APPENDIX G. 1983 LOWER SUSITNA RIVER SEGMENT GEOMORPHIC FEATURES

Susitna-Watana Hydroelectric Project (FERC No. 14241)

Geomorphology Study (6.5)

Mapping of Geomorphic Features and Turnover within the Middle and Lower Susitna River Segments from 1950s, 1980s, and Current Aerials Technical Memorandum

Prepared for

Alaska Energy Authority

SUSITNA-WATANA HYDRO

Clean, reliable energy for the next 100 years.

Prepared by

Tetra Tech Inc.

September 2014

LOWER SUSITNA RIVER SEGMENT 1983 GEOMORPHIC FEATURES

ALASKA ENERGY AUTHORITY

151°W 150°30'W 150°W 149°30'W 149°W 148°30'W 148°W 147°30'W

62°20'N 62°10'N 62°N 61°50'N 61°40'N 61°30'N 61°20'N

Sheet 15 Sheet 16 Sheet 14 Sheet 13 Sheet 12 Sheet 10 Sheet 11 Sheet 8 Sheet 9 Sheet 6 Sheet 7 Sheet 5 Sheet 4 Sheet 3 Sheet 1 Sheet 2

Deshka River Yentna River Susitna River Kashwitna River Willow Creek Matanuska River Palmer

Legend

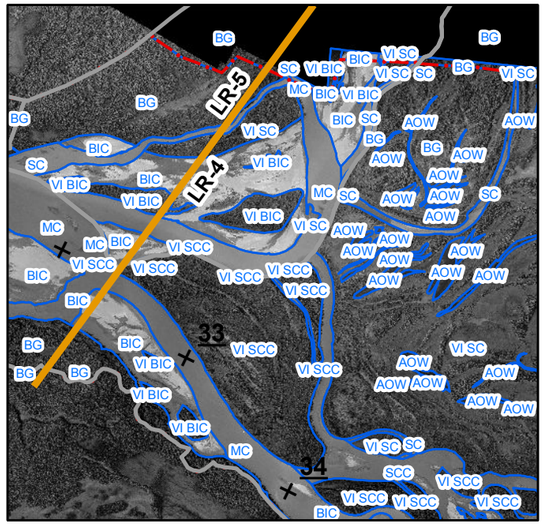
- Sheet Extents
- Roads
- Railroads
- Rivers and Streams
- Waterbodies

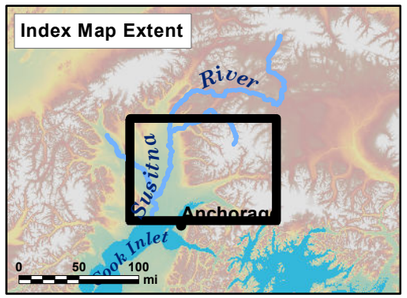
Data Sources: See Map References

Legend For Individual Mapbook Pages

- Project River Miles
- Geomorphic Reach Breaks
- Combined Extent of Aerial Photo Coverage for 1950s, 1983, & 2012
- Analysis Extent Boundary
- 1983 Geomorphic Features

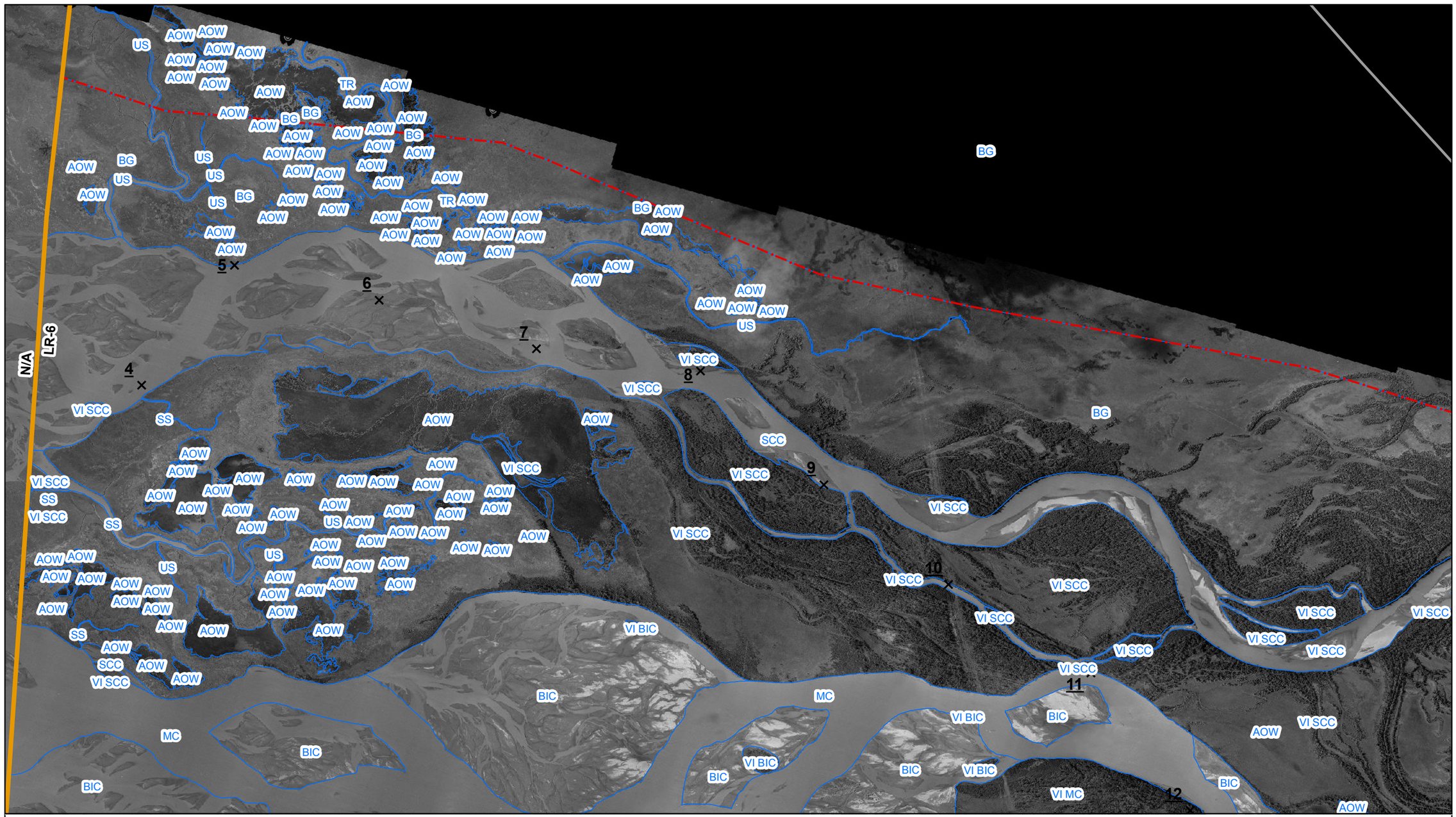
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Projection: NAD83 State Plane Alaska 4 FIPS 5004 (ft)
Date Created: 8/21/2014
Map Author: Tetra Tech
File: 1980s_LR_GeomFeat_v1_20140312_Cover.mxd



0 3,000 6,000 Feet

1 inch = 3,000 feet

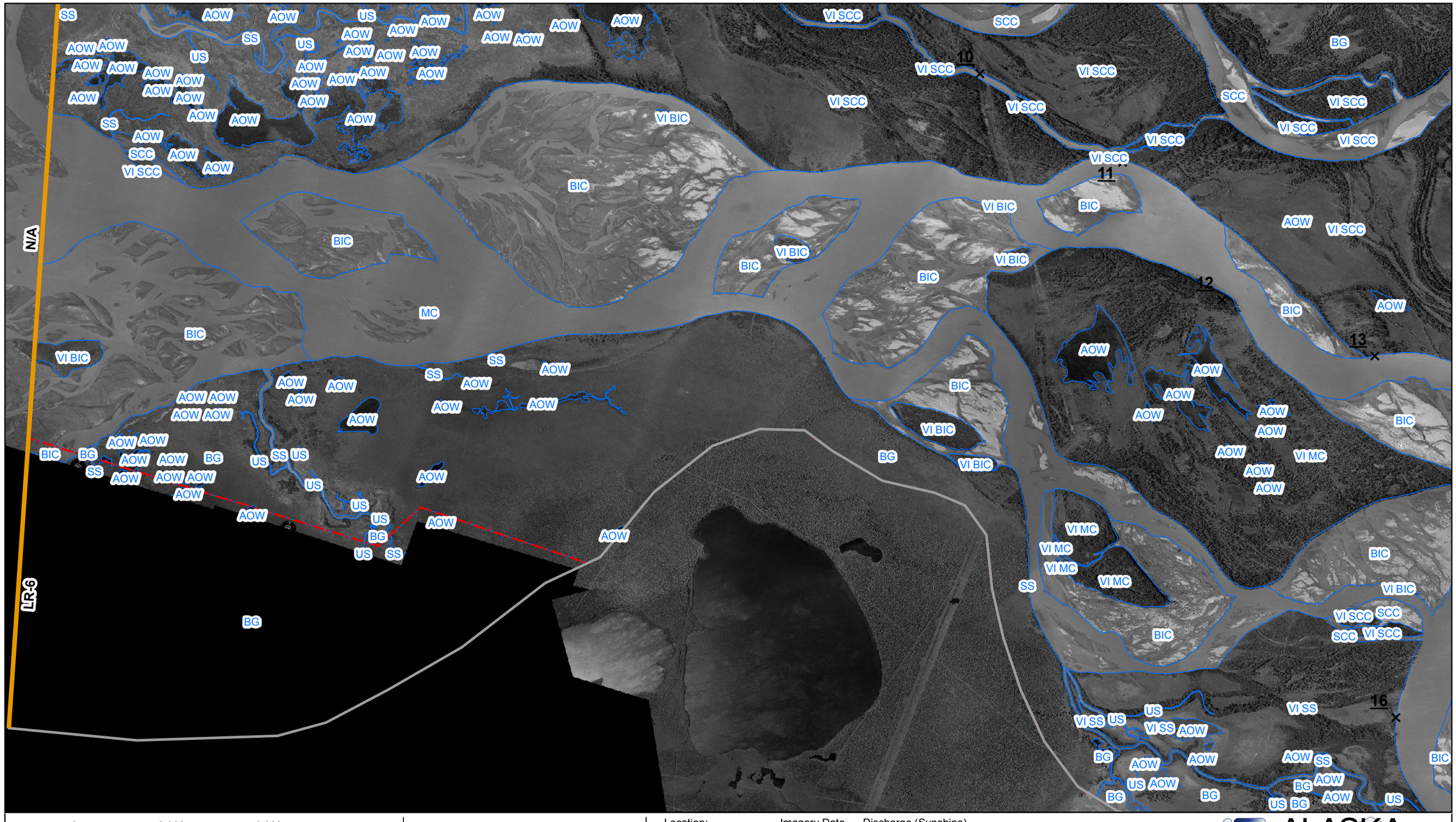
Sheet 1 of 16

See index page for legend and additional data information.

LOWER SUSITNA RIVER SEGMENT
1983 GEOMORPHIC FEATURES

Location:	Imagery Date,	Discharge (Sunshine)
PRM 0 - 102.4:	09/06/1983,	36,600 cfs

ALASKA ENERGY AUTHORITY



0 3,000 6,000 Feet

1 inch = 3,000 feet

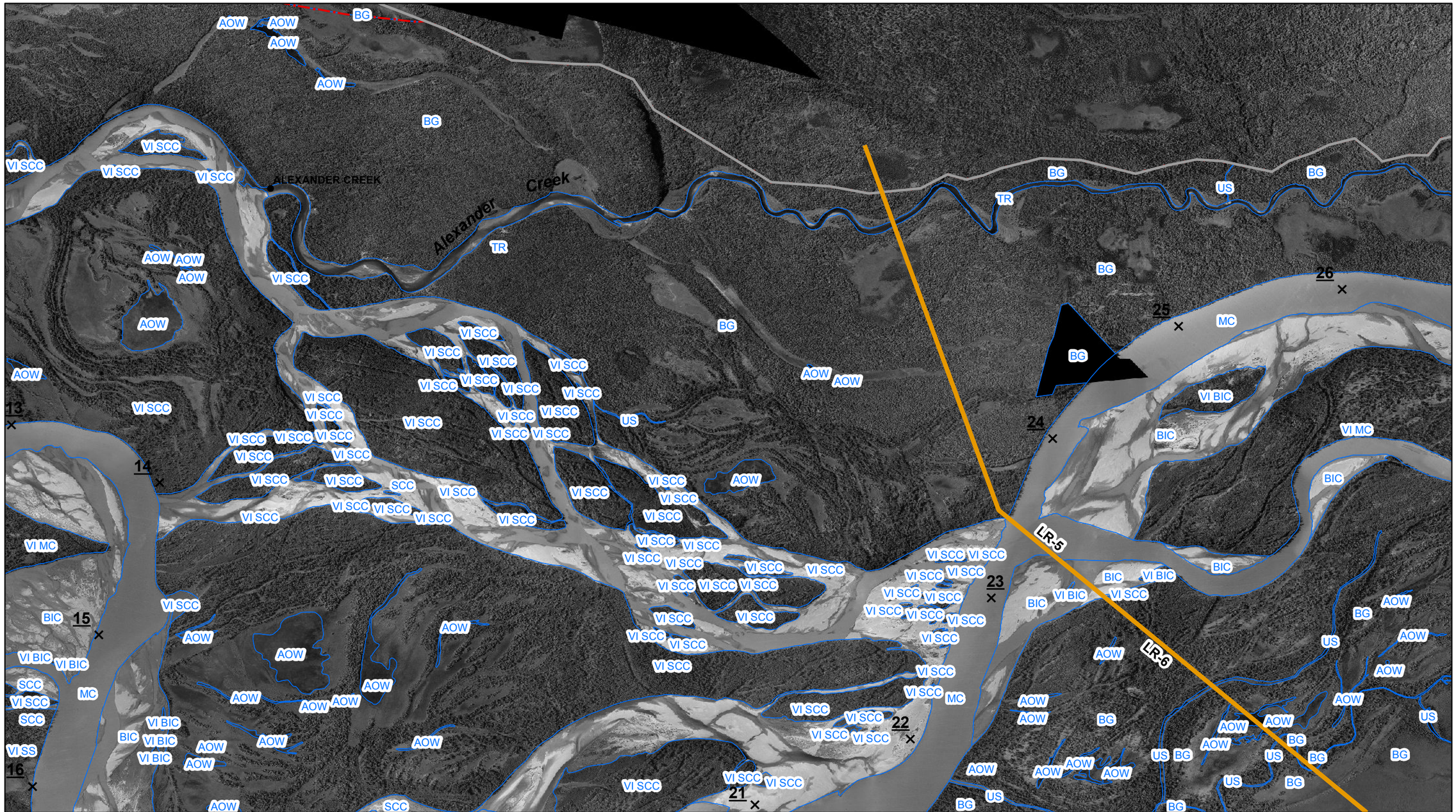
Sheet 2 of 16

See index page for legend and additional data information.

