WINDTHROW IN SOUTHEAST ALASKA
(Update and discussion)

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ADF&G Habitat

Presentation to the Board of Forestry

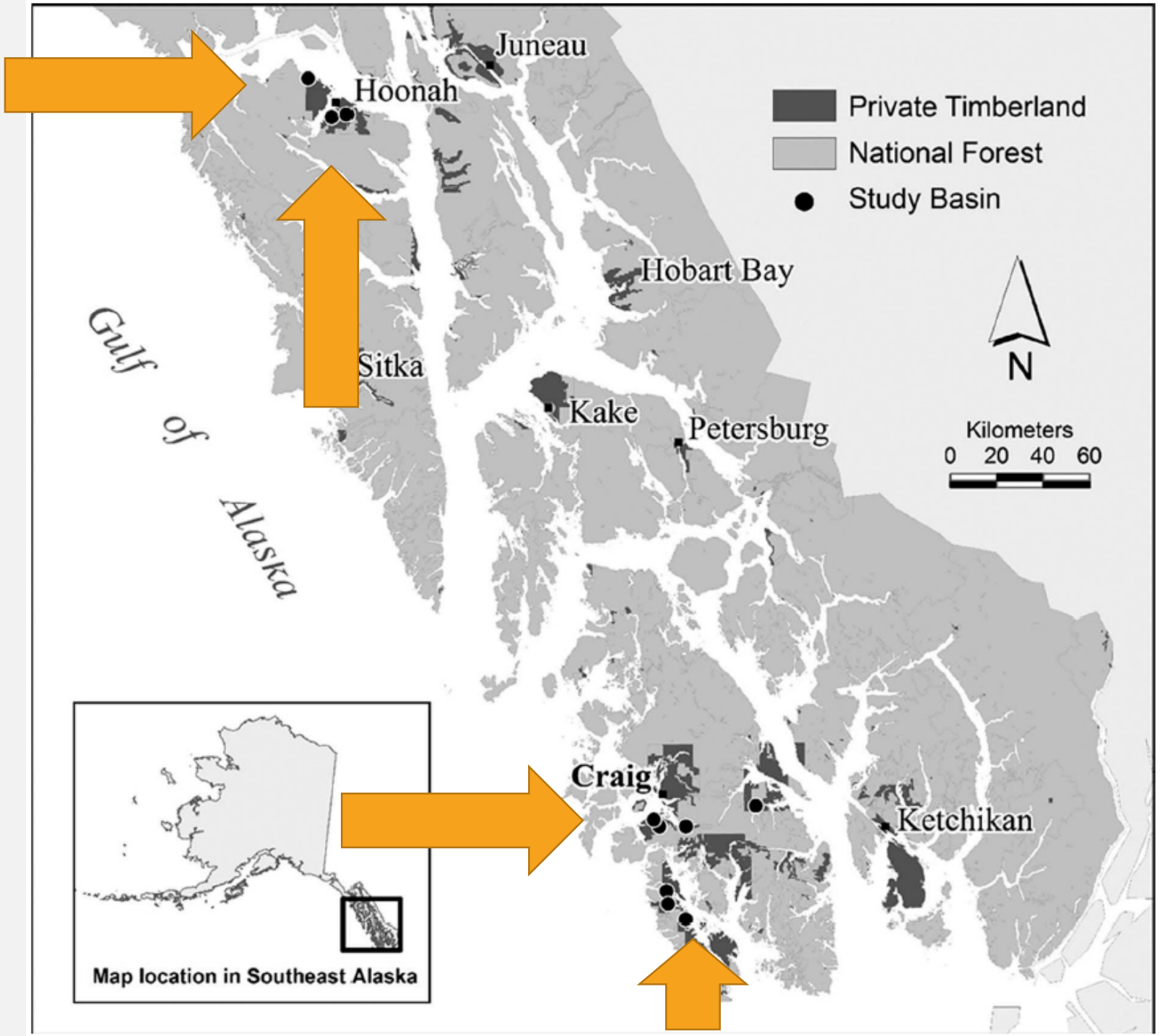
August 28, 2019

REVIEW

- Effort to assess whether blowdown can be predicted by applying Rollerson's (2009) Wind Exposure Index (WEI) and fetch distance created by clearcuts on Southeast, AK Landscape
- ArcMap tool under development for quick assessment (Jason Graham ADF&G, Anchorage)
- Previous work by Kramer (2001) involved more complex model
- Martin and Shelly (2017) found blowdown correlated with storm wind exposure using WEI.

MARTIN AND SHELLY (2017)
FUNDED BY SEALASKA CORPORATION AND ADNR

- 14 stream reaches monitored 1994-2012
- Found significant correlation between blowdown and the Rollerson et al. (2009) Wind Exposure Index (WEI)
- Fetch distance not considered



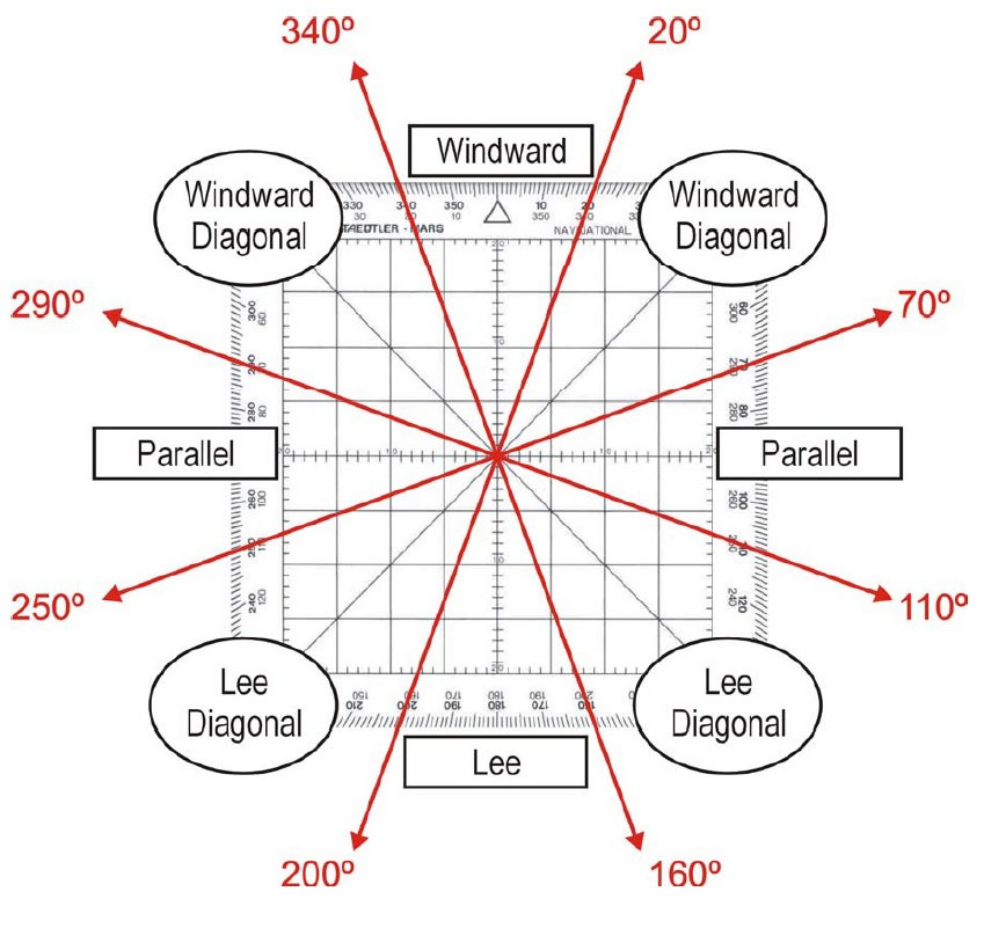


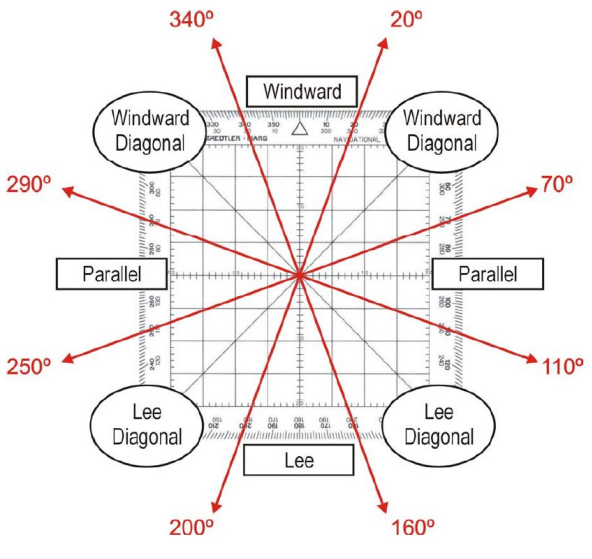
Figure A2. Wind Exposure Index/Wind Exposure Class

