0
3.0
0.0
2.0
1.9
1.8
1.7
1.6
1.5
1.4
1.3
1.2
1.1
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
10/01/10
10/15/10
10/29/10
11/12/10
11/26/10
12/10/10
12/24/10
01/07/11
01/21/11
02/04/11
02/18/11
03/04/11
03/18/11
04/01/11
04/15/11
04/29/11
05/13/11
05/27/11
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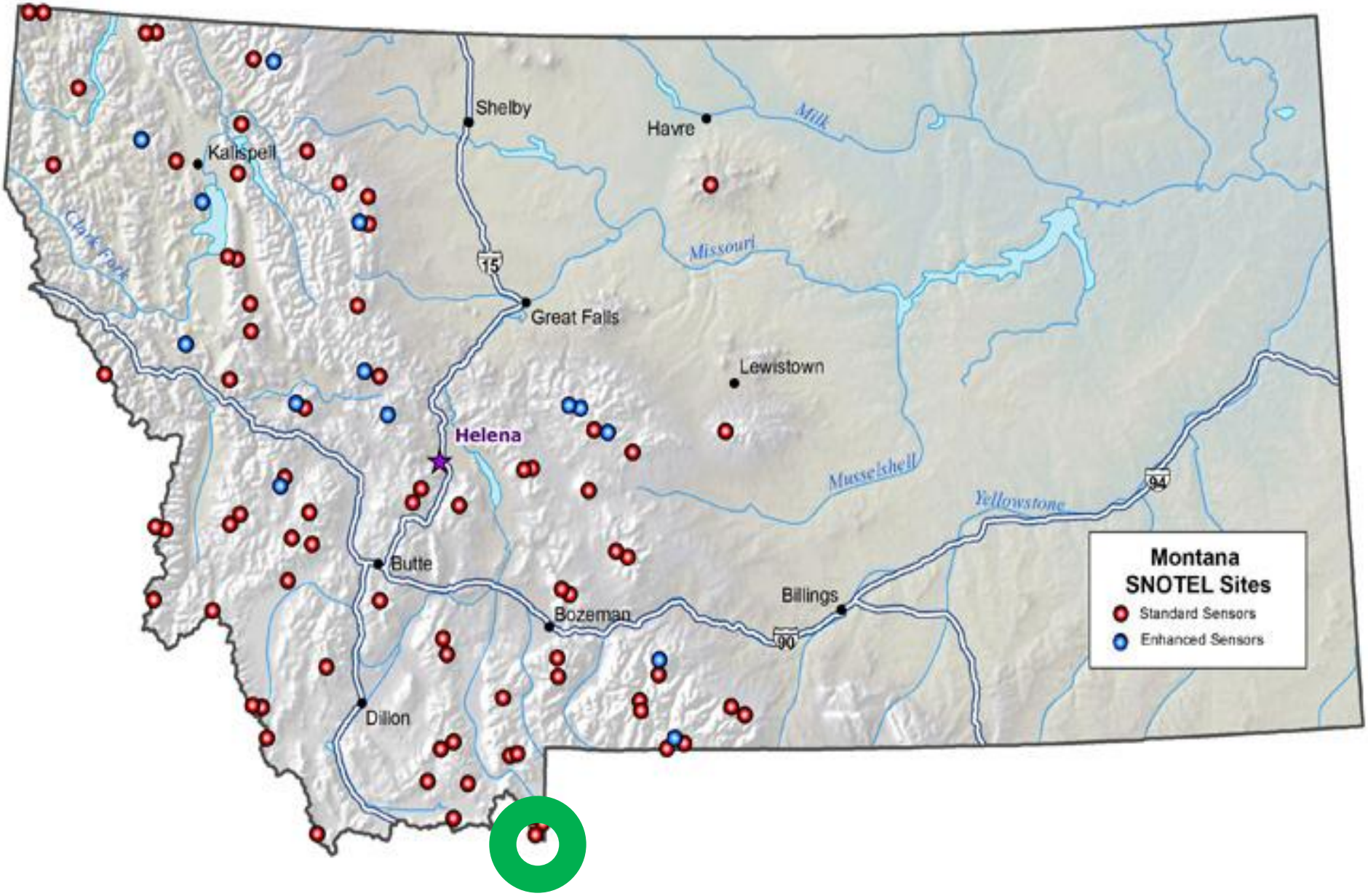
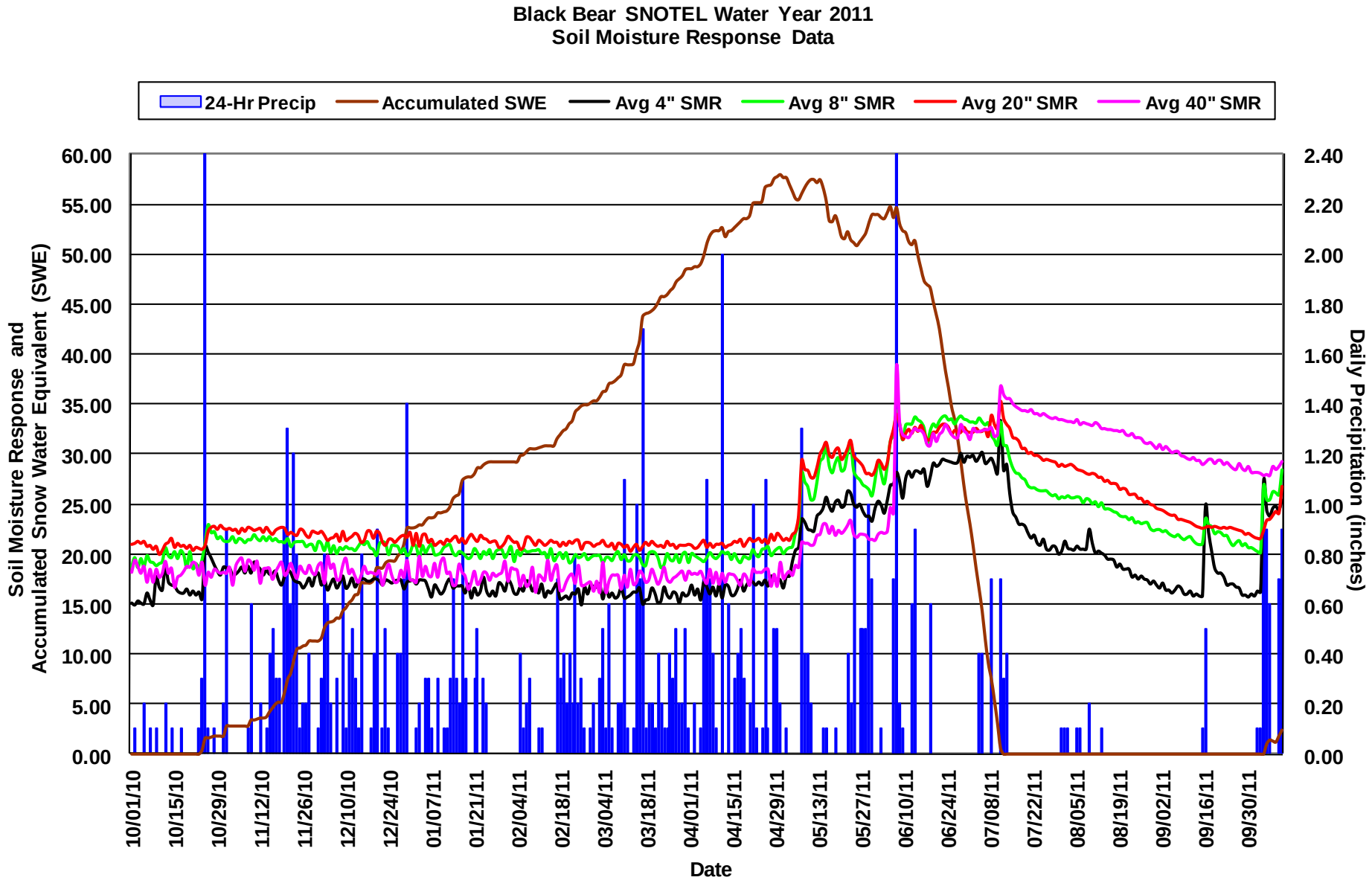
09/16/11
09/30/11