LOWER SUSITNA RIVER SEGMENT
1983 GEOMORPHIC FEATURES

Location:	Imagery Date,	Discharge (Sunshine)
PRM 0 - 102.4:	09/06/1983,	36,600 cfs

ALASKA ENERGY AUTHORITY



0 3,000 6,000 Feet

1 inch = 3,000 feet

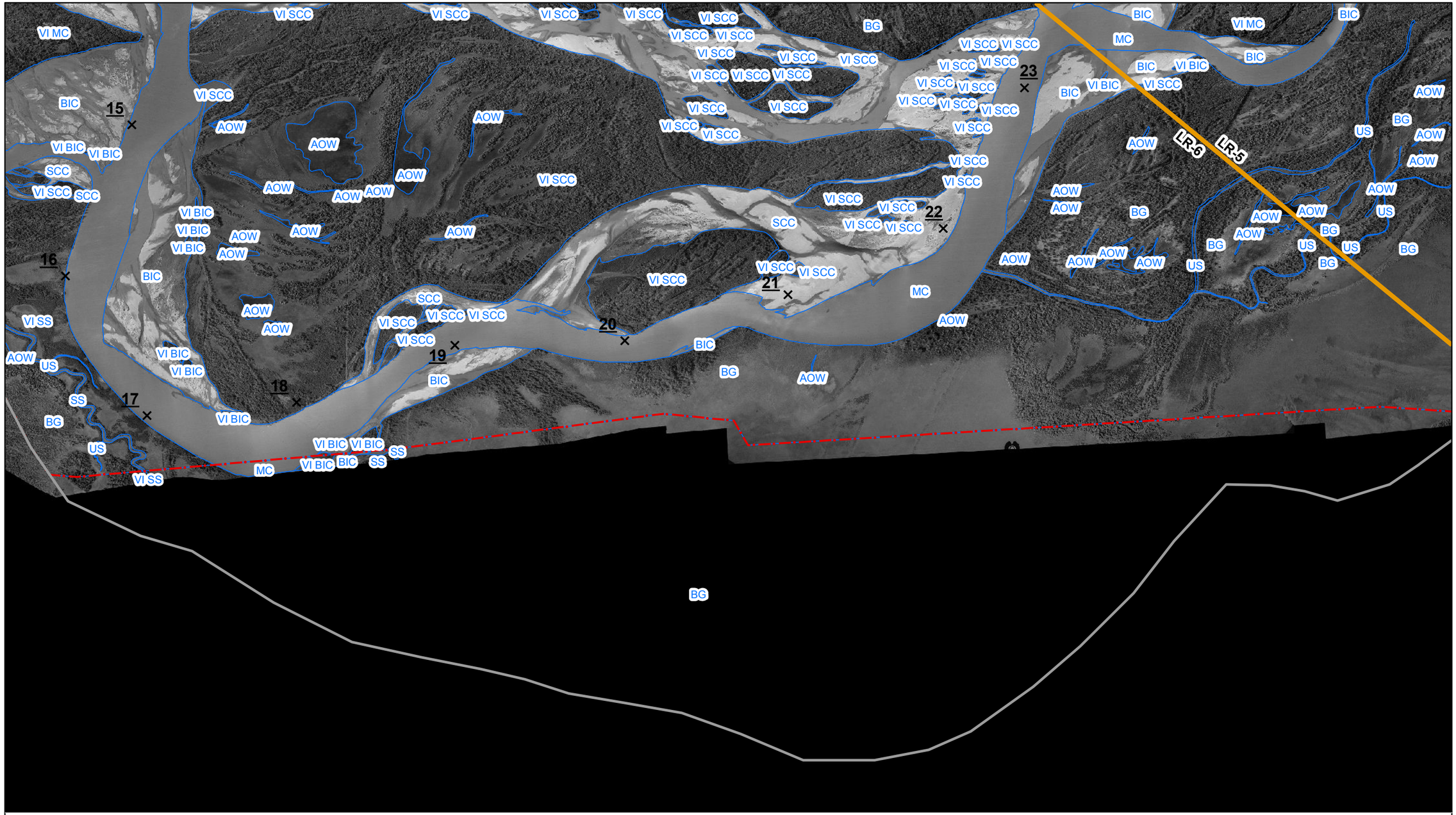
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See index page for legend and additional data information.

LOWER SUSITNA RIVER SEGMENT
1983 GEOMORPHIC FEATURES

Location:	Imagery Date,	Discharge (Sunshine)
PRM 0 - 102.4:	09/06/1983,	36,600 cfs

ALASKA ENERGY AUTHORITY



0 3,000 6,000 Feet

1 inch = 3,000 feet

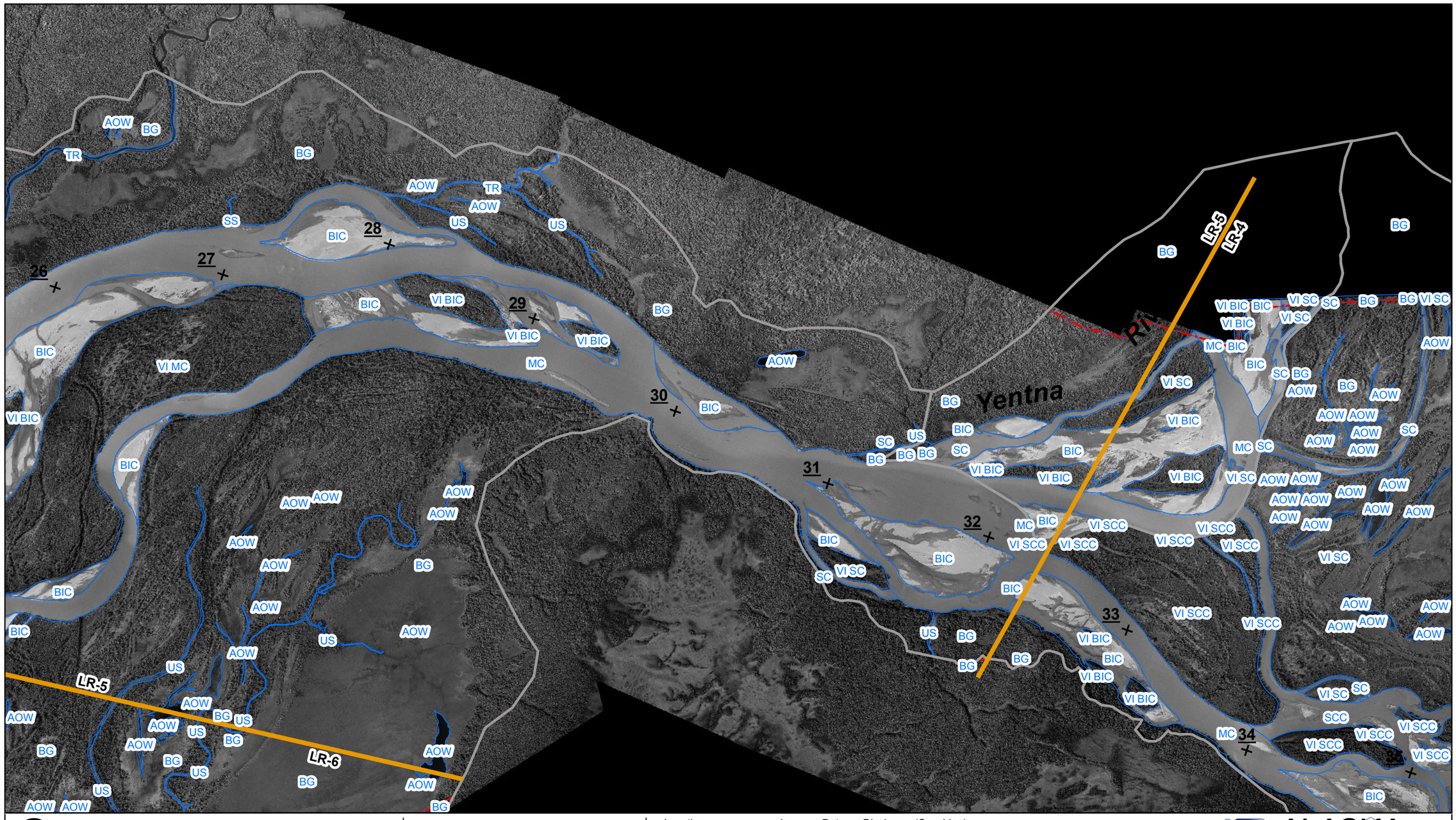
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LOWER SUSITNA RIVER SEGMENT
1983 GEOMORPHIC FEATURES

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PRM 0 - 102.4:	09/06/1983,	36,600 cfs

ALASKA ENERGY AUTHORITY



0 3,000 6,000 Feet

1 inch = 3,000 feet

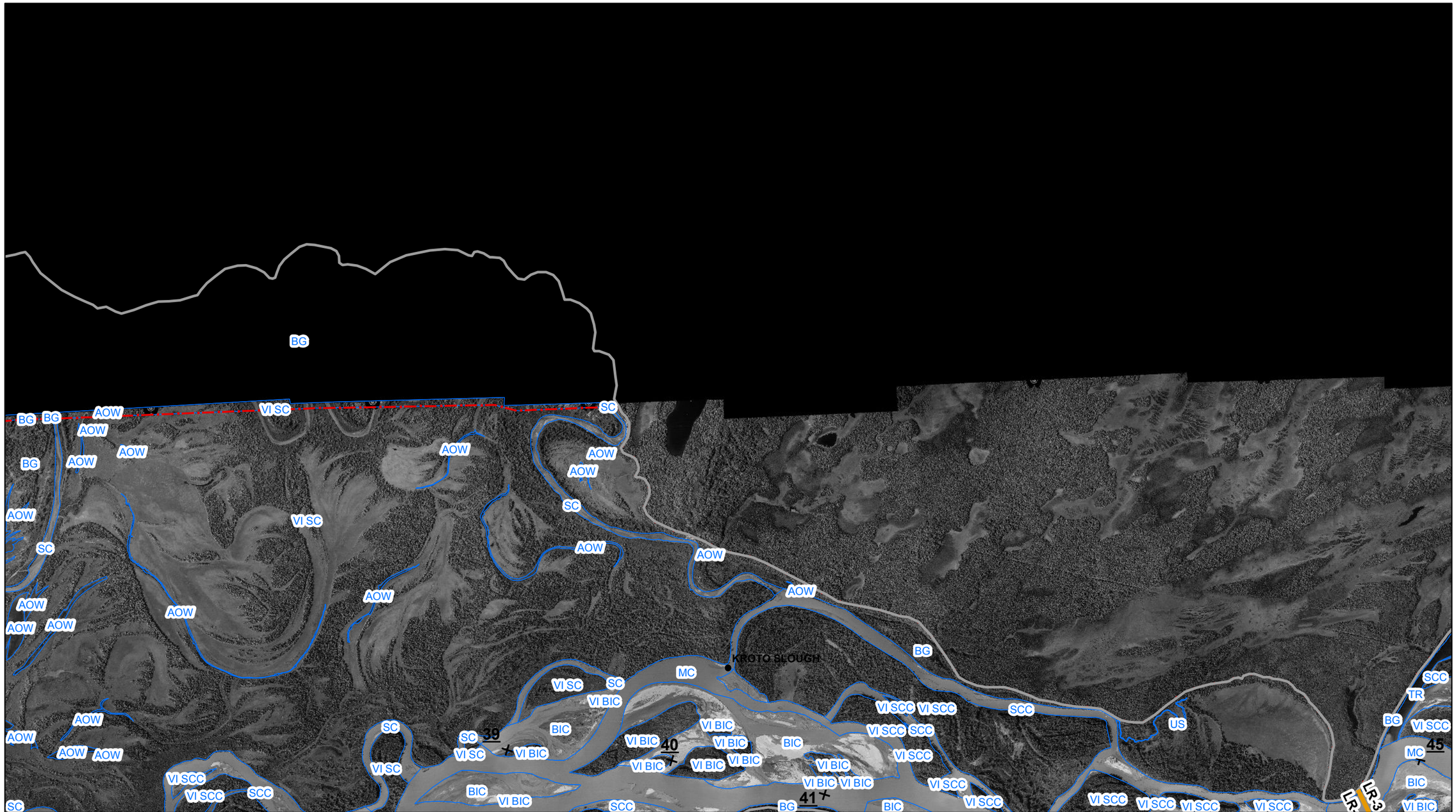
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See index page for legend and additional data information.

LOWER SUSITNA RIVER SEGMENT
1983 GEOMORPHIC FEATURES

Location:	Imagery Date,	Discharge (Sunshine)
PRM 0 - 102.4:	09/06/1983,	36,600 cfs

ALASKA ENERGY AUTHORITY



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1 inch = 3,000 feet

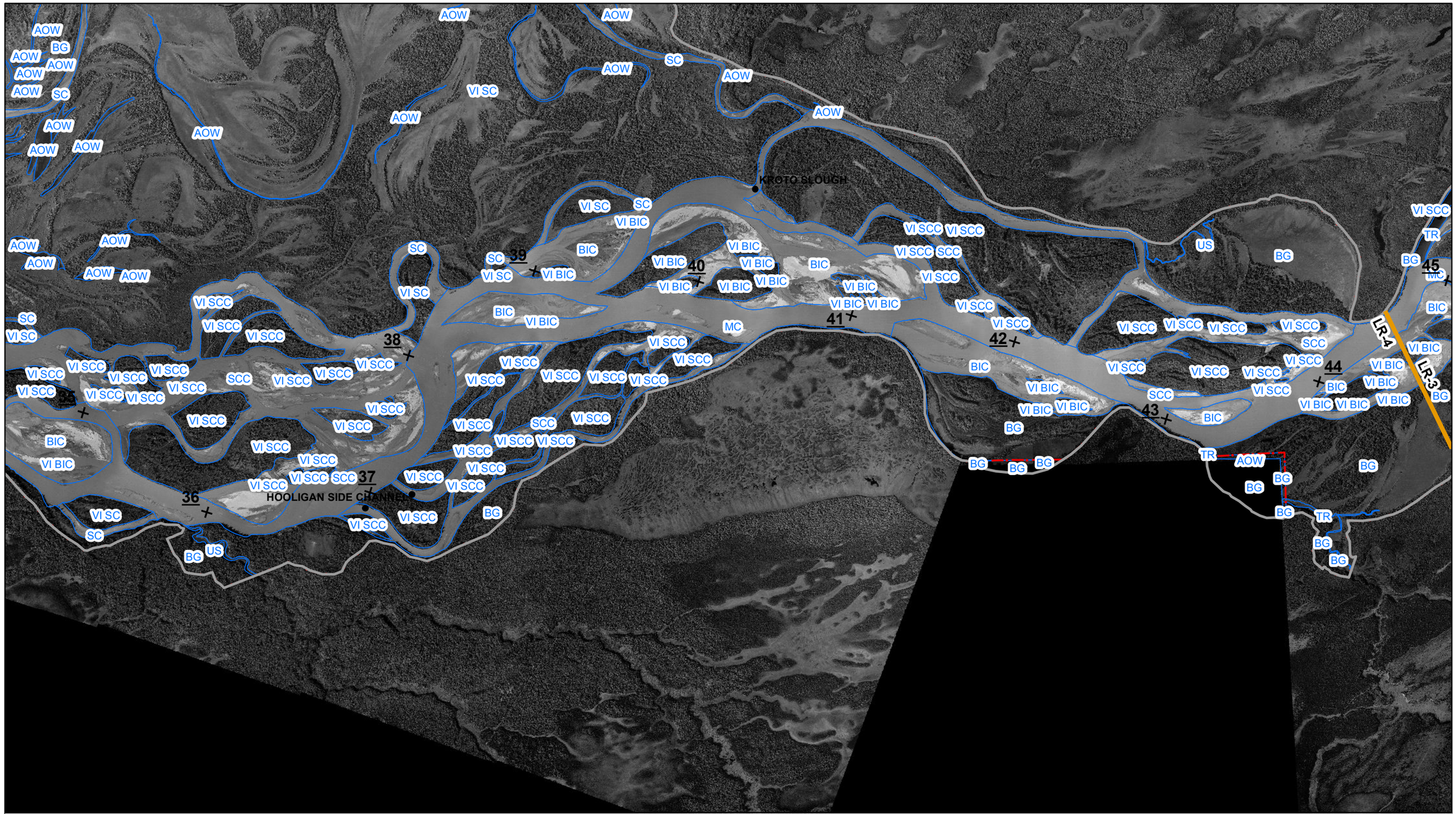
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See index page for legend and additional data information.