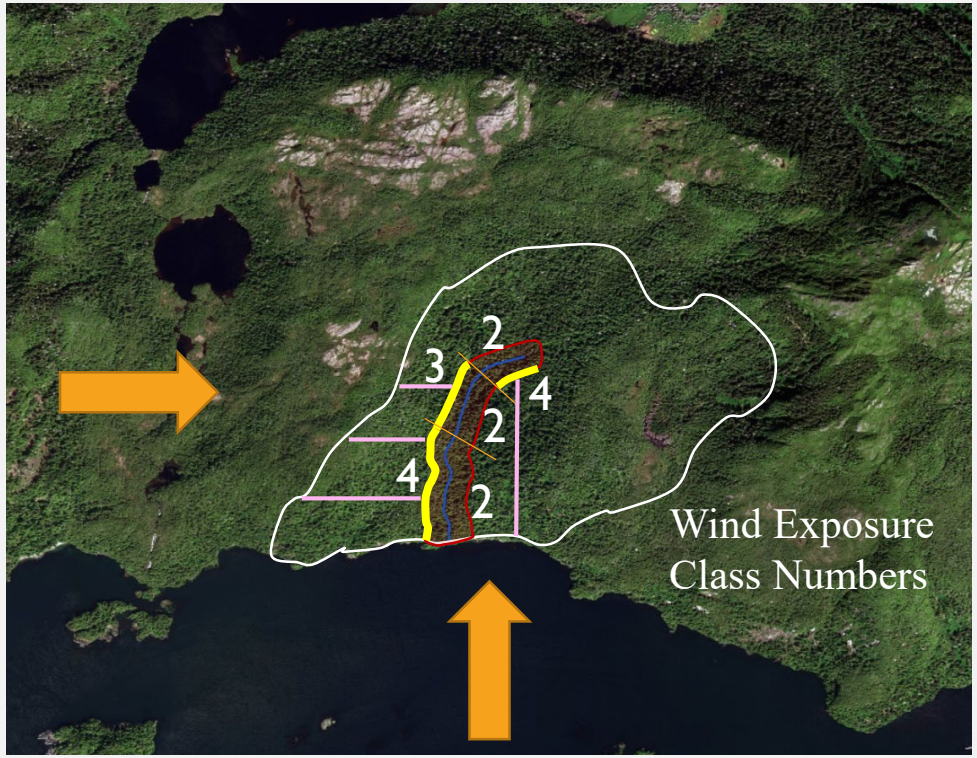
Boundary exposure 2	Lee	Lee diagonal	Parallel	Windward diagonal	Windward
	1	2	3	4	5

Boundary exposure 1						
Lee	1		**3**	**4**	**5**	**6**
Lee diagonal	2	**3**	**4**	**5**	**6**	**7**
Parallel	3	**4**	**5**	**6**	**7**	**8**
Windward diagonal	4	**5**	**6**	**7**	**8**	**9**
Windward	5	**6**	**7**	**8**	**9**	

Note: Wind Exposure Index = (Boundary exposure 1 rank) + (Boundary exposure 2 rank)

Wind Exposure Index (sum of ranks)	Wind Exposure Class	Wind Exposure Class number
0-1	Very low	1
2-3-4	Low	2
5-6	Moderate	3
7-8	High	4
9-10	Very high	5





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Windward	5		**6**	**7**	**8**	**9**	

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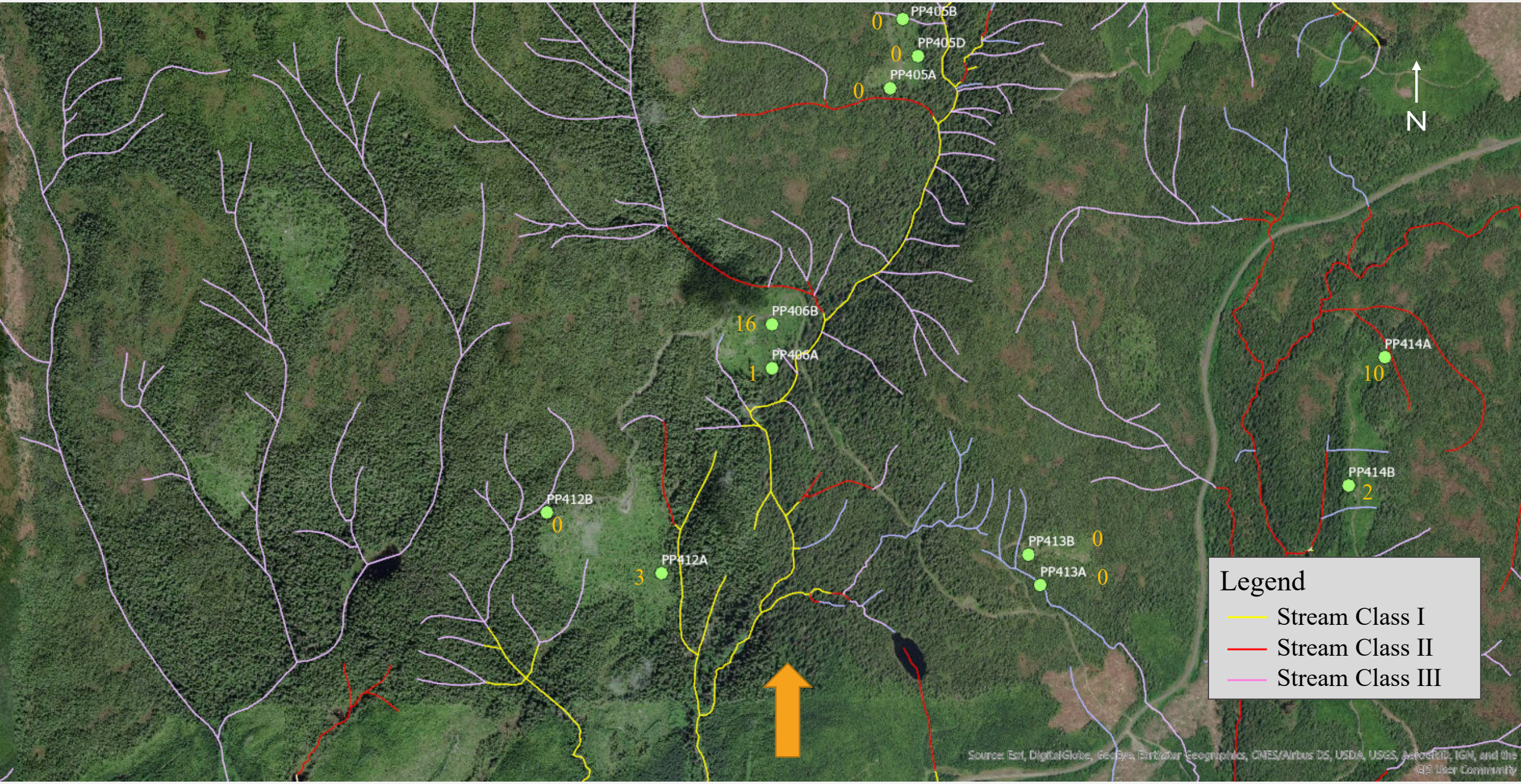
5-6	Moderate	3
7-8	High	4
9-10	Very high	5