Montana
SNOTEL Sites
Standard Sensors
Enhanced Sensors
Shelby
Havre
Milk
Kalispell
Clark Fork
Missouri
15
Great Falls
Lewistown
Helena
Musselshell
Yellowstone
94
Butte
Billings
Bozeman
90
Dillon


Black Bear SNOTEL Water Year 2011
Soil Moisture Response Data
24-Hr Precip
Accumulated SWE
Avg 4" SMR
Avg 8" SMR
Avg 20" SMR
Avg 40" SMR
Soil Moisture Response and Accumulated Snow Water Equivalent (SWE)
Daily Precipitation (inches)
60.00
55.00
50.00
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
2.40
2.20
2.00
1.80
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
10/01/10
10/15/10
10/29/10
11/12/10
11/26/10
12/10/10
12/24/10
01/07/11
01/21/11
02/04/11
02/18/11
03/04/11
03/18/11
04/01/11
04/15/11
04/29/11
05/13/11
05/27/11
06/10/11
06/24/11
07/08/11
07/22/11
08/05/11
08/19/11
09/02/11
09/16/11
09/30/11
Date

Summary

- Current soil moisture levels are below this time last year but still near normal.
- Well above average precipitation across the state since the start of the water year.
- Additional precipitation before the onset of the seasonal snowpack would bring soil moisture levels to last year’s levels.
- What little snowpack we have is right near normal.
- The year is young and much can change.

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