LOWER SUSITNA RIVER SEGMENT
1983 GEOMORPHIC FEATURES

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PRM 0 - 102.4:	09/06/1983,	36,600 cfs

ALASKA ENERGY AUTHORITY



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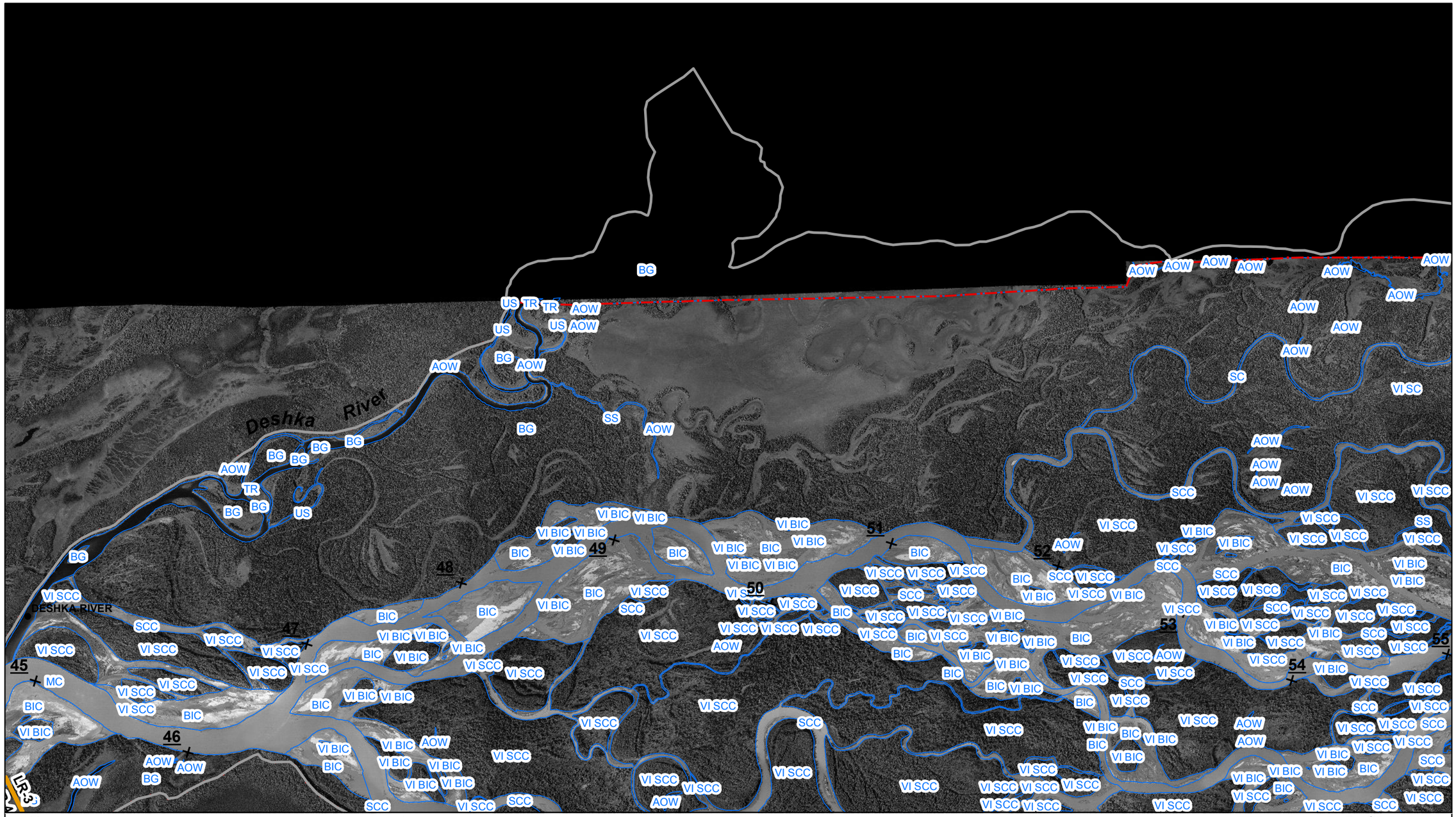
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See index page for legend and additional data information.

LOWER SUSITNA RIVER SEGMENT
1983 GEOMORPHIC FEATURES

Location:	Imagery Date,	Discharge (Sunshine)
PRM 0 - 102.4:	09/06/1983,	36,600 cfs

ALASKA ENERGY AUTHORITY



0 3,000 6,000 Feet

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See index page for legend and additional data information.

Sheet 8 of 16

LOWER SUSITNA RIVER SEGMENT
1983 GEOMORPHIC FEATURES

Location:	Imagery Date,	Discharge (Sunshine)
PRM 0 - 102.4:	09/06/1983,	36,600 cfs

ALASKA ENERGY AUTHORITY



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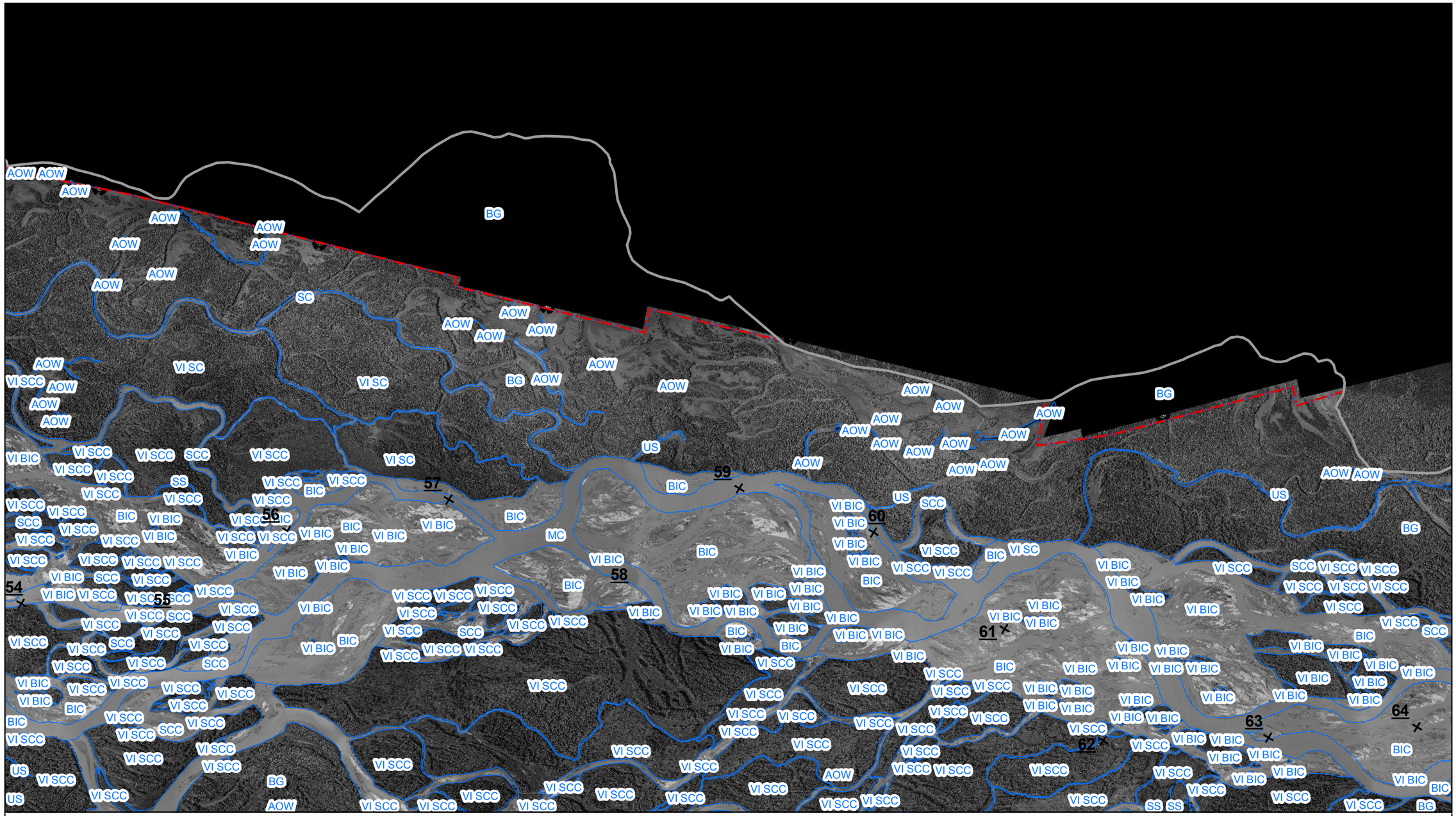
Sheet 9 of 16

See index page for legend and additional data information.

LOWER SUSITNA RIVER SEGMENT
1983 GEOMORPHIC FEATURES

Location:	Imagery Date,	Discharge (Sunshine)
PRM 0 - 102.4:	09/06/1983,	36,600 cfs

ALASKA ENERGY AUTHORITY



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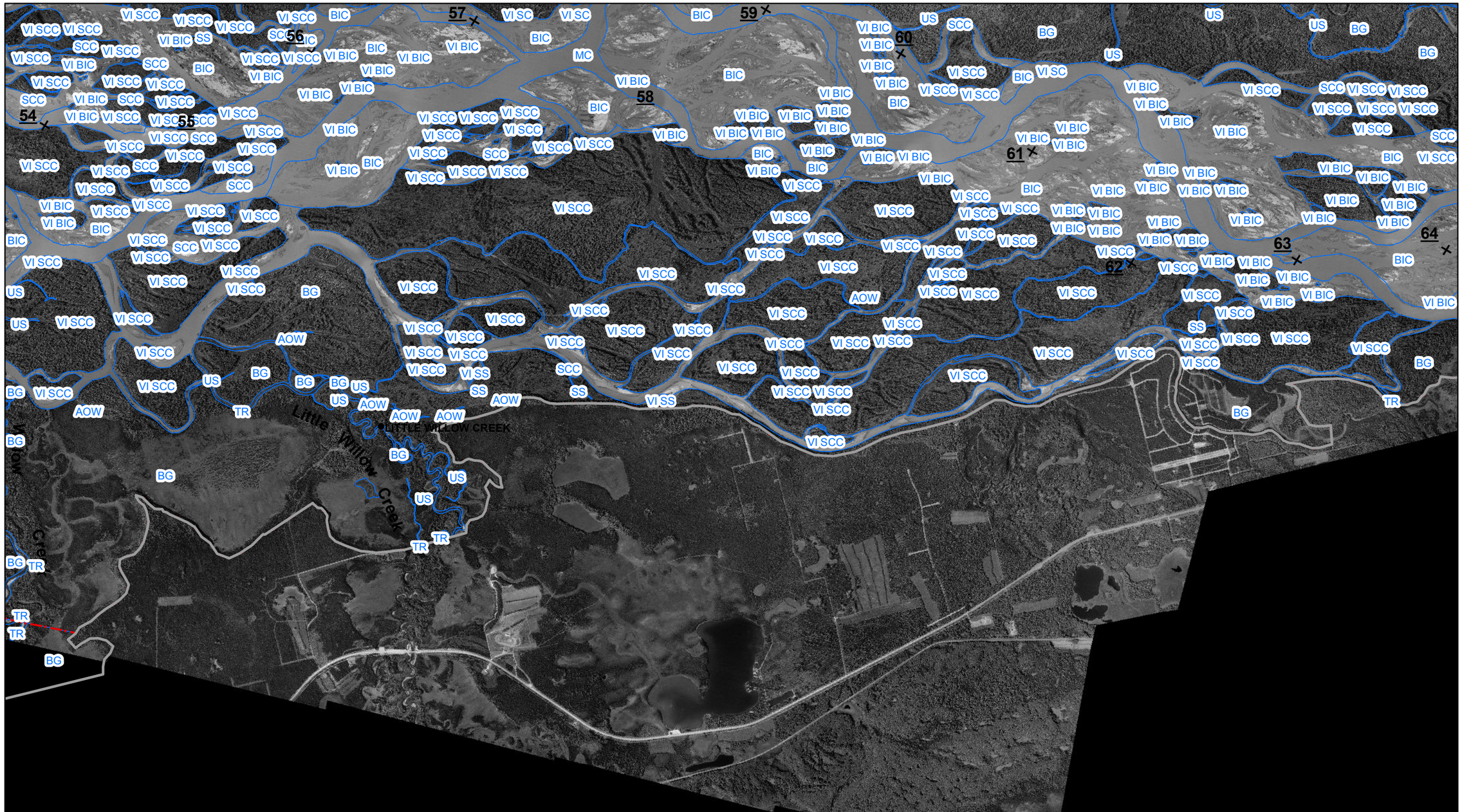
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See index page for legend and additional data information.

LOWER SUSITNA RIVER SEGMENT
1983 GEOMORPHIC FEATURES

Location:	Imagery Date,	Discharge (Sunshine)
PRM 0 - 102.4:	09/06/1983,	36,600 cfs

ALASKA ENERGY AUTHORITY



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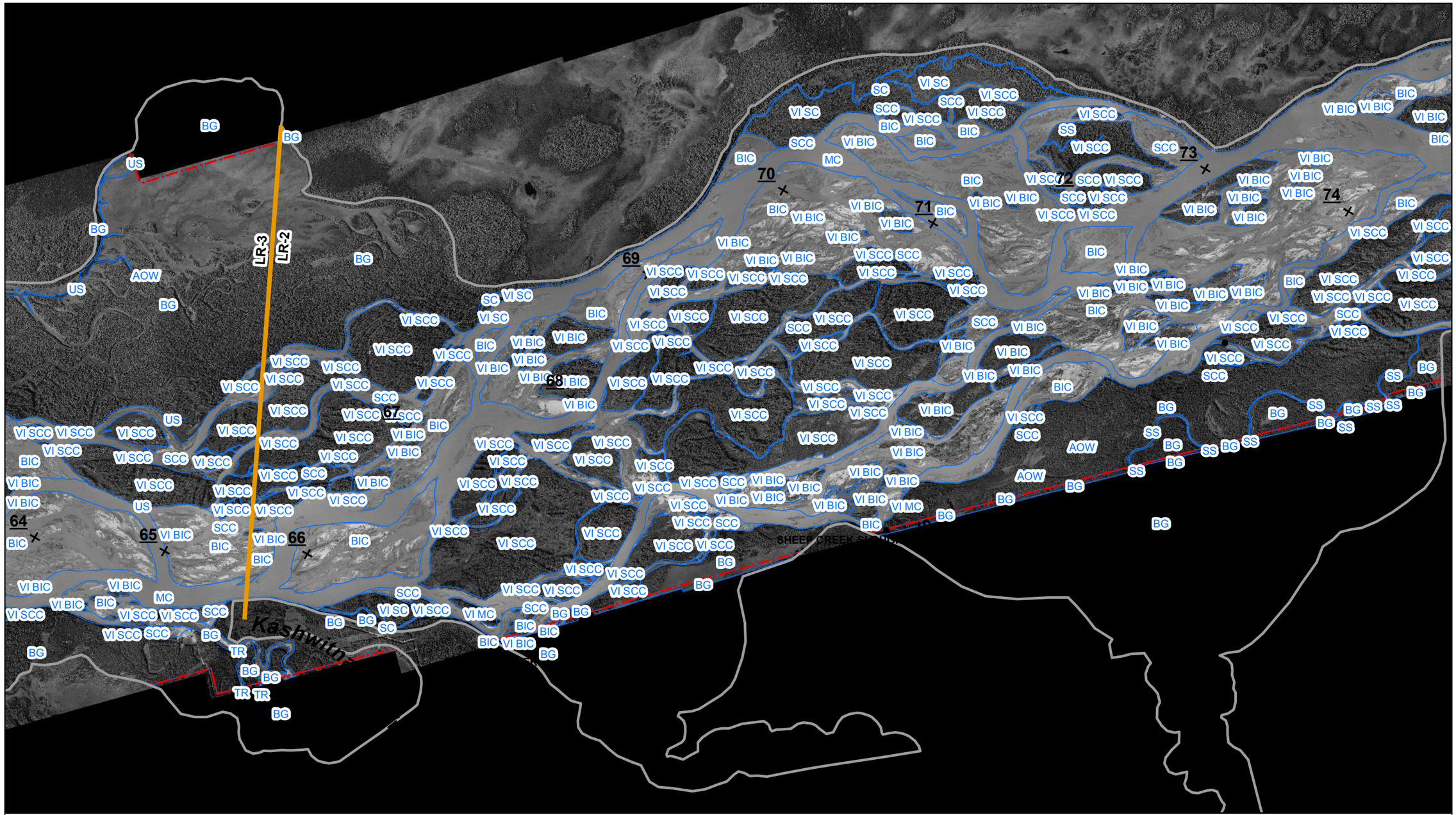
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See index page for legend and additional data information.