USFS MONITORING DATA

*Courtesy of Heidi Lombard, USFS PRD Fisheries Biologist

- Harvest during 2000-2006
- 98 buffers on class I-III streams
- Prince of Wales Island only
- Preliminary data and analysis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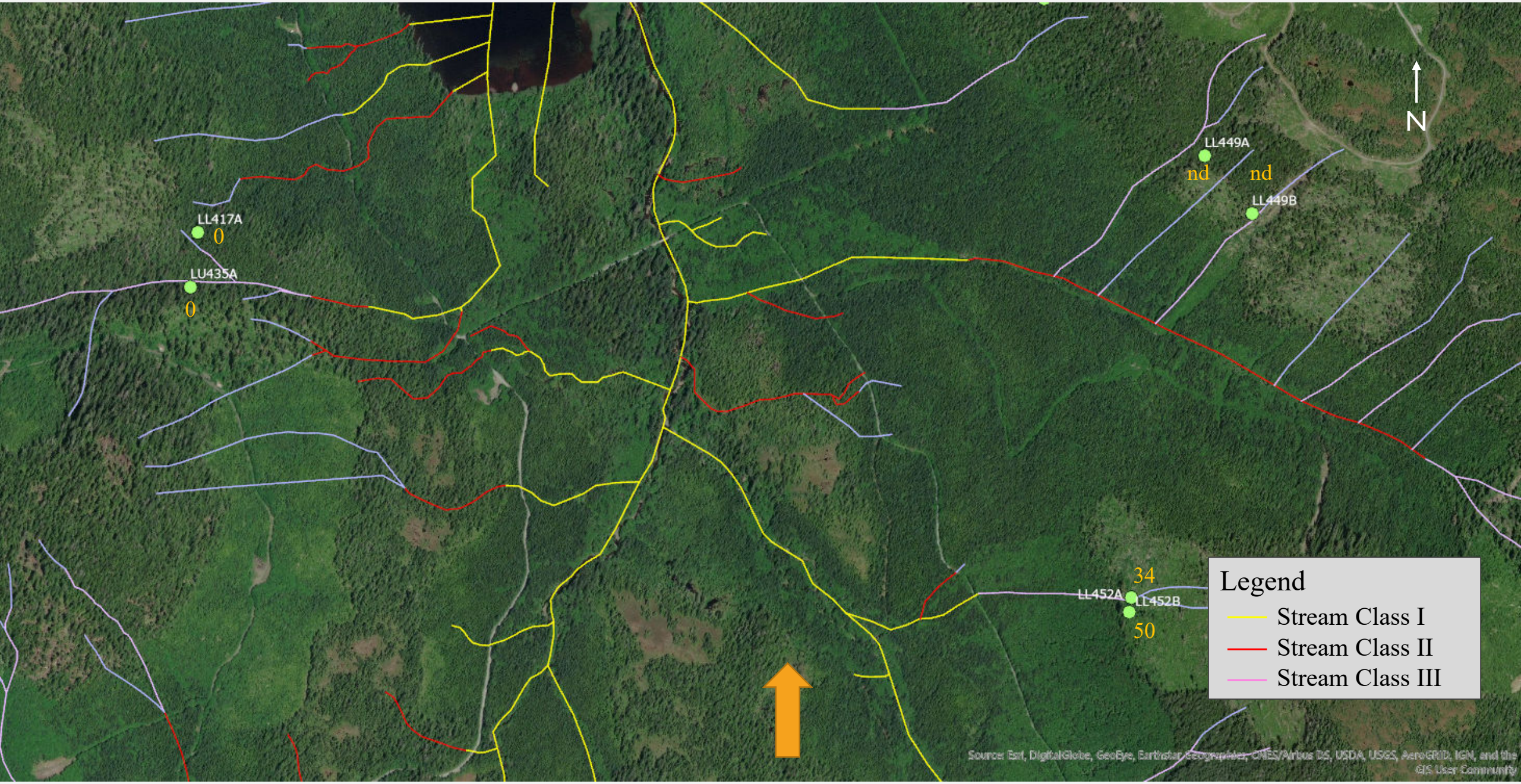
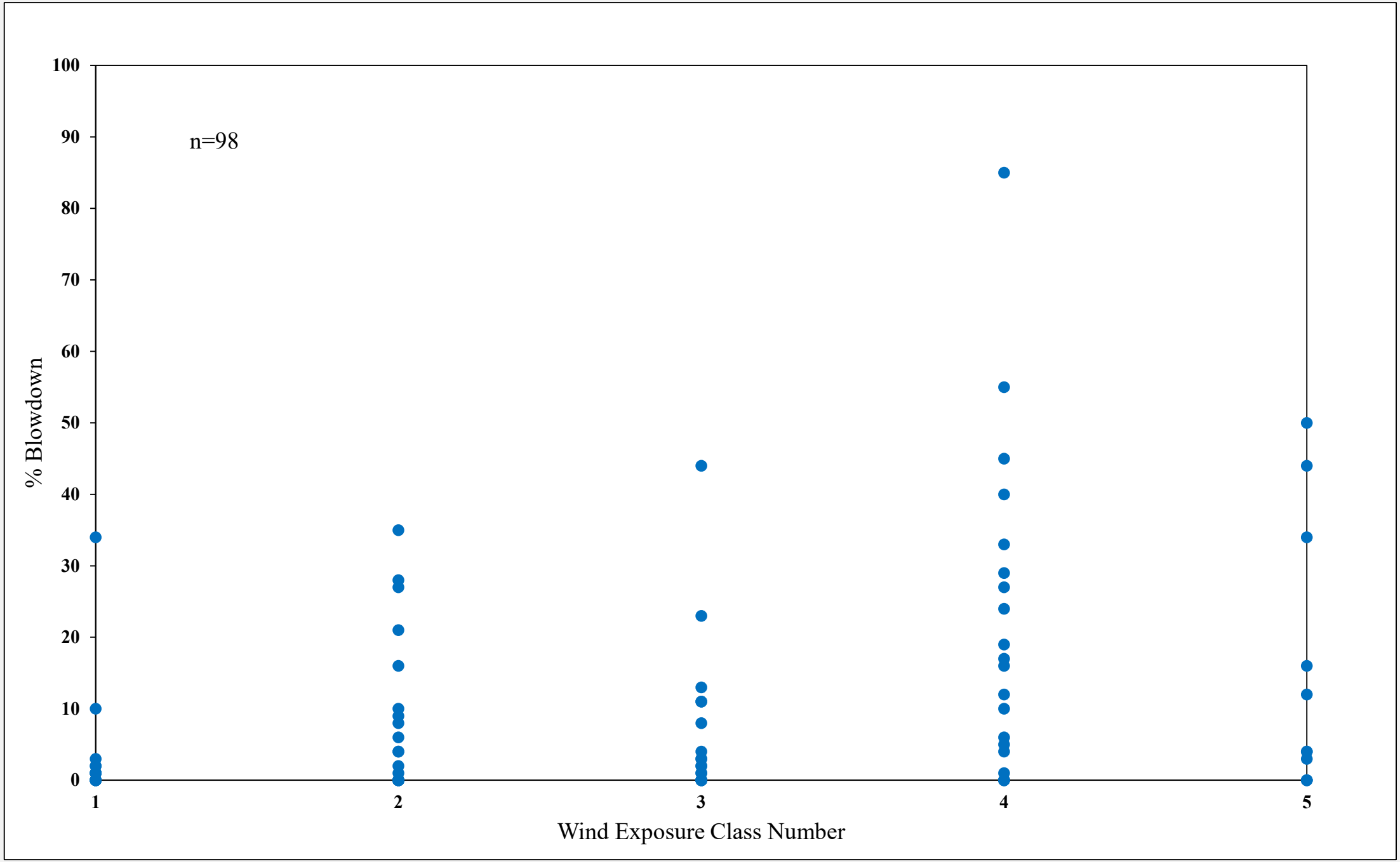
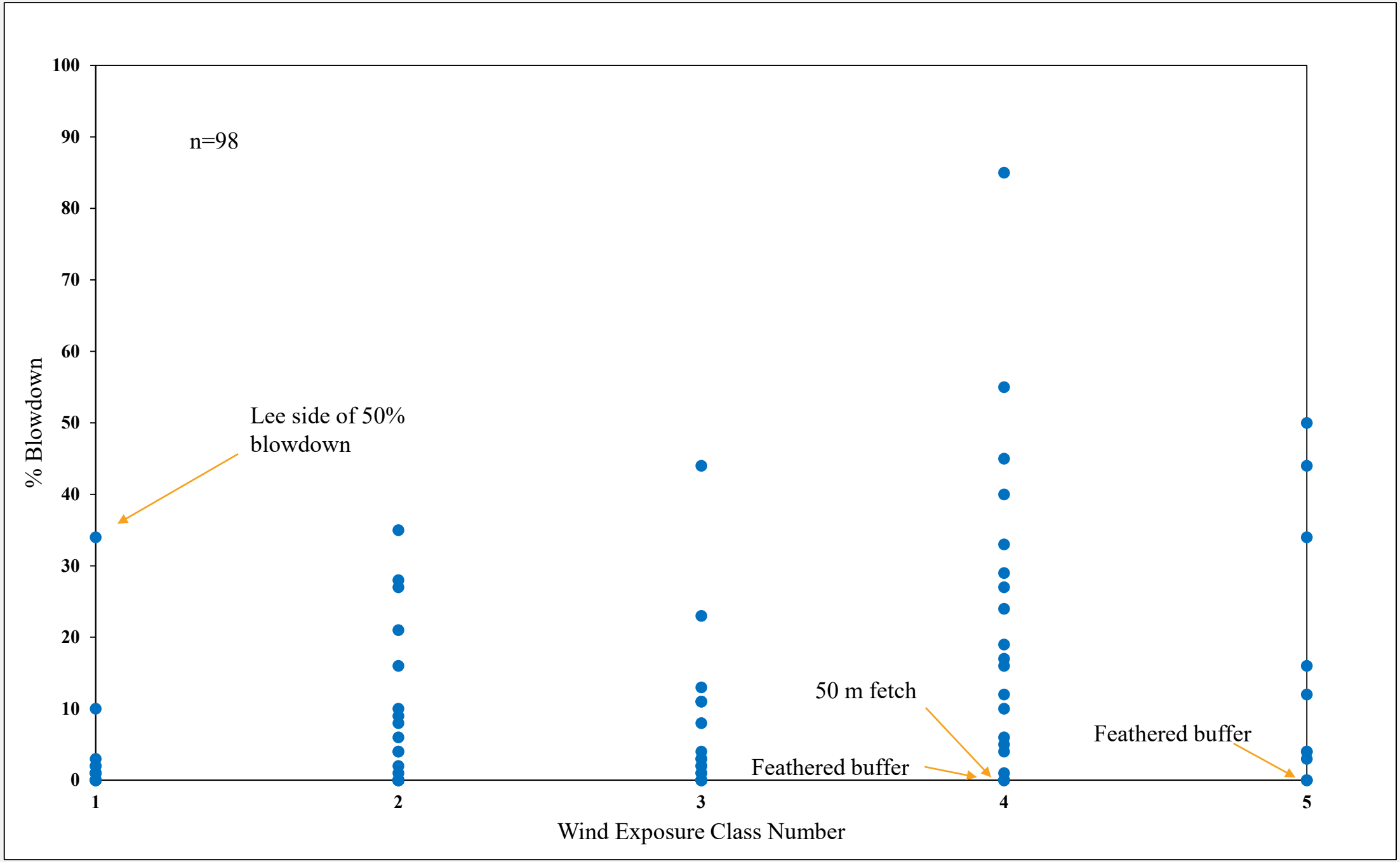
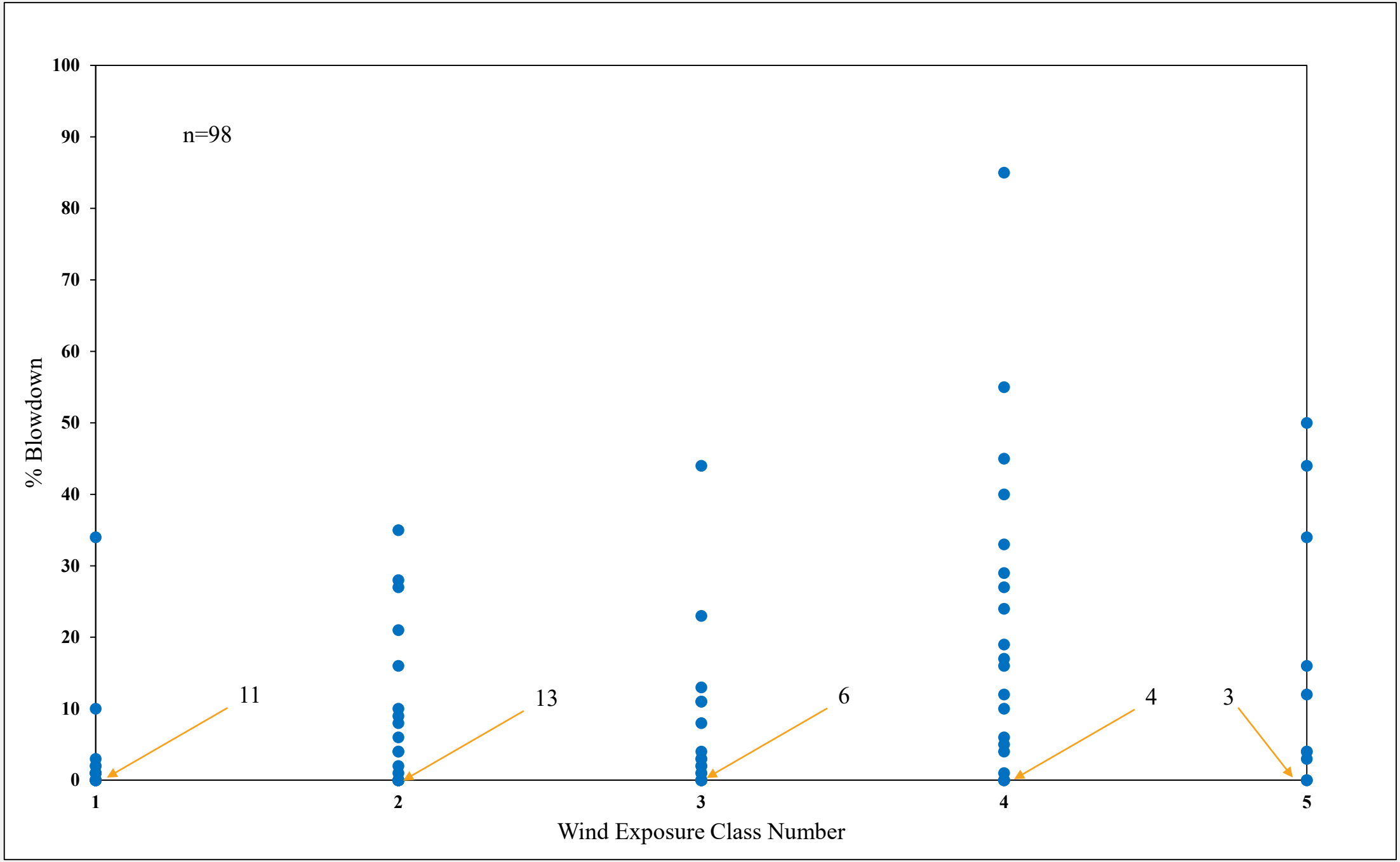
0
PP405D
0
PP405A
0
N
PP406B
16
PP406A
1
PP414A
10
PP414B
2
PP412B
0
PP412A
3
PP413B
0
PP413A
0
Legend
Stream Class I
Stream Class II
Stream Class III
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community