LOWER SUSITNA RIVER SEGMENT
1983 GEOMORPHIC FEATURES

Location:	Imagery Date,	Discharge (Sunshine)
PRM 0 - 102.4:	09/06/1983,	36,600 cfs

ALASKA ENERGY AUTHORITY



0 3,000 6,000 Feet

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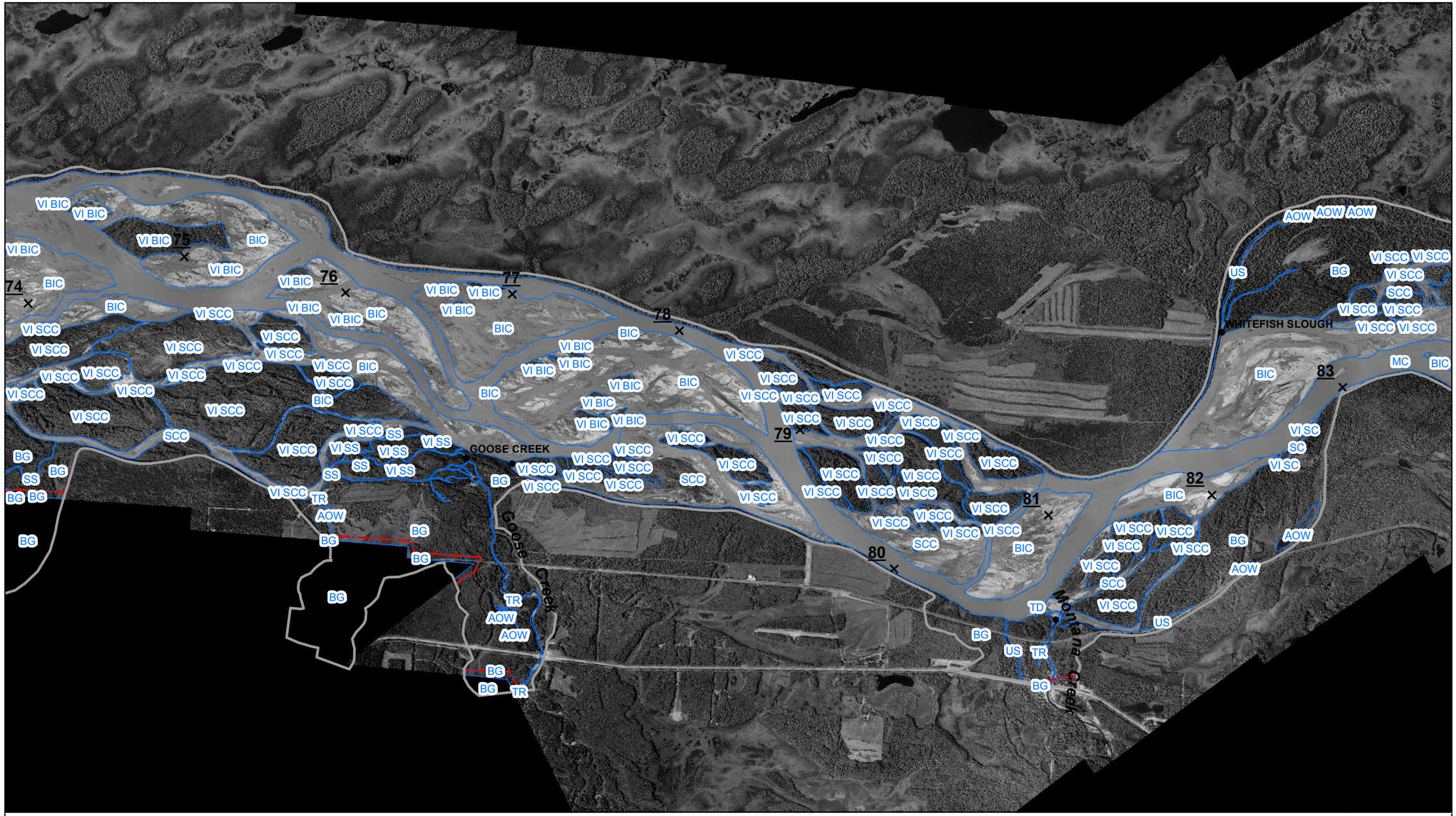
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See index page for legend and additional data information.

LOWER SUSITNA RIVER SEGMENT
1983 GEOMORPHIC FEATURES

Location:	Imagery Date,	Discharge (Sunshine)
PRM 0 - 102.4:	09/06/1983,	36,600 cfs

ALASKA ENERGY AUTHORITY



0 3,000 6,000 Feet

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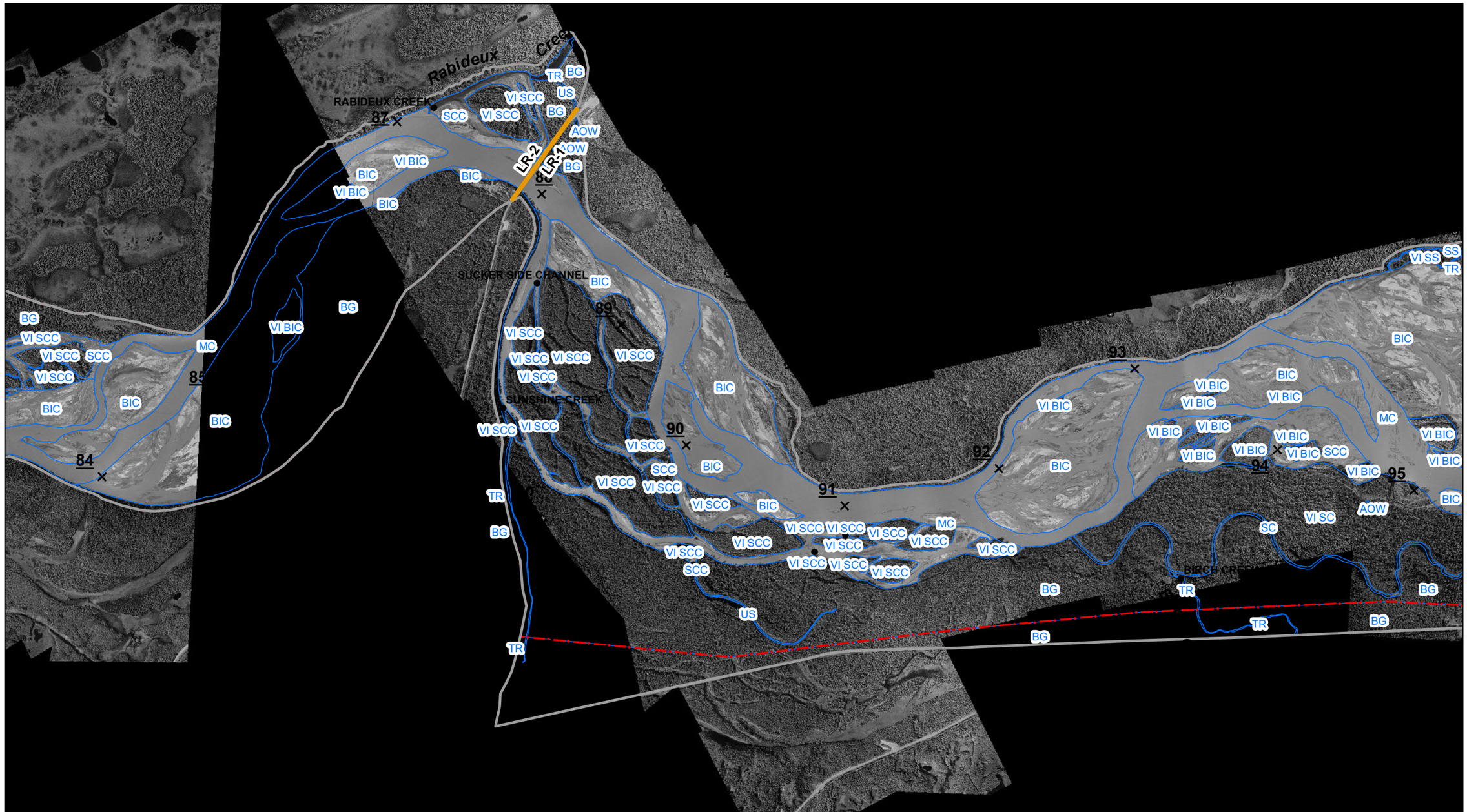
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See index page for legend and additional data information.

LOWER SUSITNA RIVER SEGMENT
1983 GEOMORPHIC FEATURES

Location:	Imagery Date,	Discharge (Sunshine)
PRM 0 - 102.4:	09/06/1983,	36,600 cfs

ALASKA ENERGY AUTHORITY



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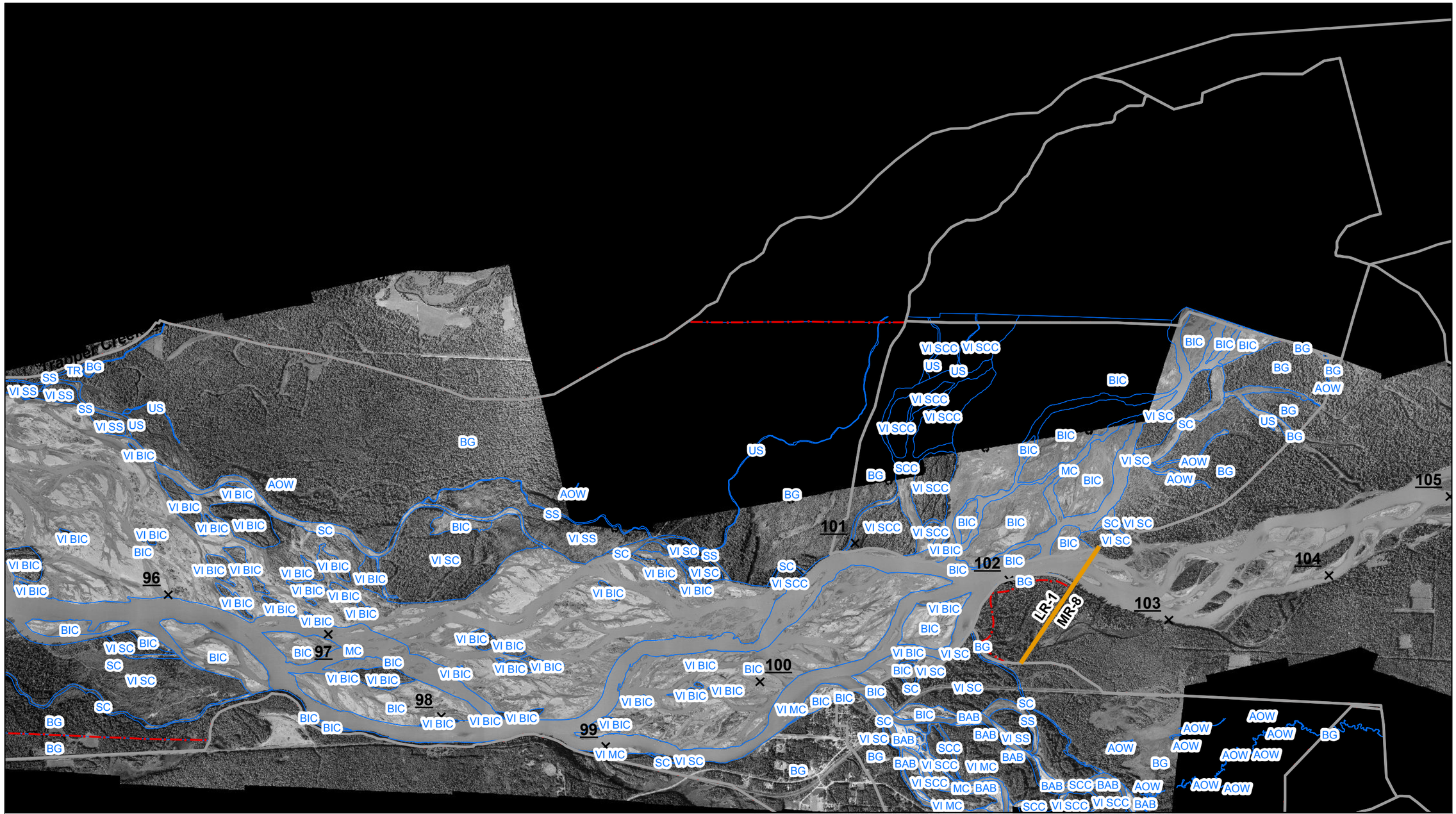
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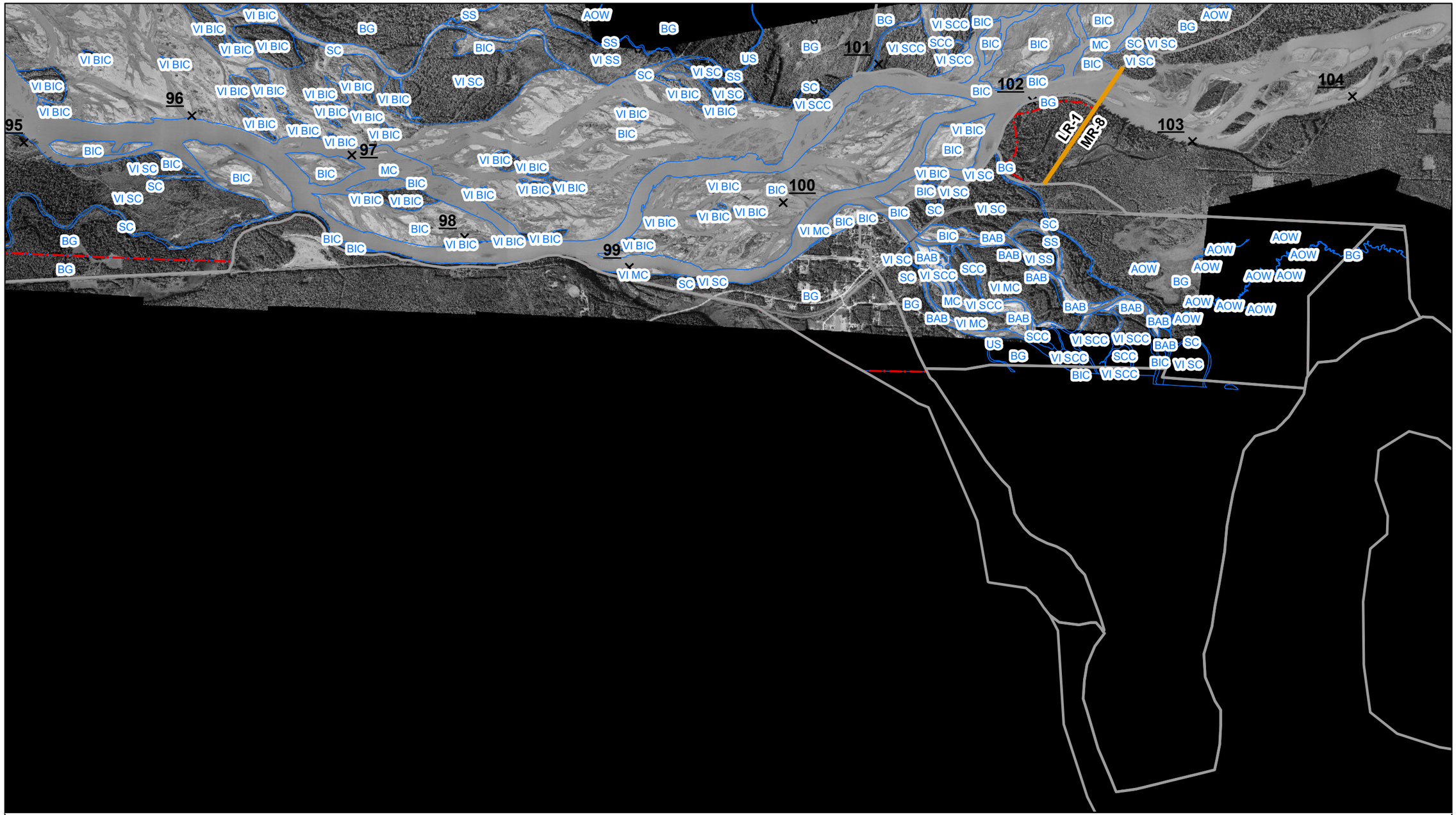
See index page for legend and additional data information.

LOWER SUSITNA RIVER SEGMENT
1983 GEOMORPHIC FEATURES

Location:	Imagery Date,	Discharge (Sunshine)
PRM 0 - 102.4:	09/06/1983,	36,600 cfs

ALASKA ENERGY AUTHORITY


Trapper Creek
TR
BG
SS
VI SS
VI SS
SS
US
VI SS
US
VI BIC
BG
AOW
VI BIC
VI BIC
VI BIC
VI BIC
SC
BIC
VI SC
VI BIC
VI BIC
BIC
VI BIC
VI BIC
VI



0 3,000 6,000 Feet

1 inch = 3,000 feet

Sheet 16 of 16

See index page for legend and additional data information.

LOWER SUSITNA RIVER SEGMENT
1983 GEOMORPHIC FEATURES

Location:	Imagery Date,	Discharge (Sunshine)
PRM 0 - 102.4:	09/06/1983,	36,600 cfs

ALASKA ENERGY AUTHORITY

APPENDIX H. 2012 LOWER SUSITNA RIVER SEGMENT GEOMORPHIC FEATURES

Susitna-Watana Hydroelectric Project
(FERC No. 14241)

Geomorphology Study (6.5)

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LOWER SUSITNA RIVER SEGMENT 2012 GEOMORPHIC FEATURES

ALASKA ENERGY AUTHORITY

151°W 150°30'W 150°W 149°30'W 149°W 148°30'W 148°W 147°30'W

62°20'N 62°10'N 62°N 61°50'N 61°40'N 61°30'N 61°20'N

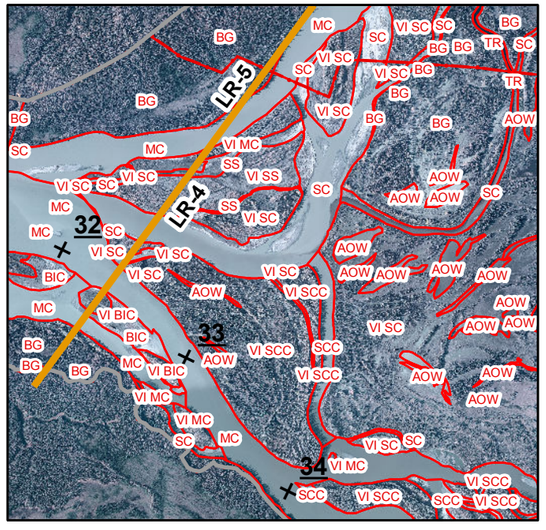
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Sheet 15
Sheet 14
Sheet 13
Sheet 12
Sheet 10
Sheet 11
Sheet 8
Sheet 9
Sheet 6
Sheet 7
Sheet 5
Sheet 4
Sheet 3
Sheet 1
Sheet 2

Deshka River
Yentna River
Susitna River
Kashwitna River
Willow Creek
Matanuska River
Palmer

Legend For Individual Mapbook Pages

- Project River Miles
- Geomorphic Reach Breaks
- Combined Extent of Aerial Photo Coverage for 1950s, 1983 & 2012
- Analysis Extent Boundary
- 2012 Geomorphic Features

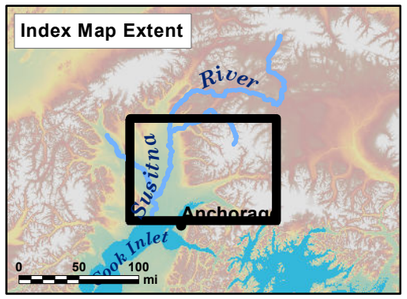
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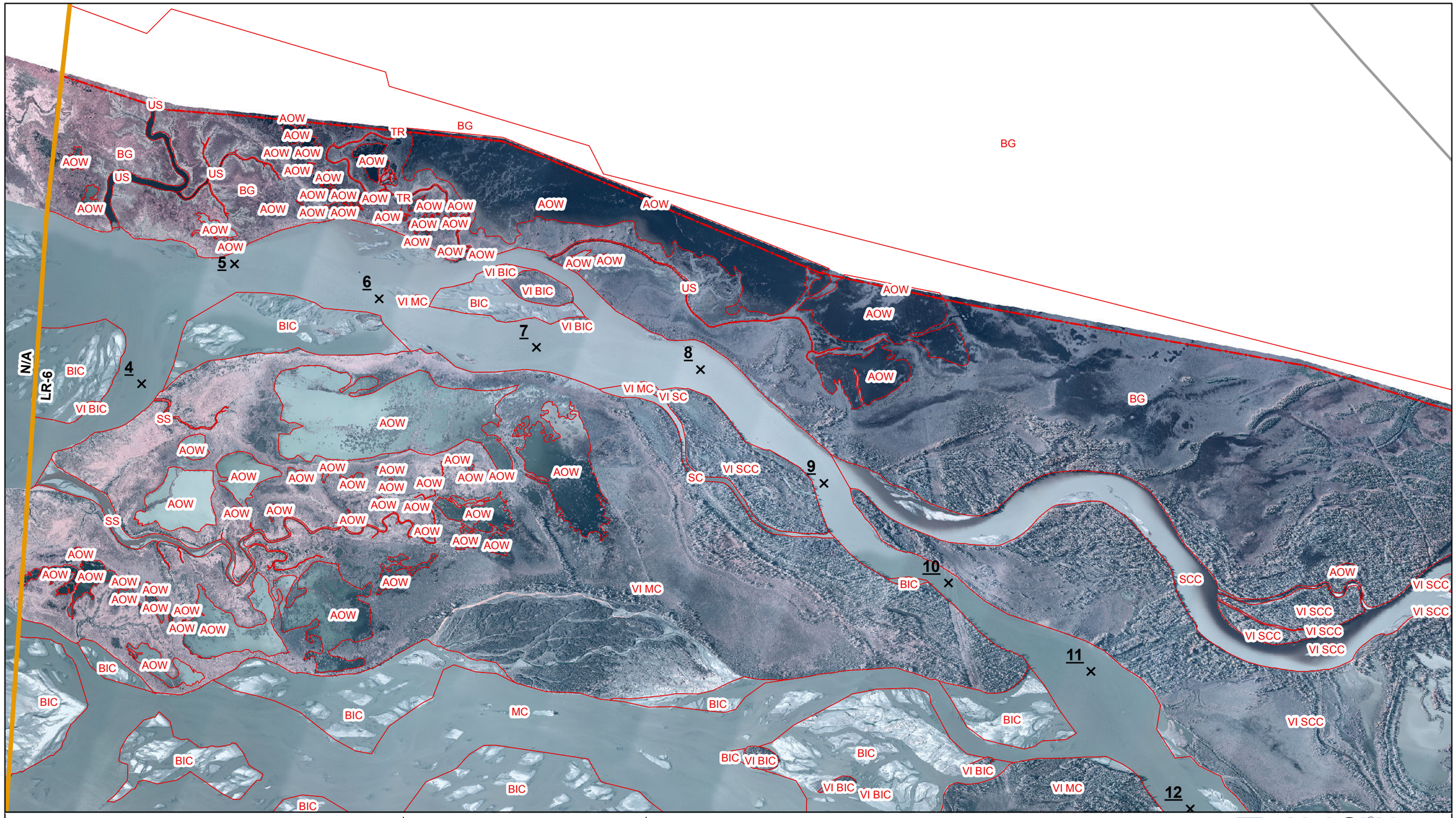
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- Roads
- Railroads
- Rivers and Streams
- Waterbodies

Data Sources: See Map References



0 10 20 mi

Projection: NAD83 State Plane Alaska 4 FIPS 5004 (ft)
Date Created: 8/21/2014
Map Author: Tetra Tech
File: 2012_LR_GeomFeat_v1_20140219_Cover.mxd



0 3,000 6,000 Feet

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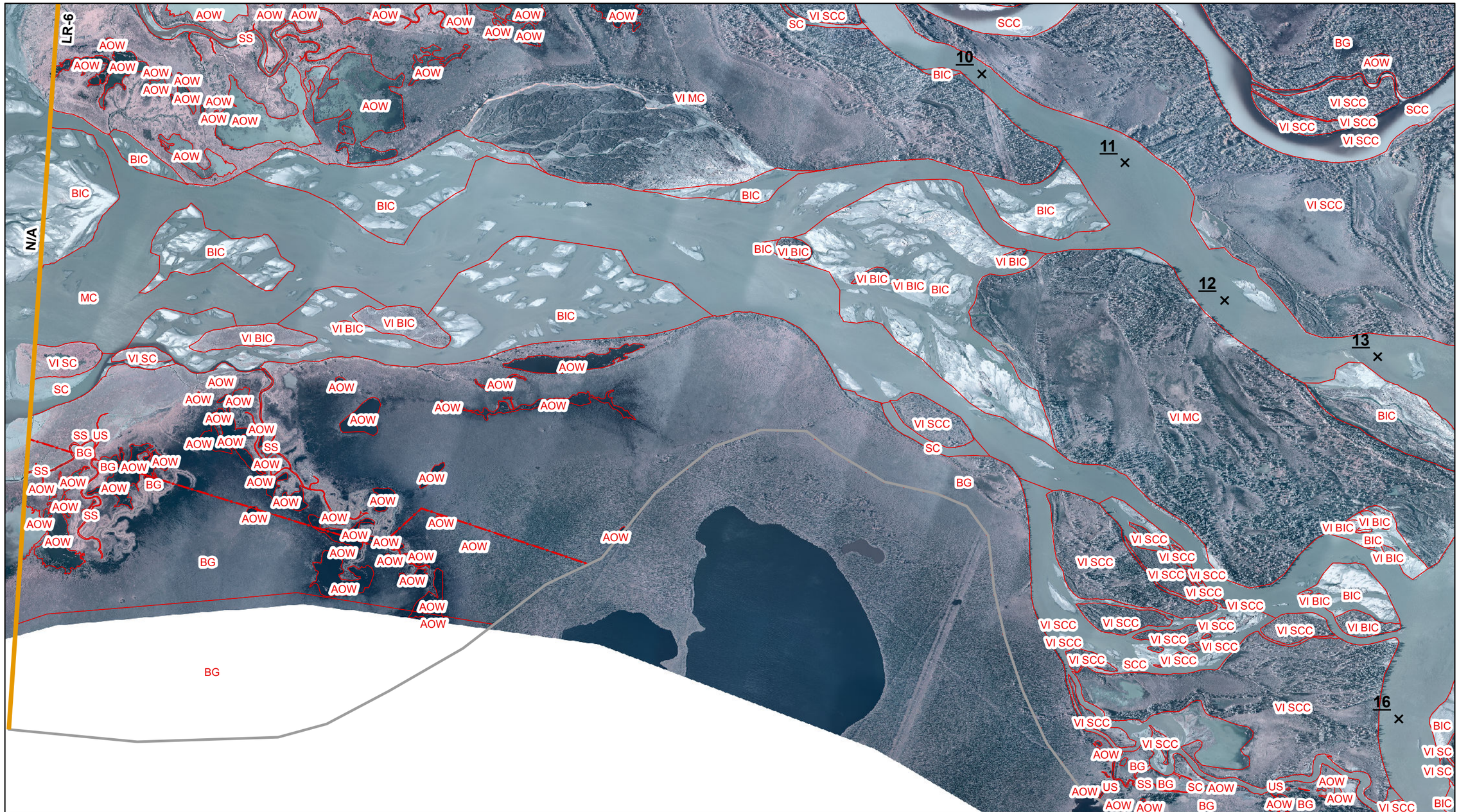
Sheet 1 of 18

LOWER SUSITNA RIVER SEGMENT
2012 GEOMORPHIC FEATURES

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PRM 22.5 - 33.5, 69 - 78:	09/30/2012,	46,900 cfs

Location:	Imagery Date,	Discharge (Sunshine)
PRM 78 - 102:	09/10/2012,	38,100 cfs

ALASKA ENERGY AUTHORITY



0 3,000 6,000 Feet

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See index page for legend and additional data information.