N
LL449A
nd
nd
LL449B
LL417A
0
LU435A
0
34
LL452A
LL452B
50
Legend
Stream Class I
Stream Class II
Stream Class III
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community


n=98
% Blowdown
100
90
80
70
60
50
40
30
20
10
0
1
2
3
4
5
Wind Exposure Class Number


n=98
% Blowdown
100
90
80
70
60
50
40
30
20
10
0
1
2
3
4
5
Wind Exposure Class Number
Lee side of 50% blowdown
50 m fetch
Feathered buffer
Feathered buffer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% Blowdown
100
90
80
70
60
50
40
30
20
10
0
11
13
6
4
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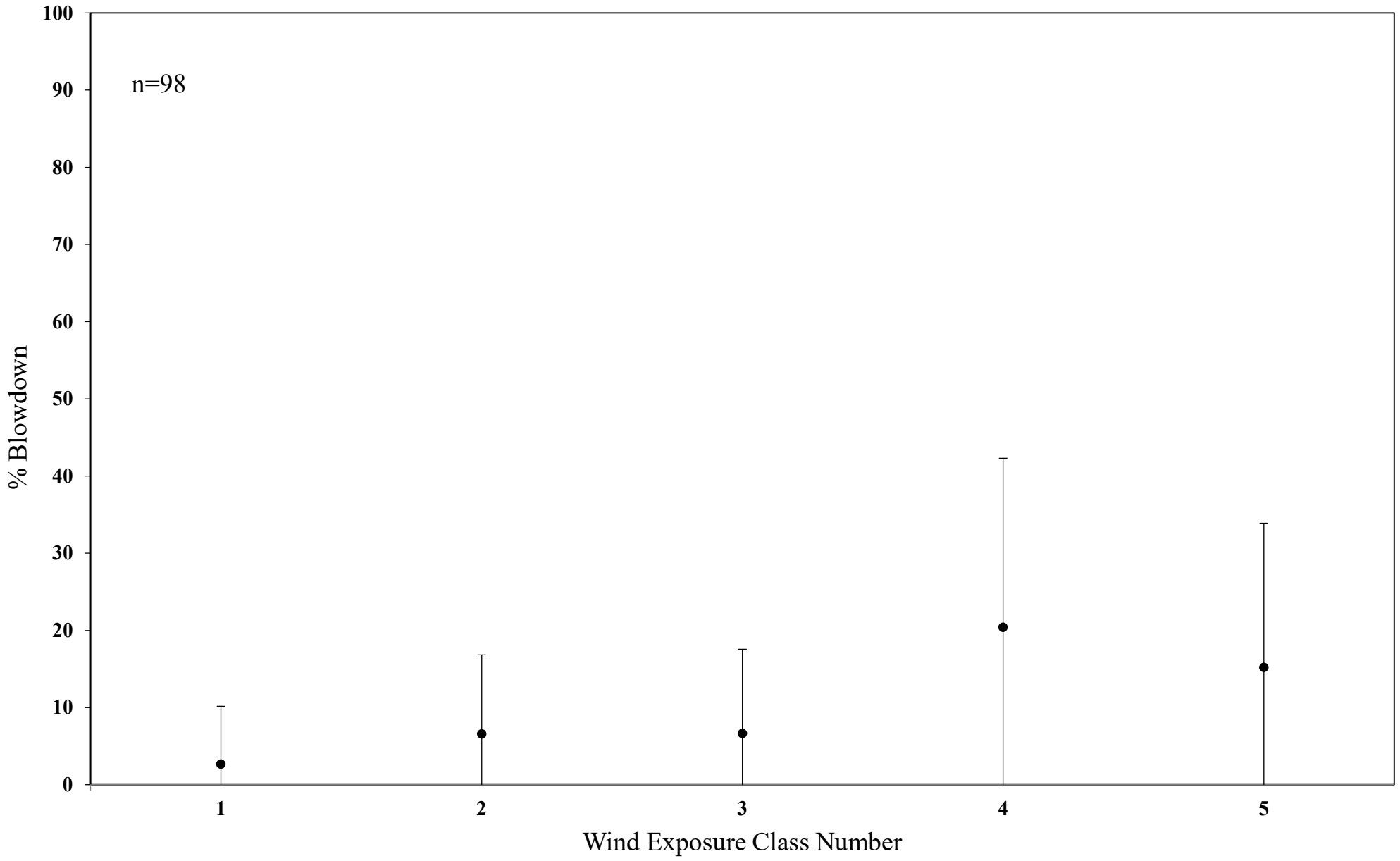
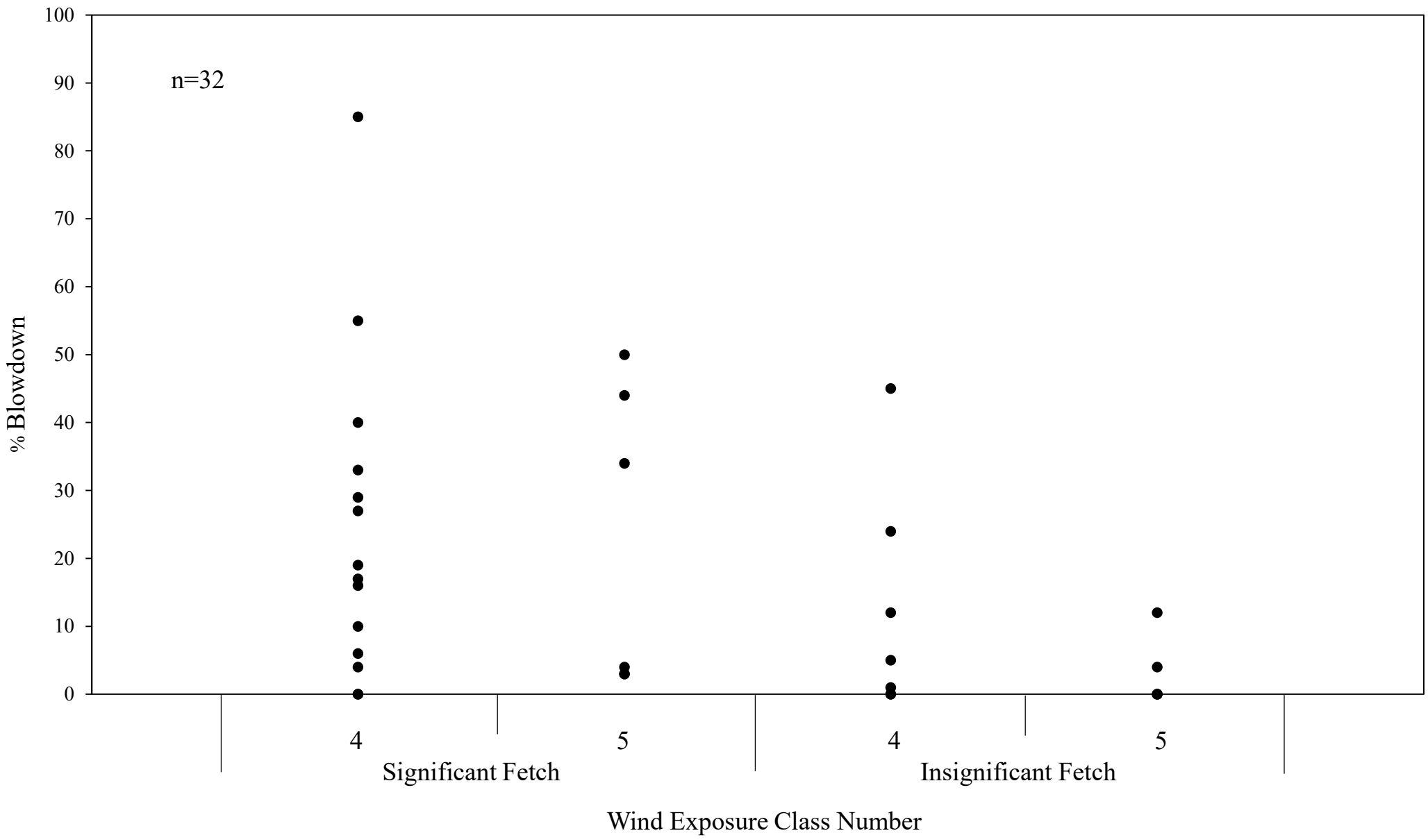
1
2
3
4
5
Wind Exposure Class Number