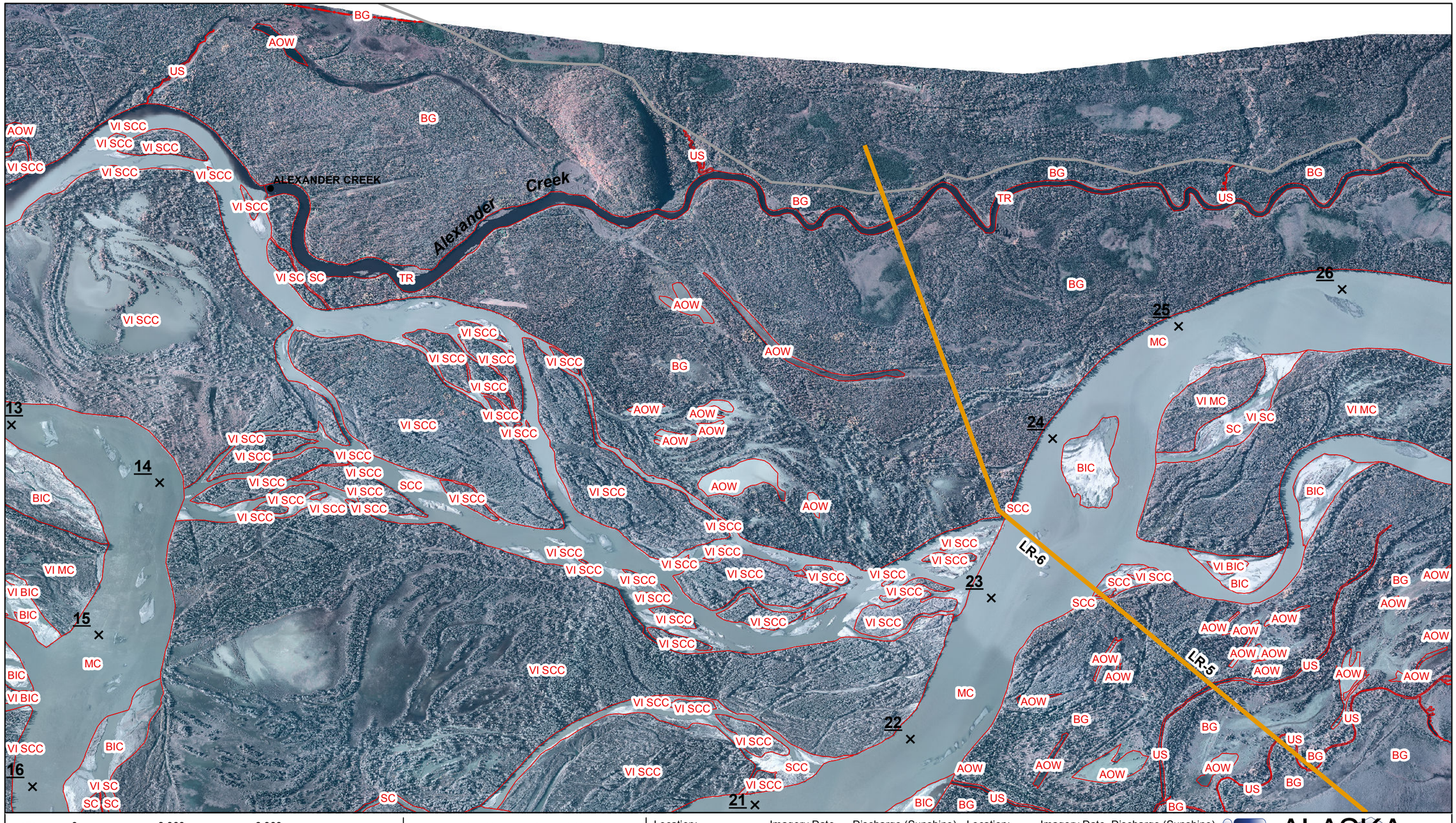
Sheet 2 of 18

LOWER SUSITNA RIVER SEGMENT
2012 GEOMORPHIC FEATURES

Location:	Imagery Date,	Discharge (Sunshine)
PRM 0 - 22.5, 33.5 - 69:	10/10/2012,	53,700 cfs
PRM 22.5 - 33.5, 69 - 78:	09/30/2012,	46,900 cfs

Location:	Imagery Date,	Discharge (Sunshine)
PRM 78 - 102:	09/10/2012,	38,100 cfs

ALASKA ENERGY AUTHORITY



0 3,000 6,000 Feet

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LOWER SUSITNA RIVER SEGMENT 2012 GEOMORPHIC FEATURES

Location:	Imagery Date,	Discharge (Sunshine)
PRM 0 - 22.5, 33.5 - 69:	10/10/2012,	53,700 cfs
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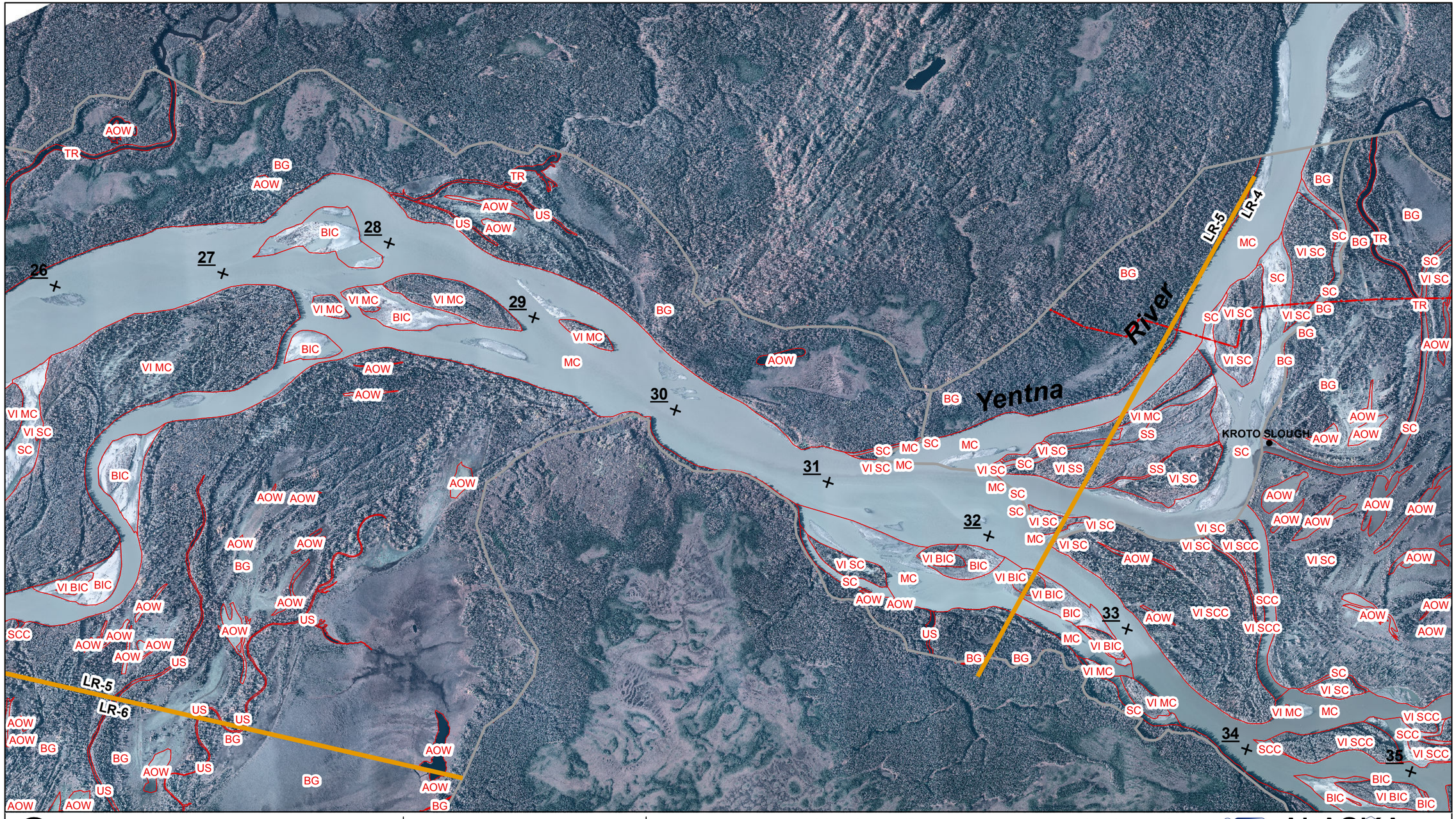
Sheet 4 of 18

LOWER SUSITNA RIVER SEGMENT 2012 GEOMORPHIC FEATURES

Location:	Imagery Date,	Discharge (Sunshine)
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PRM 22.5 - 33.5, 69 - 78:	09/30/2012,	46,900 cfs

Location:	Imagery Date,	Discharge (Sunshine)
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ALASKA ENERGY AUTHORITY



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Sheet 5 of 18

LOWER SUSITNA RIVER SEGMENT
2012 GEOMORPHIC FEATURES

Location:	Imagery Date,	Discharge (Sunshine)
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PRM 22.5 - 33.5, 69 - 78:	09/30/2012,	46,900 cfs

Location:	Imagery Date,	Discharge (Sunshine)
PRM 78 - 102:	09/10/2012,	38,100 cfs

ALASKA ENERGY AUTHORITY



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Sheet 6 of 18

LOWER SUSITNA RIVER SEGMENT
2012 GEOMORPHIC FEATURES

Location:	Imagery Date,	Discharge (Sunshine)
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PRM 22.5 - 33.5, 69 - 78:	09/30/2012,	46,900 cfs

Location:	Imagery Date,	Discharge (Sunshine)
PRM 78 - 102:	09/10/2012,	38,100 cfs

ALASKA ENERGY AUTHORITY

KROTO SLOUGH

EAGLES NEST SIDE CHANNEL

LR-3

LR-4

35 36 37 38 39 40 41 42 43 44 45

0 3,000 6,000 Feet

1 inch = 3,000 feet

See index page for legend and additional data information.

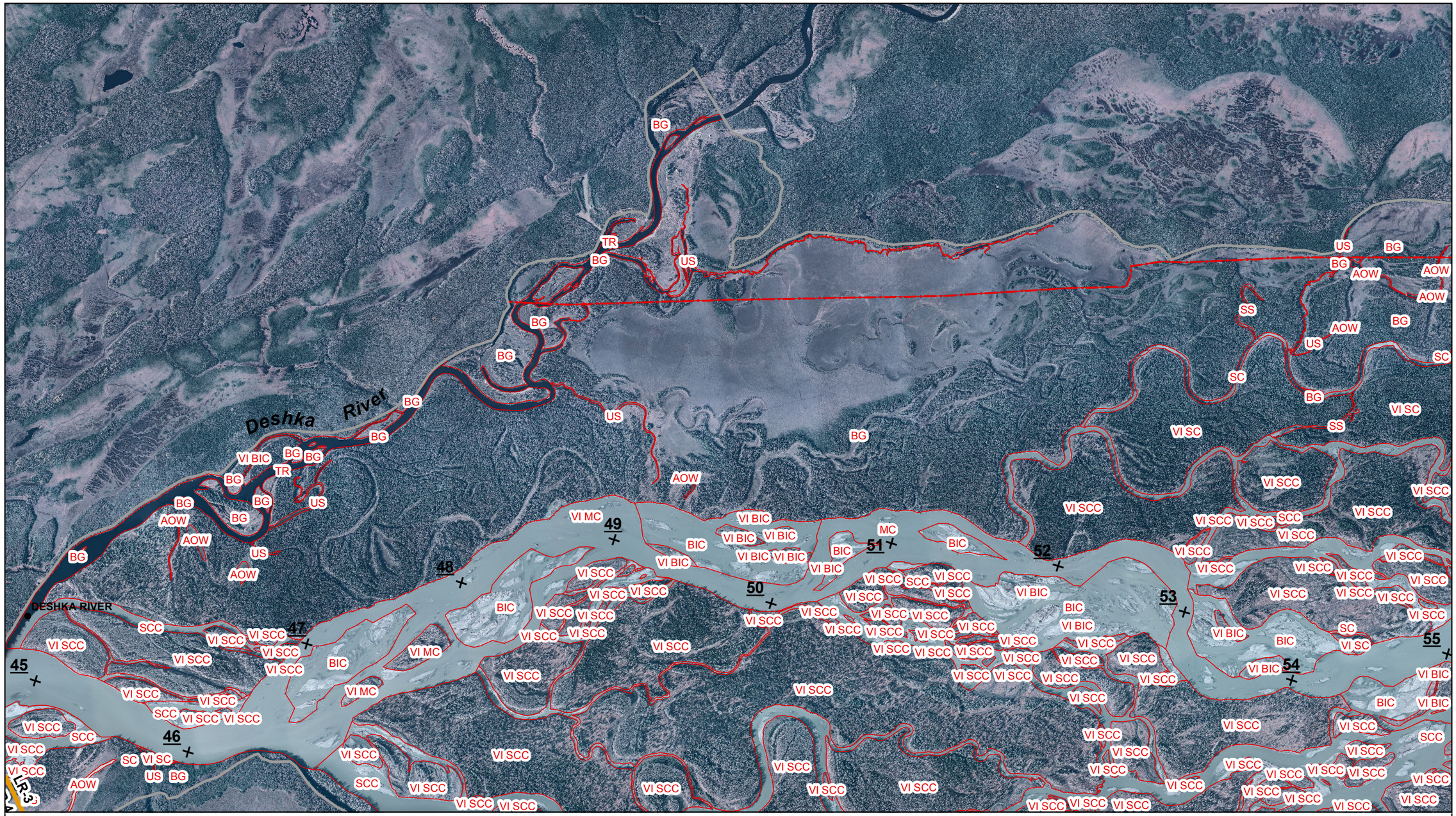
Sheet 7 of 18

LOWER SUSITNA RIVER SEGMENT
2012 GEOMORPHIC FEATURES

Location:	Imagery Date,	Discharge (Sunshine)
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PRM 22.5 - 33.5, 69 - 78:	09/30/2012,	46,900 cfs

Location:	Imagery Date,	Discharge (Sunshine)
PRM 78 - 102:	09/10/2012,	38,100 cfs

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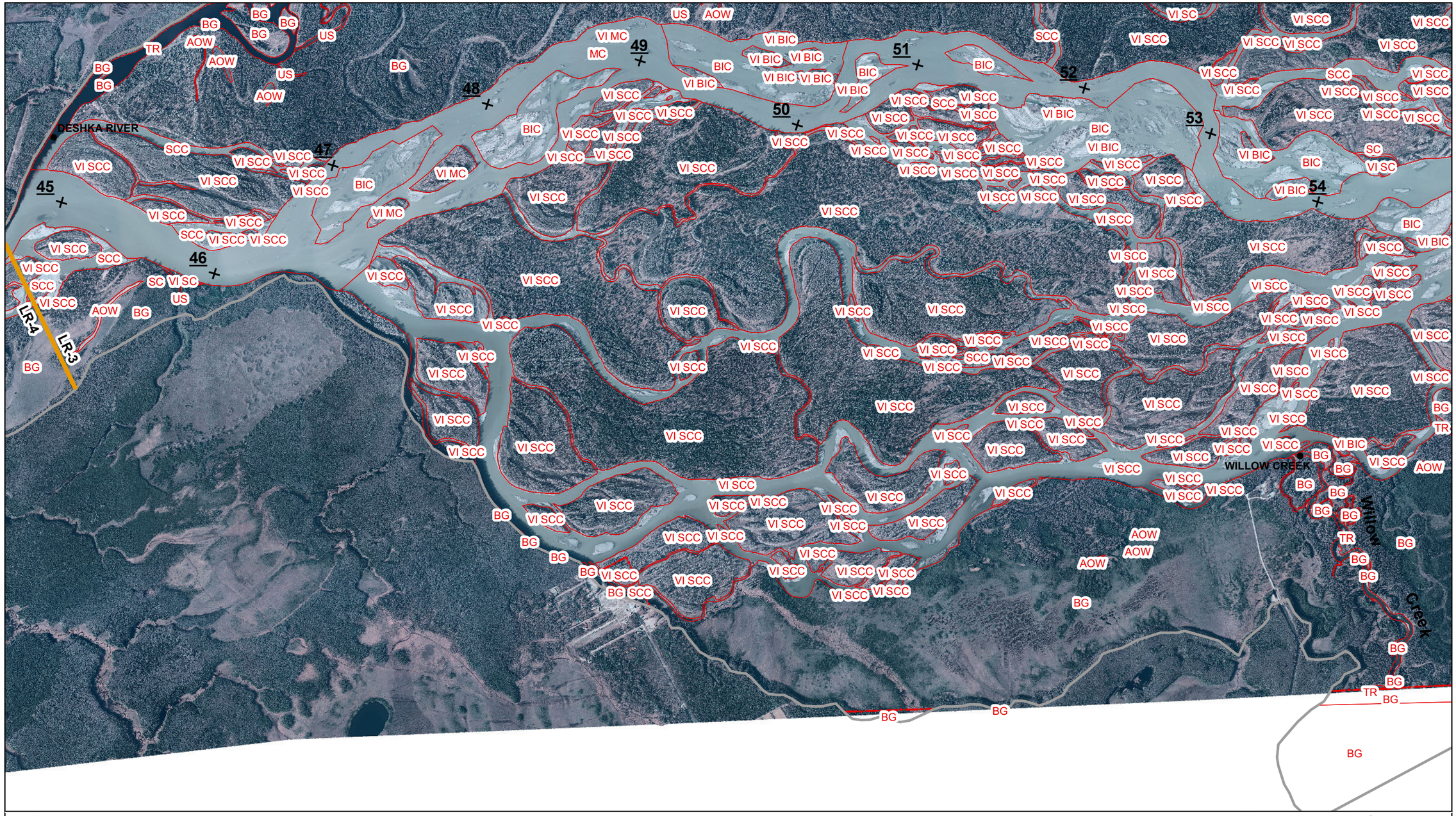
Sheet 8 of 18