n=98
% Blowdown
100
90
80
70
60
50
40
30
20
10
0
1
2
3
4
5
Wind Exposure Class Number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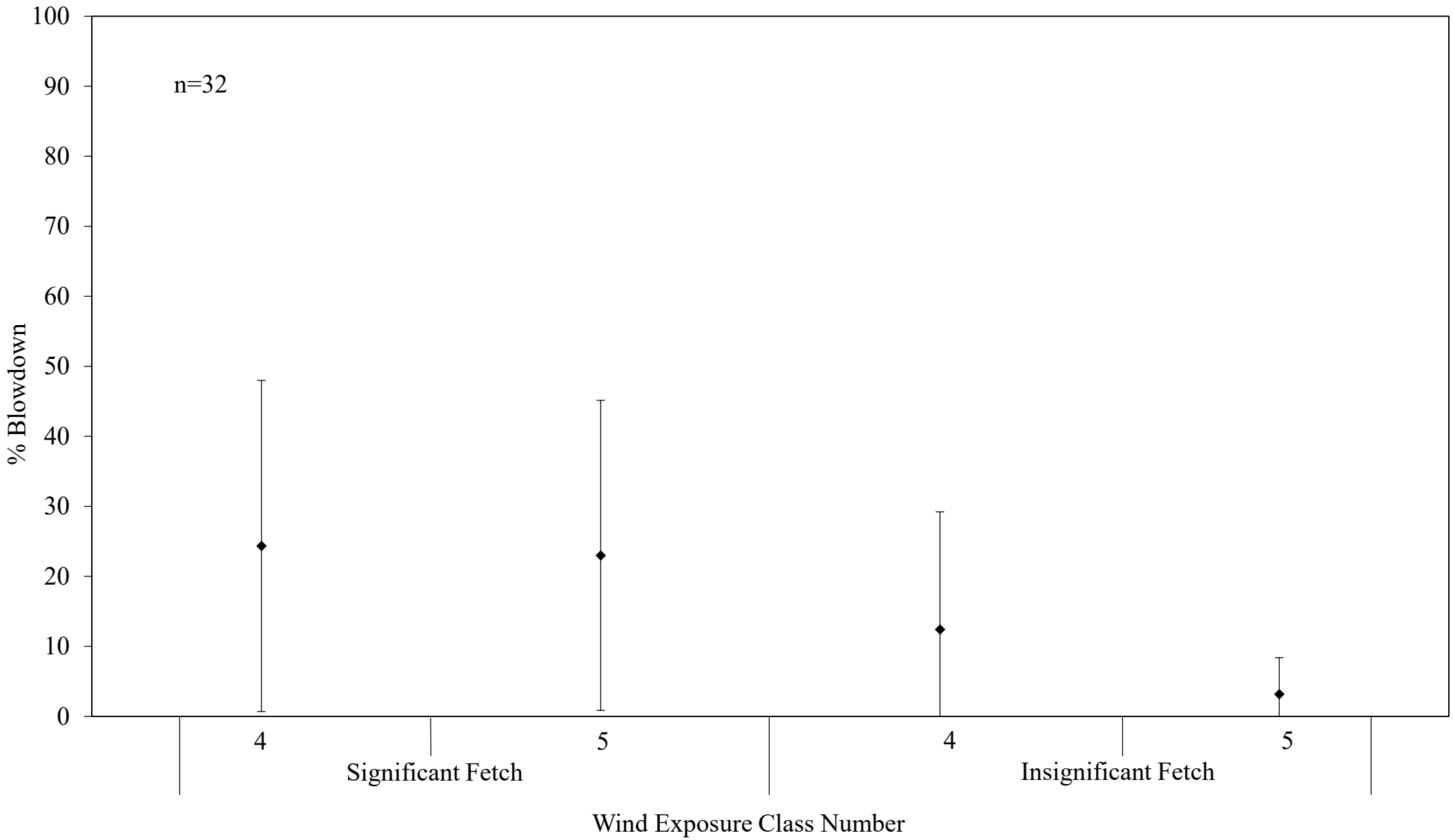
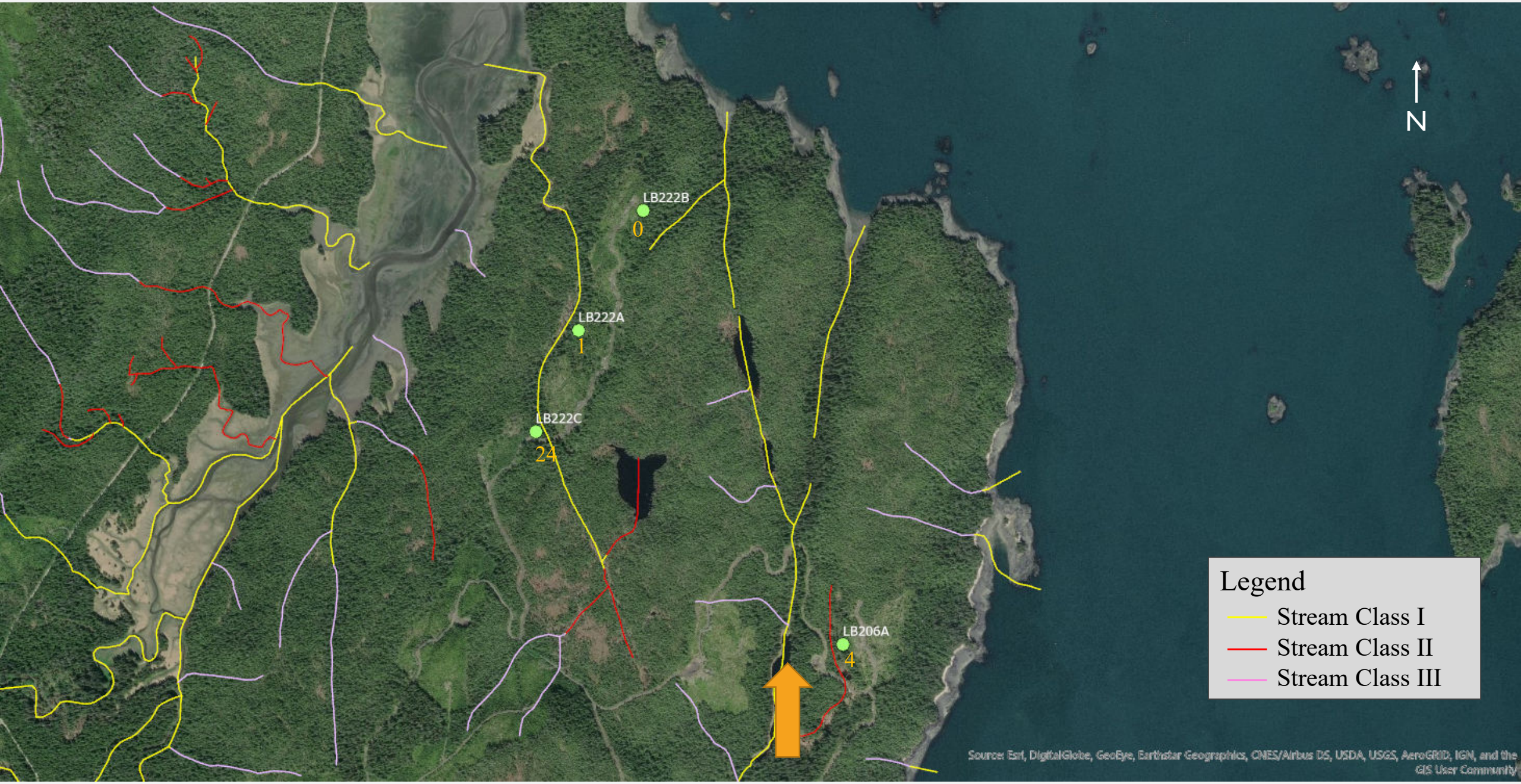
% Blowdown
100
90
80
70
60
50
40
30
20
10
0
4
5
4
5
Significant Fetch
Insignificant Fetch
Wind Exposure Class Number