LOWER SUSITNA RIVER SEGMENT
2012 GEOMORPHIC FEATURES

Location:	Imagery Date,	Discharge (Sunshine)
PRM 0 - 22.5, 33.5 - 69:	10/10/2012,	53,700 cfs
PRM 22.5 - 33.5, 69 - 78:	09/30/2012,	46,900 cfs

Location:	Imagery Date,	Discharge (Sunshine)
PRM 78 - 102:	09/10/2012,	38,100 cfs

ALASKA ENERGY AUTHORITY



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Sheet 9 of 18

LOWER SUSITNA RIVER SEGMENT
2012 GEOMORPHIC FEATURES

Location:	Imagery Date,	Discharge (Sunshine)
PRM 0 - 22.5, 33.5 - 69:	10/10/2012,	53,700 cfs
PRM 22.5 - 33.5, 69 - 78:	09/30/2012,	46,900 cfs

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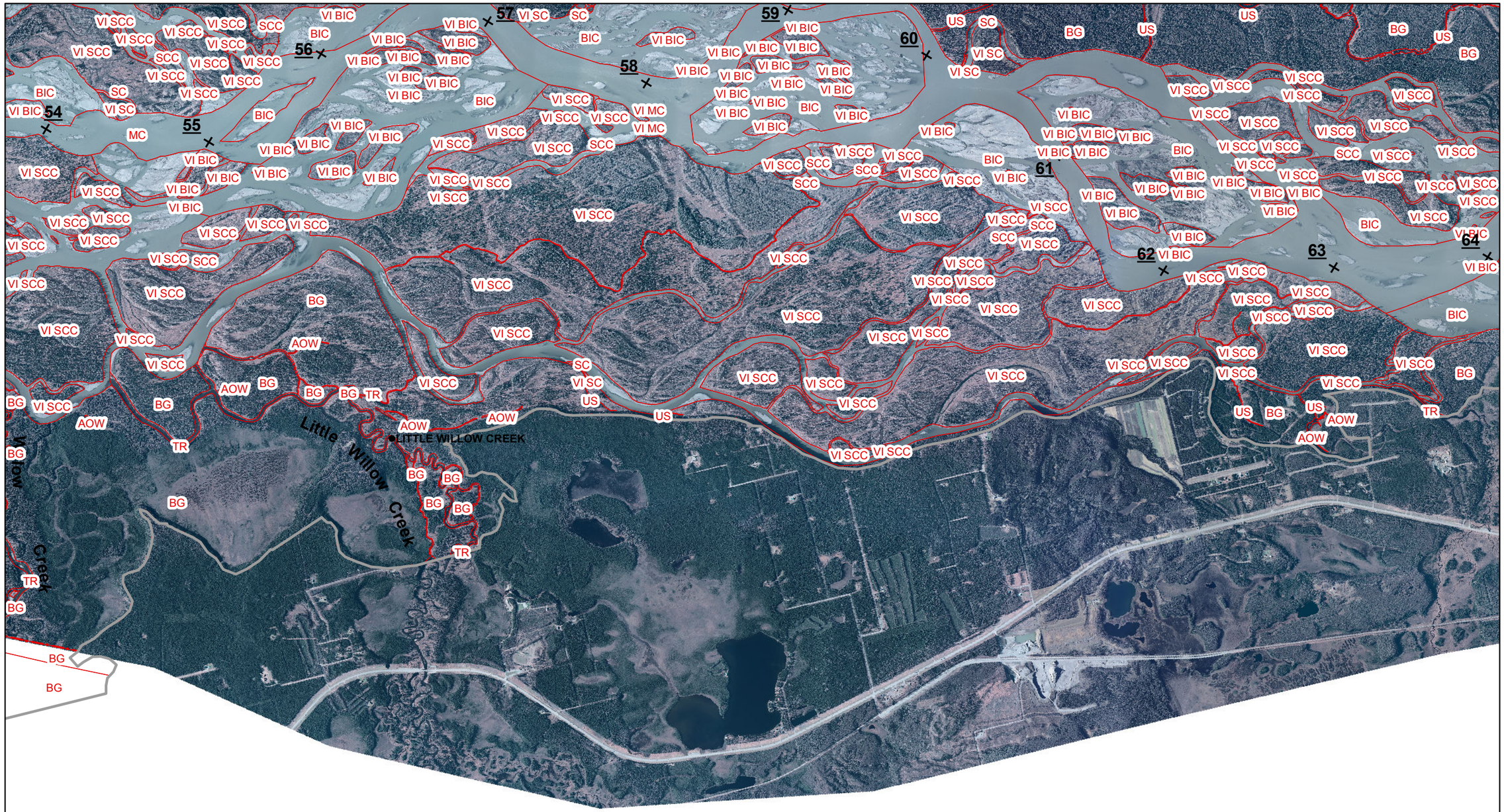
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LOWER SUSITNA RIVER SEGMENT 2012 GEOMORPHIC FEATURES

Location:	Imagery Date,	Discharge (Sunshine)
PRM 0 - 22.5, 33.5 - 69:	10/10/2012,	53,700 cfs
PRM 22.5 - 33.5, 69 - 78:	09/30/2012,	46,900 cfs

Location:	Imagery Date,	Discharge (Sunshine)
PRM 78 - 102:	09/10/2012,	38,100 cfs

ALASKA ENERGY AUTHORITY



0 3,000 6,000 Feet

1 inch = 3,000 feet

See index page for legend and additional data information.

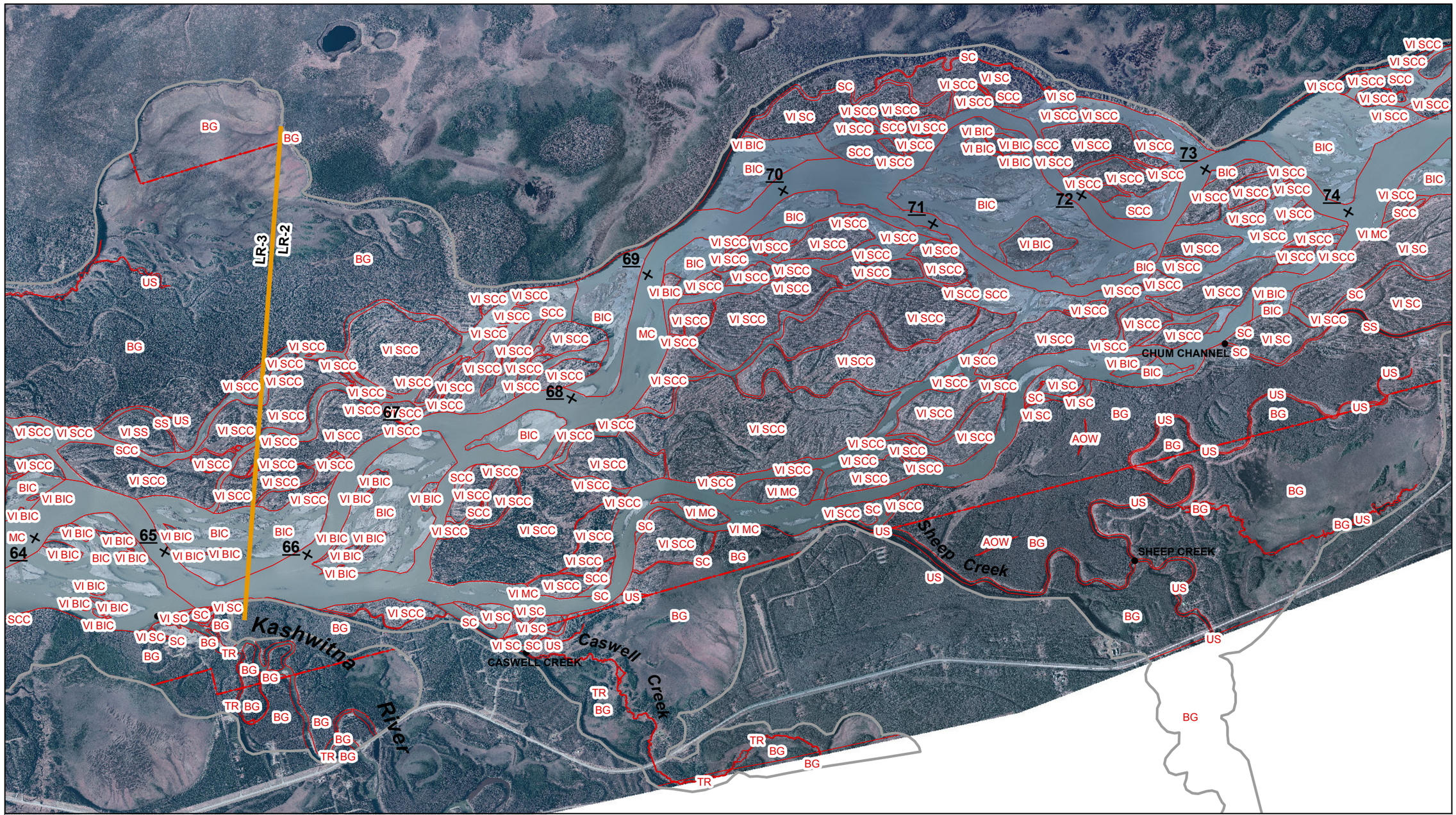
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LOWER SUSITNA RIVER SEGMENT
2012 GEOMORPHIC FEATURES

Location:	Imagery Date,	Discharge (Sunshine)
PRM 0 - 22.5, 33.5 - 69:	10/10/2012,	53,700 cfs
PRM 22.5 - 33.5, 69 - 78:	09/30/2012,	46,900 cfs

Location:	Imagery Date,	Discharge (Sunshine)
PRM 78 - 102:	09/10/2012,	38,100 cfs

ALASKA ENERGY AUTHORITY



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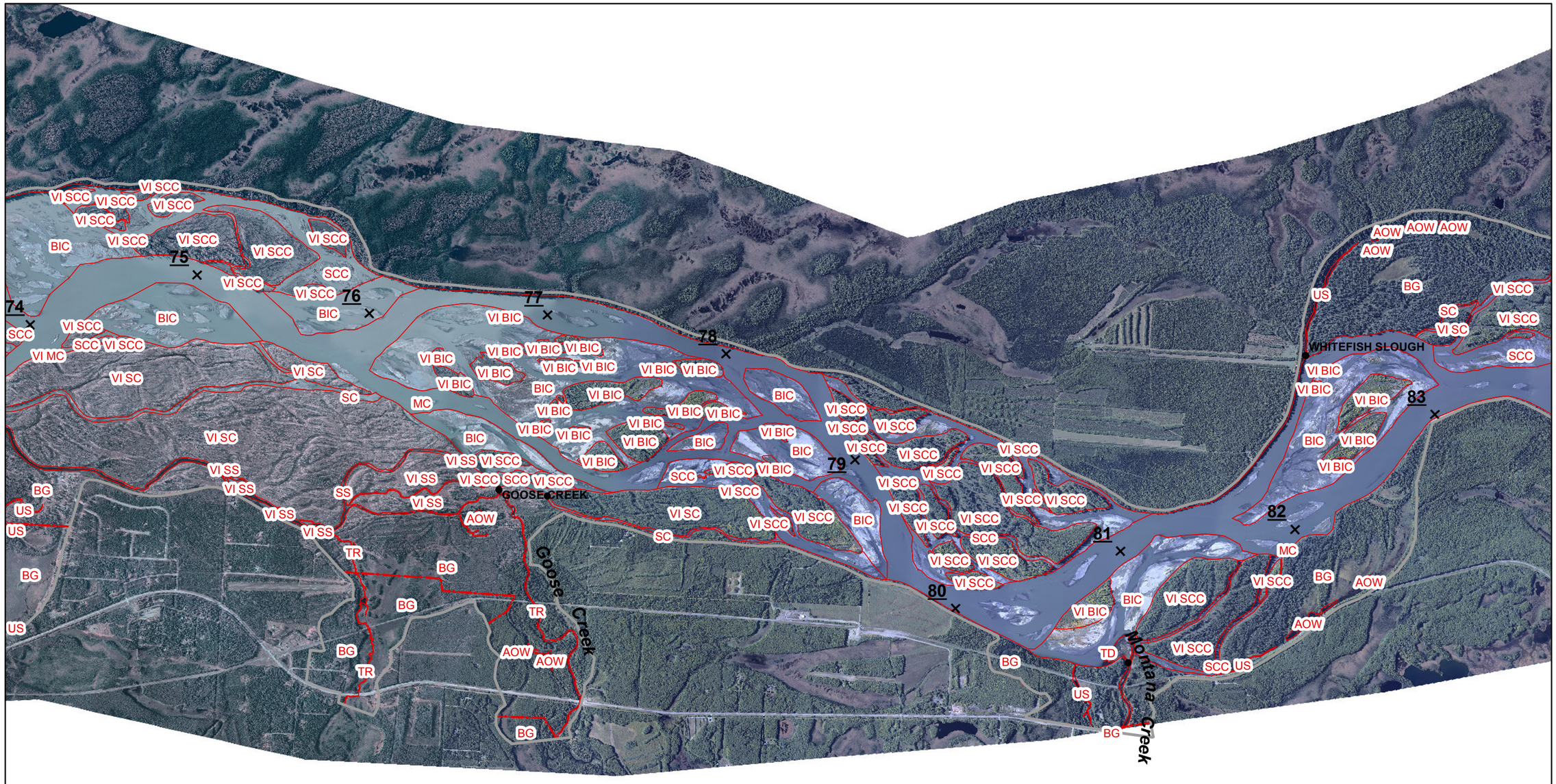
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LOWER SUSITNA RIVER SEGMENT
2012 GEOMORPHIC FEATURES

Location:	Imagery Date,	Discharge (Sunshine)
PRM 0 - 22.5, 33.5 - 69:	10/10/2012,	53,700 cfs
PRM 22.5 - 33.5, 69 - 78:	09/30/2012,	46,900 cfs

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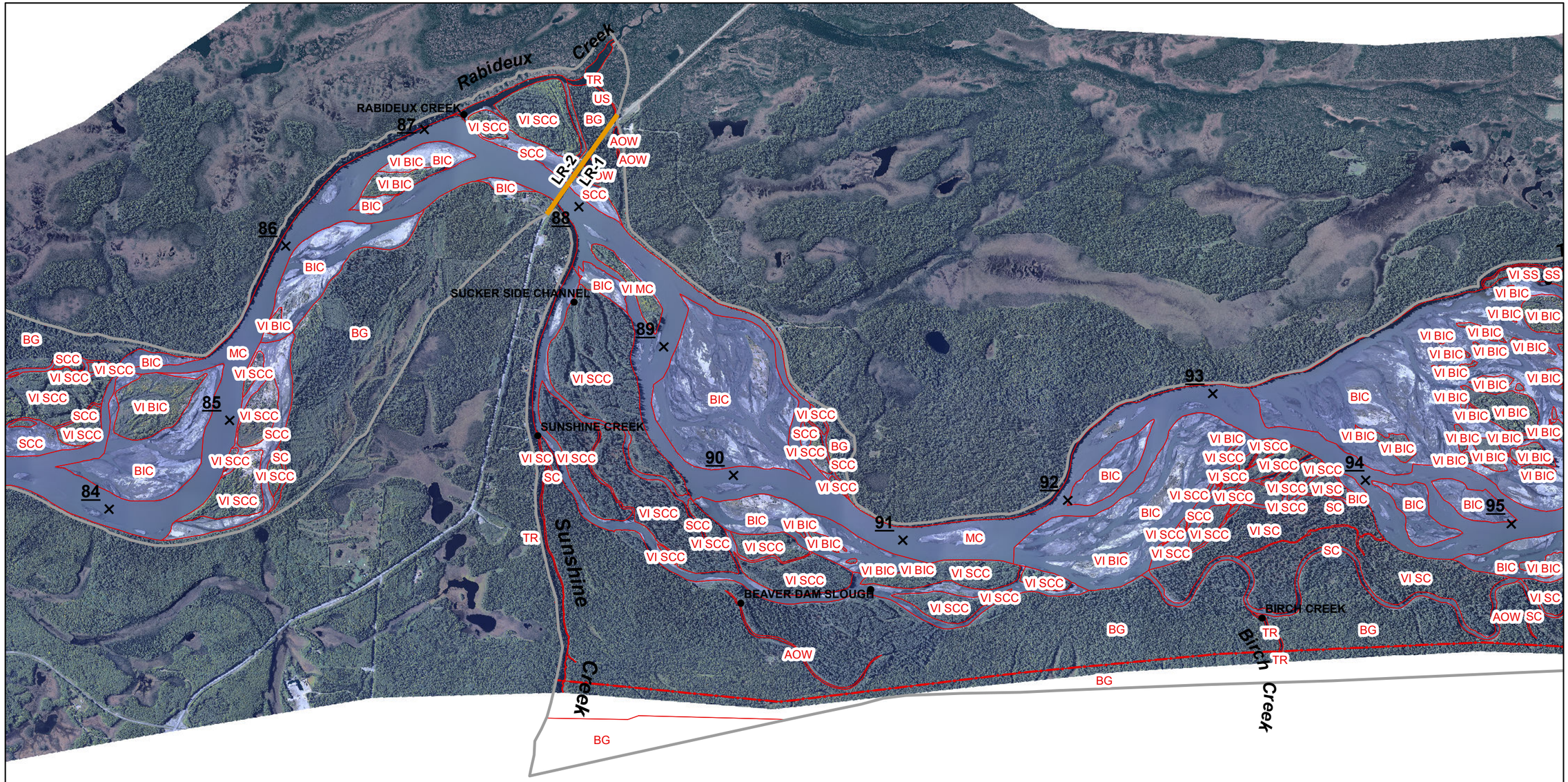
Sheet 13 of 18

LOWER SUSITNA RIVER SEGMENT
2012 GEOMORPHIC FEATURES

Location:	Imagery Date,	Discharge (Sunshine)
PRM 0 - 22.5, 33.5 - 69:	10/10/2012,	53,700 cfs
PRM 22.5 - 33.5, 69 - 78:	09/30/2012,	46,900 cfs

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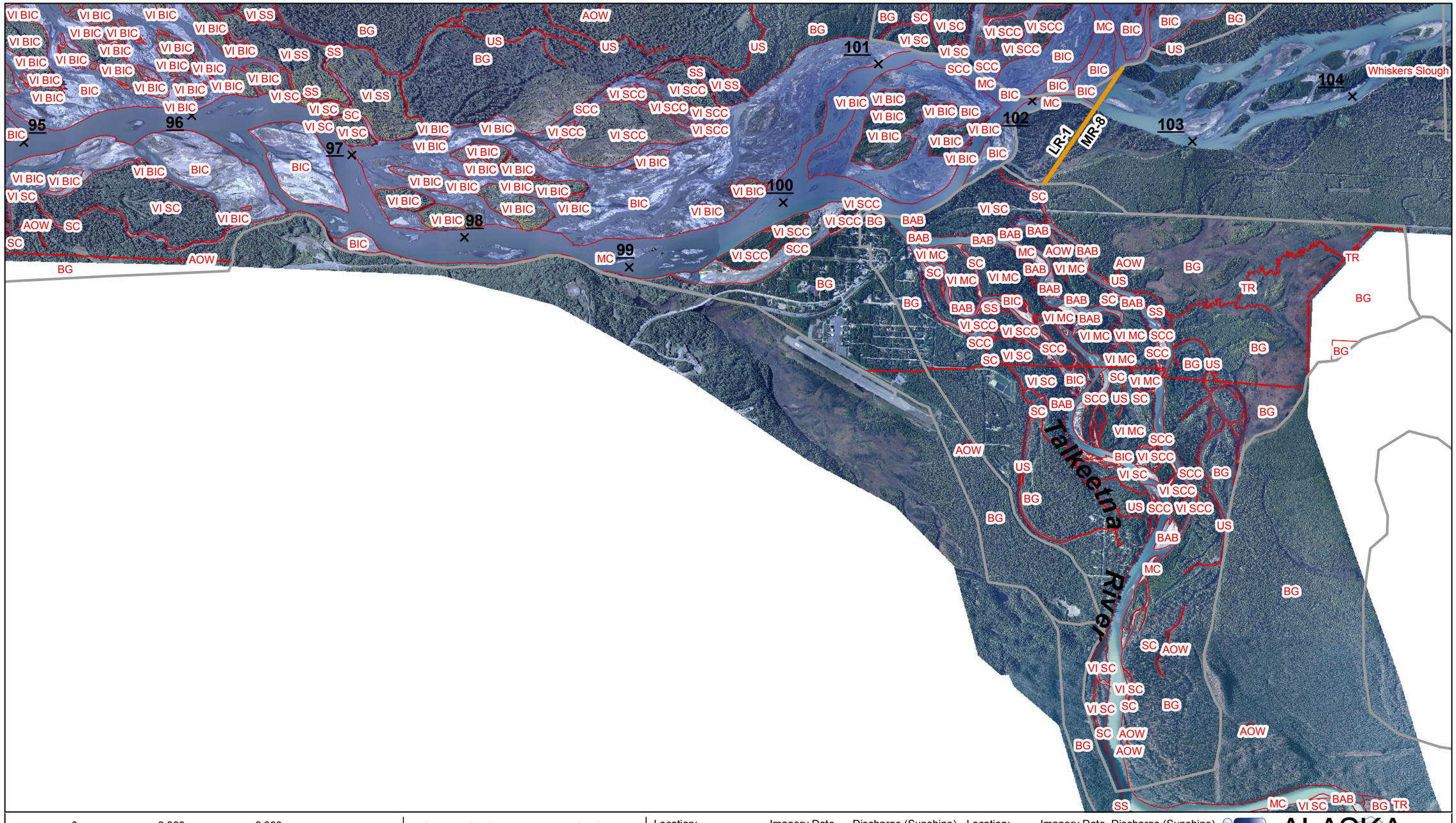
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LOWER SUSITNA RIVER SEGMENT
2012 GEOMORPHIC FEATURES

Location:	Imagery Date,	Discharge (Sunshine)
PRM 0 - 22.5, 33.5 - 69:	10/10/2012,	53,700 cfs
PRM 22.5 - 33.5, 69 - 78:	09/30/2012,	46,900 cfs

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ALASKA ENERGY AUTHORITY



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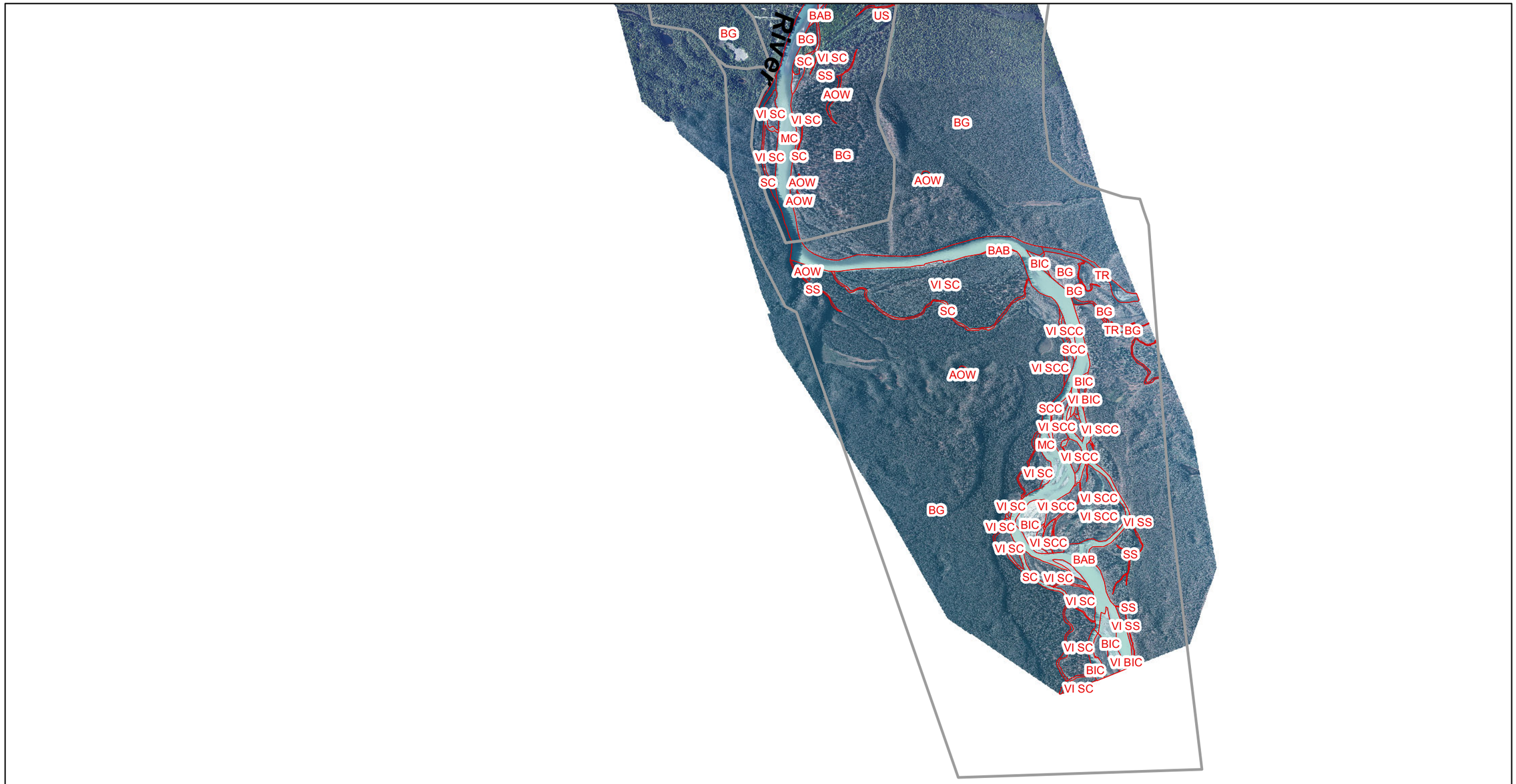
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LOWER SUSITNA RIVER SEGMENT
2012 GEOMORPHIC FEATURES

Location:	Imagery Date,	Discharge (Sunshine)
PRM 0 - 22.5, 33.5 - 69:	10/10/2012,	53,700 cfs
PRM 22.5 - 33.5, 69 - 78:	09/30/2012,	46,900 cfs

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ALASKA ENERGY AUTHORITY



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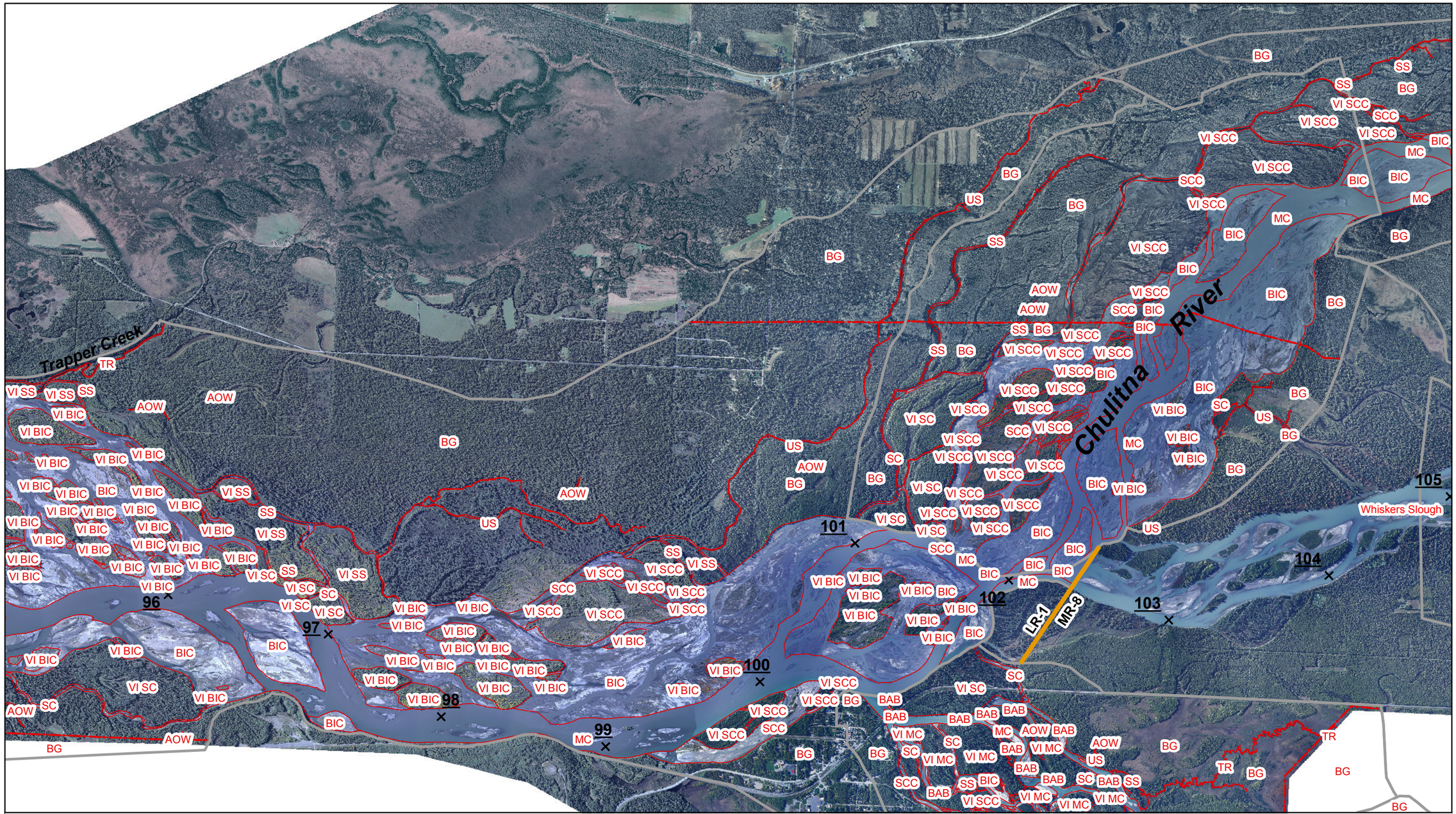
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LOWER SUSITNA RIVER SEGMENT
2012 GEOMORPHIC FEATURES

Location:	Imagery Date,	Discharge (Sunshine)
PRM 0 - 22.5, 33.5 - 69:	10/10/2012,	53,700 cfs
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See index page for legend and additional data information.

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LOWER SUSITNA RIVER SEGMENT 2012 GEOMORPHIC FEATURES

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Sheet 18 of 18

LOWER SUSITNA RIVER SEGMENT
2012 GEOMORPHIC FEATURES

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