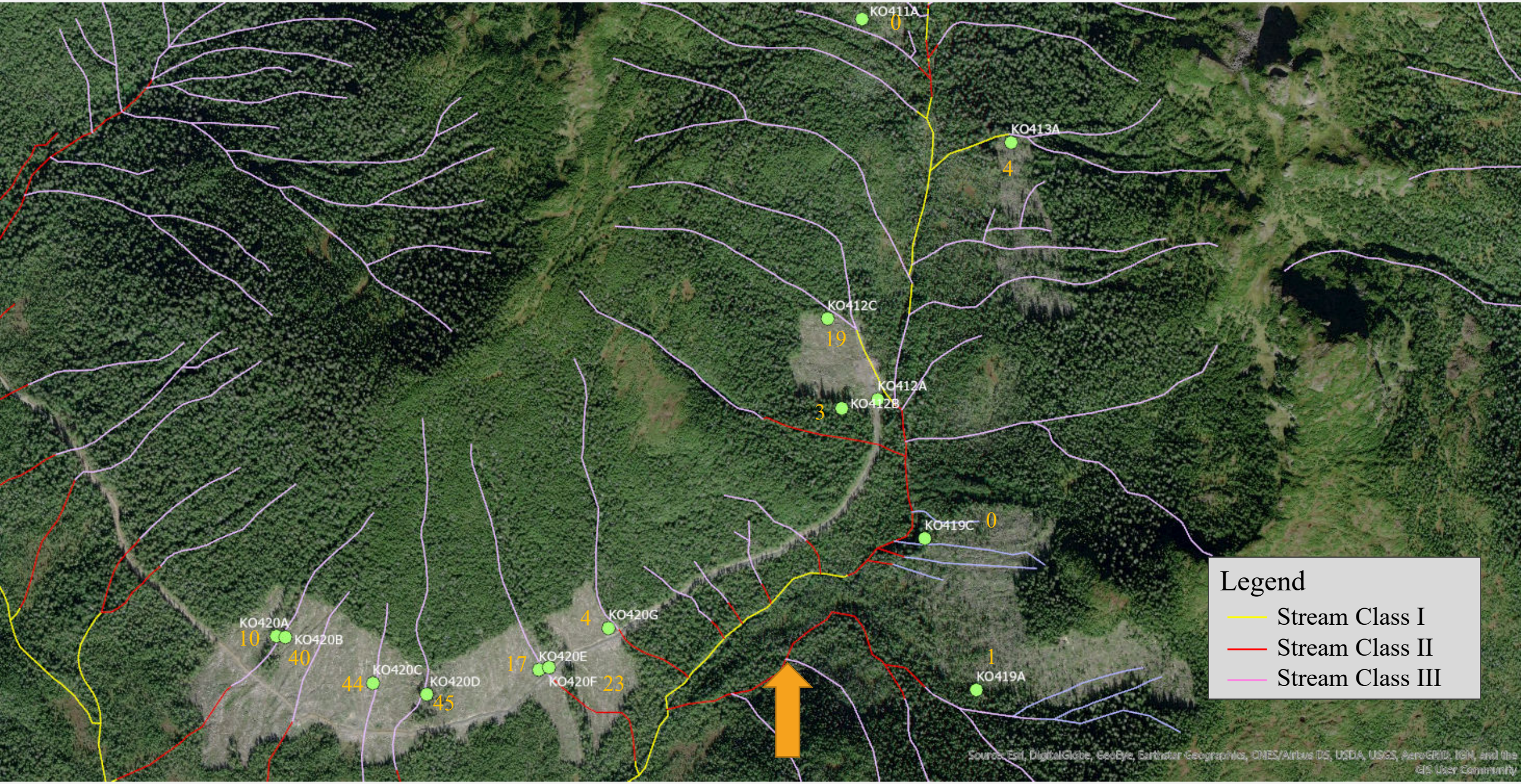

100
90
80
70
60
50
40
30
20
10
0
% Blowdown
n=32
4
5
4
5
Significant Fetch
Insignificant Fetch
Wind Exposure Class Number

POTENTIAL ACTIONS FOR DISCUSSION

- No action
- Use the simple Rollerson WEI with fetch during DPO review
- Fine tune using local conditions and indicators (known wind patterns, past blowdown from field, aerial, and LIDAR observations)
- Agree on workable BMPs for the site to mitigate high and very high risk categories
- Record in monitoring list
- Evaluate in the future

QUESTIONS?


N
LB222B
0
LB222A
1
LB222C
24
LB206A
4
Legend
Stream Class I
Stream Class II
Stream Class III
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community


KO411A
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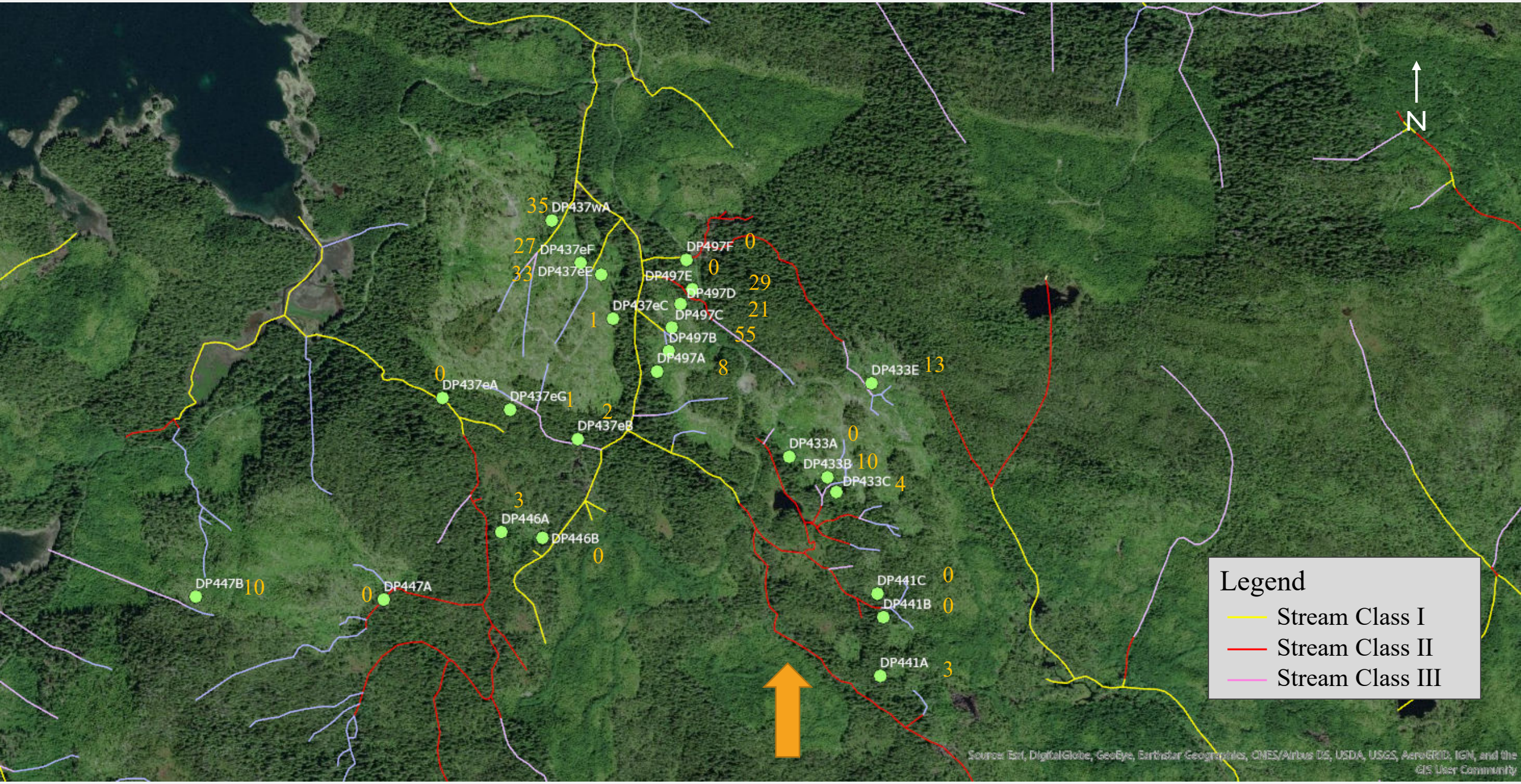
KO413A
4
KO412C
19
KO412A
KO412B
3
KO419C
0
KO420A
10
KO420B
40
KO420C
44
KO420D
45
KO420E
17
KO420F
23
KO420G
4
KO419A
1
Legend
Stream Class I
Stream Class II
Stream Class III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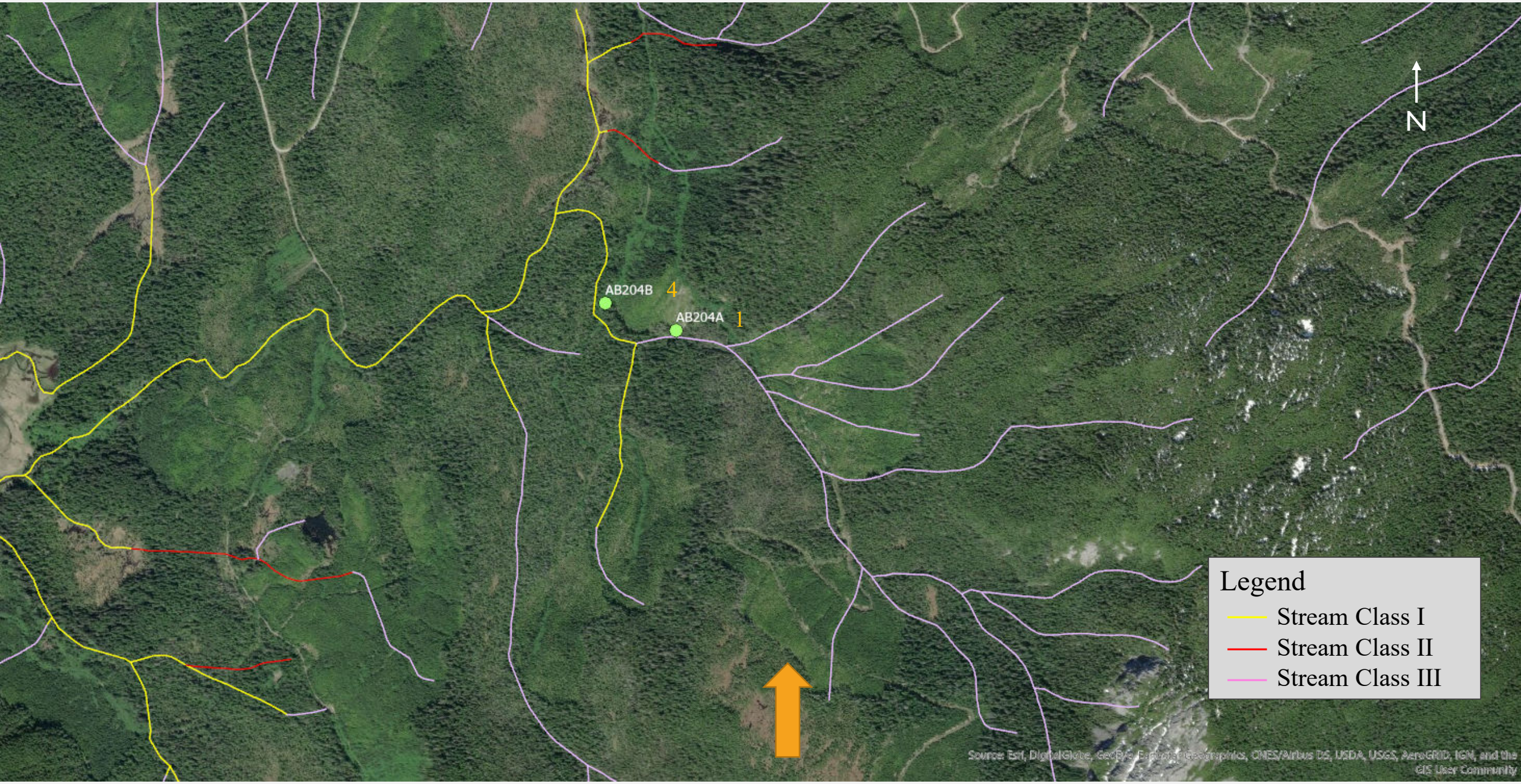
33 DP437eE
DP497F 0
DP497E 0
DP497D 29
DP437eC 1
DP497C 21
DP497B 55
DP497A 8
DP433E 13
0 DP437eA
DP437eG 1
2 DP437eB
DP433A 0
DP433B 10
DP433C 4
3 DP446A
DP446B 0
DP447B 10
0 DP447A
DP441C 0
DP441B 0
DP441A 3
Legend
Stream Class I
Stream Class II
Stream Class III
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community


AB204B
4
AB204A
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N
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Stream Class I
Stream Class II
Stream Class III
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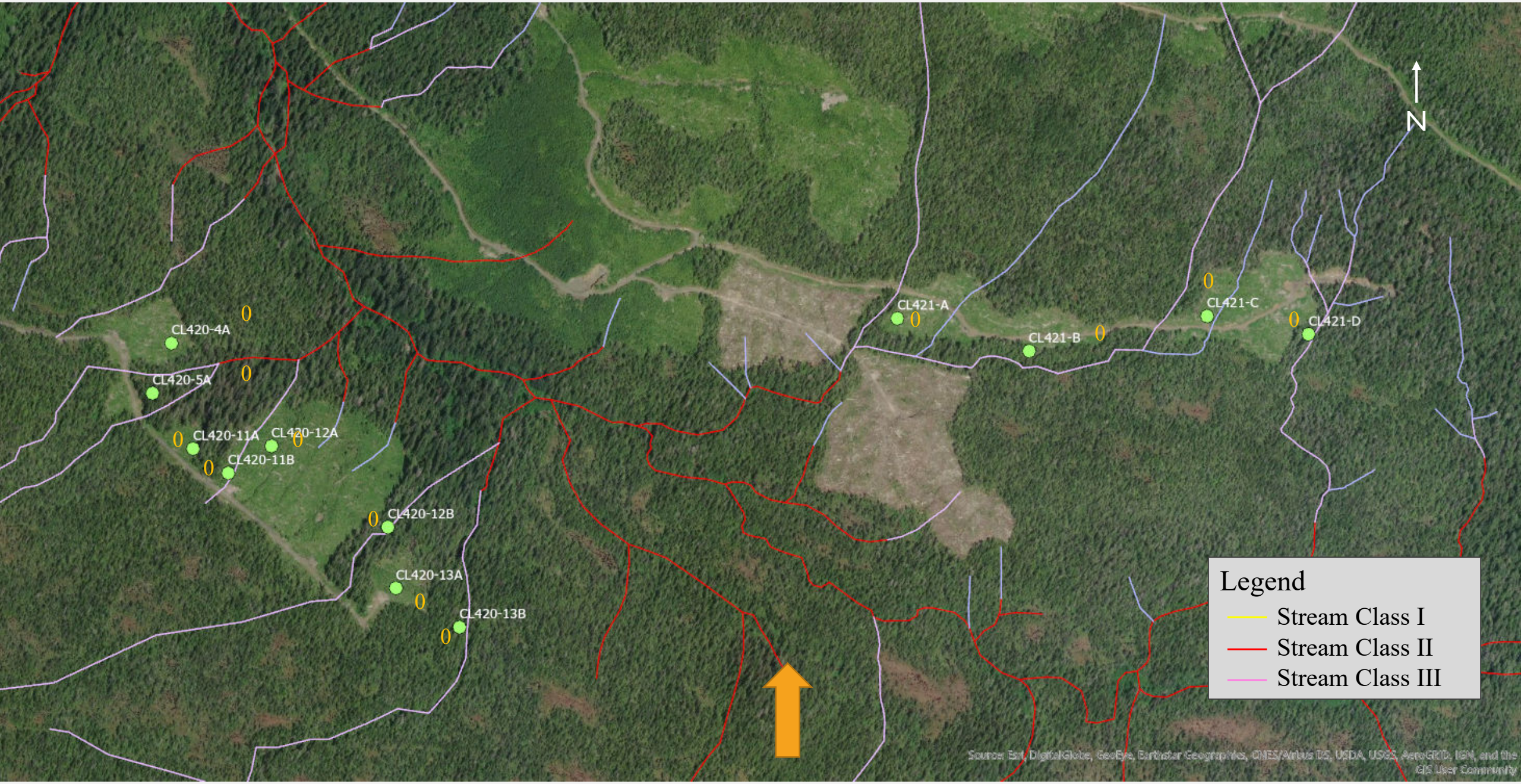
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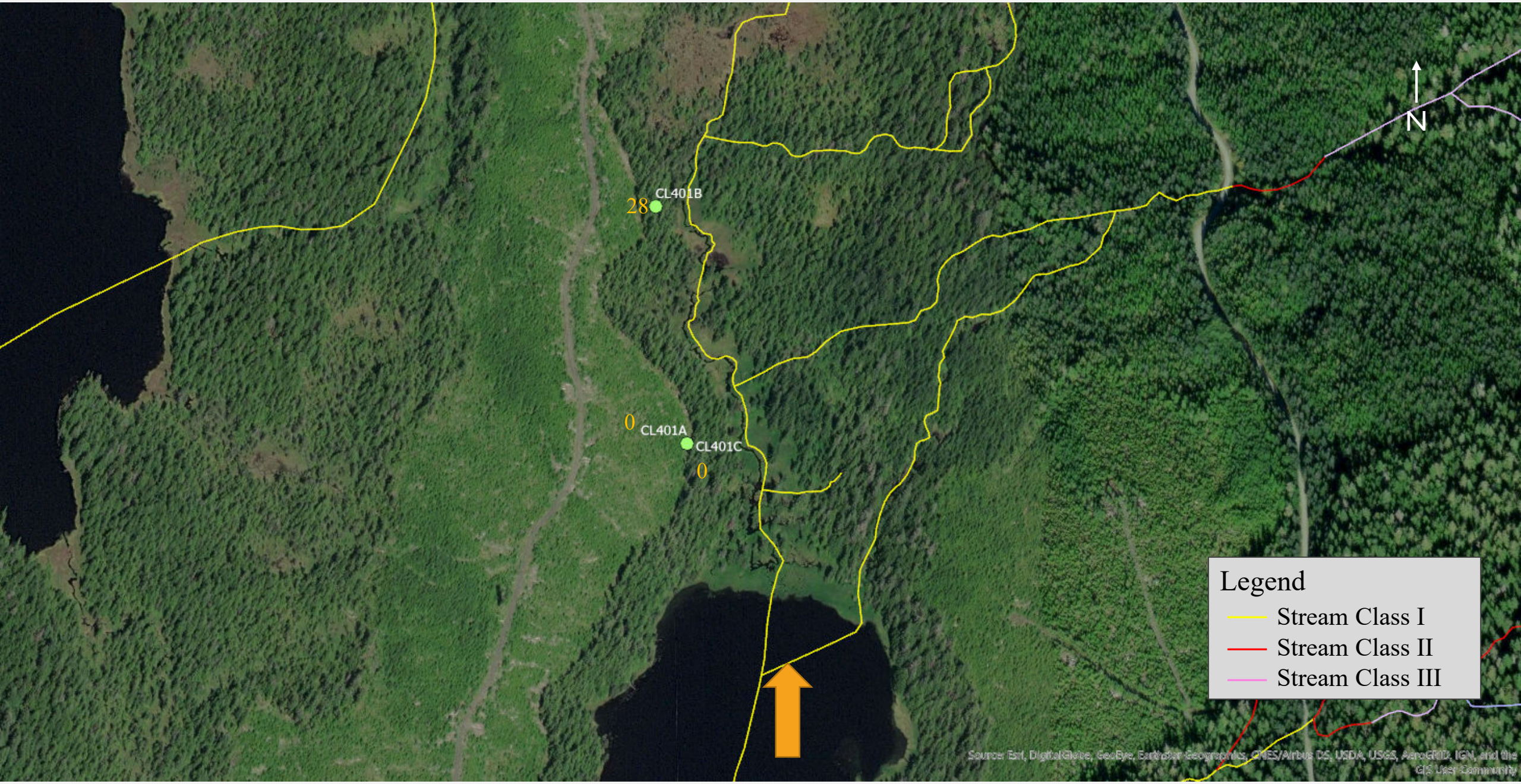
CL420-5A
CL420-11A
CL420-12A
CL420-11B
CL420-12B
CL420-13A
CL420-13B
CL421-A
CL421-B
CL421-C
CL421-D
Legend
Stream Class I
Stream Class II
Stream Class III
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community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CL401B
28
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CL401A
CL401C
0
Legend
Stream Class I
Stream Class II
Stream Class III

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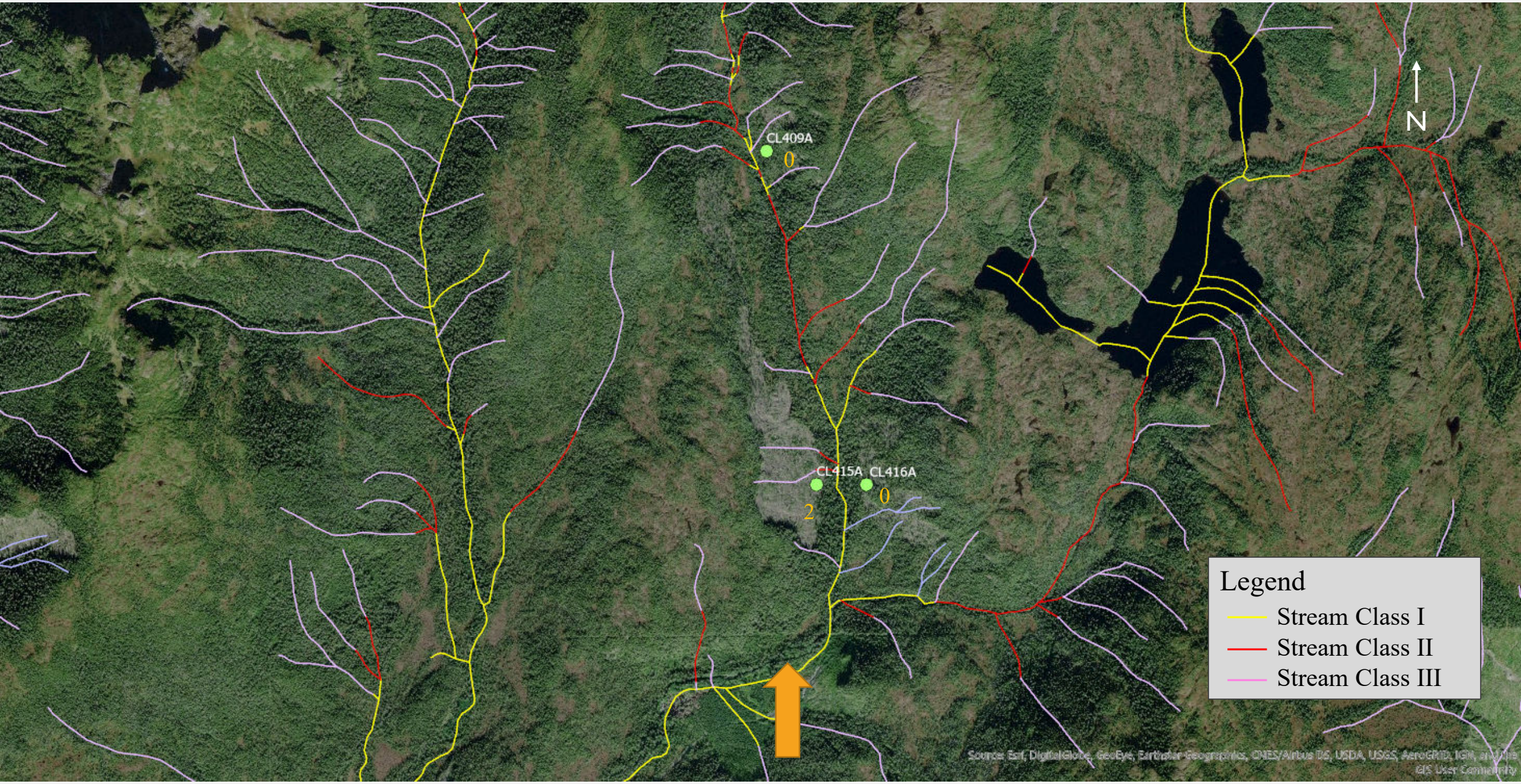
CL404aB
0
CL404bA
0
N
Legend
Stream Class I
Stream Class II
Stream Class III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CL415A
CL416A
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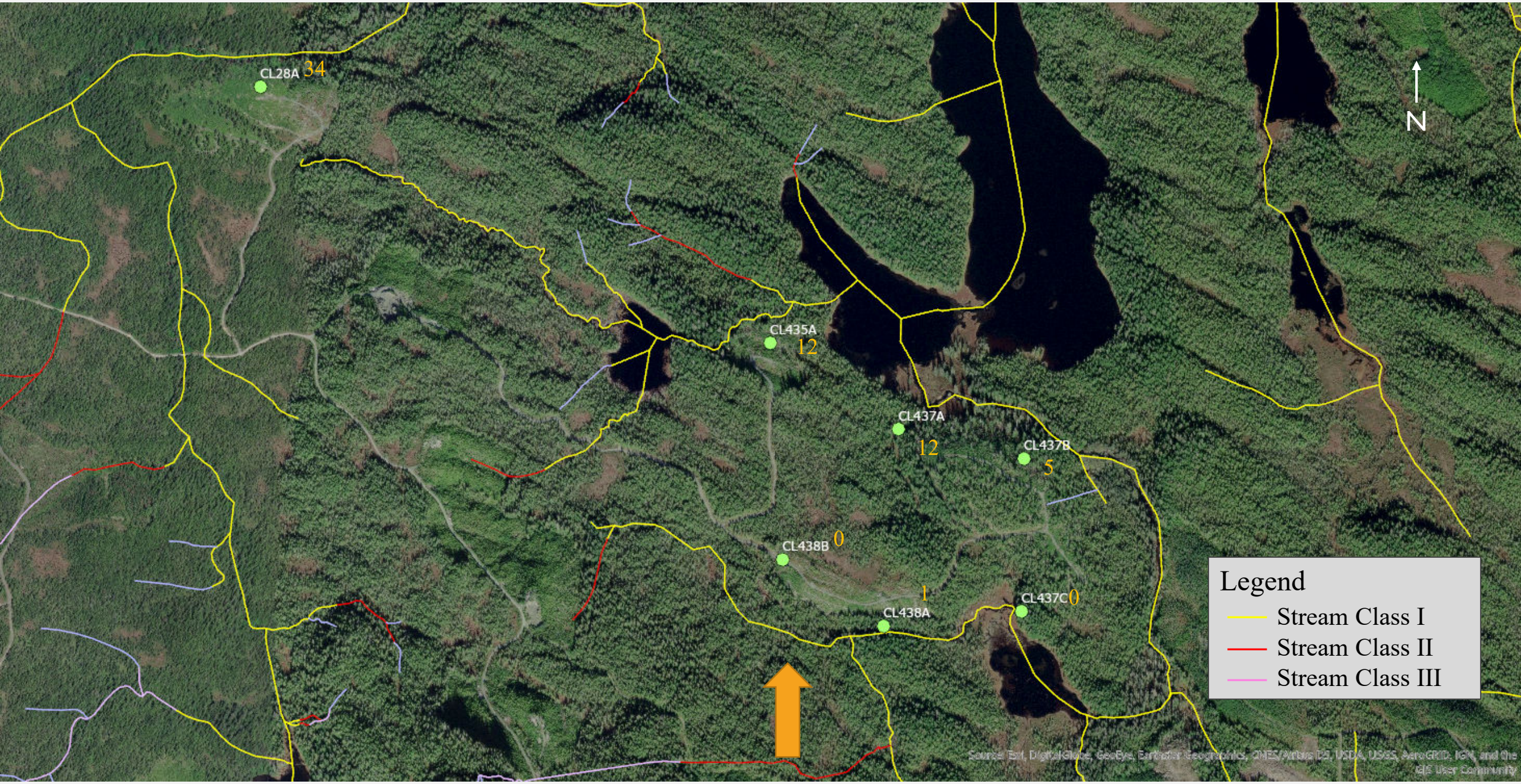
Stream Class I
Stream Class II
Stream Class III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CL435A
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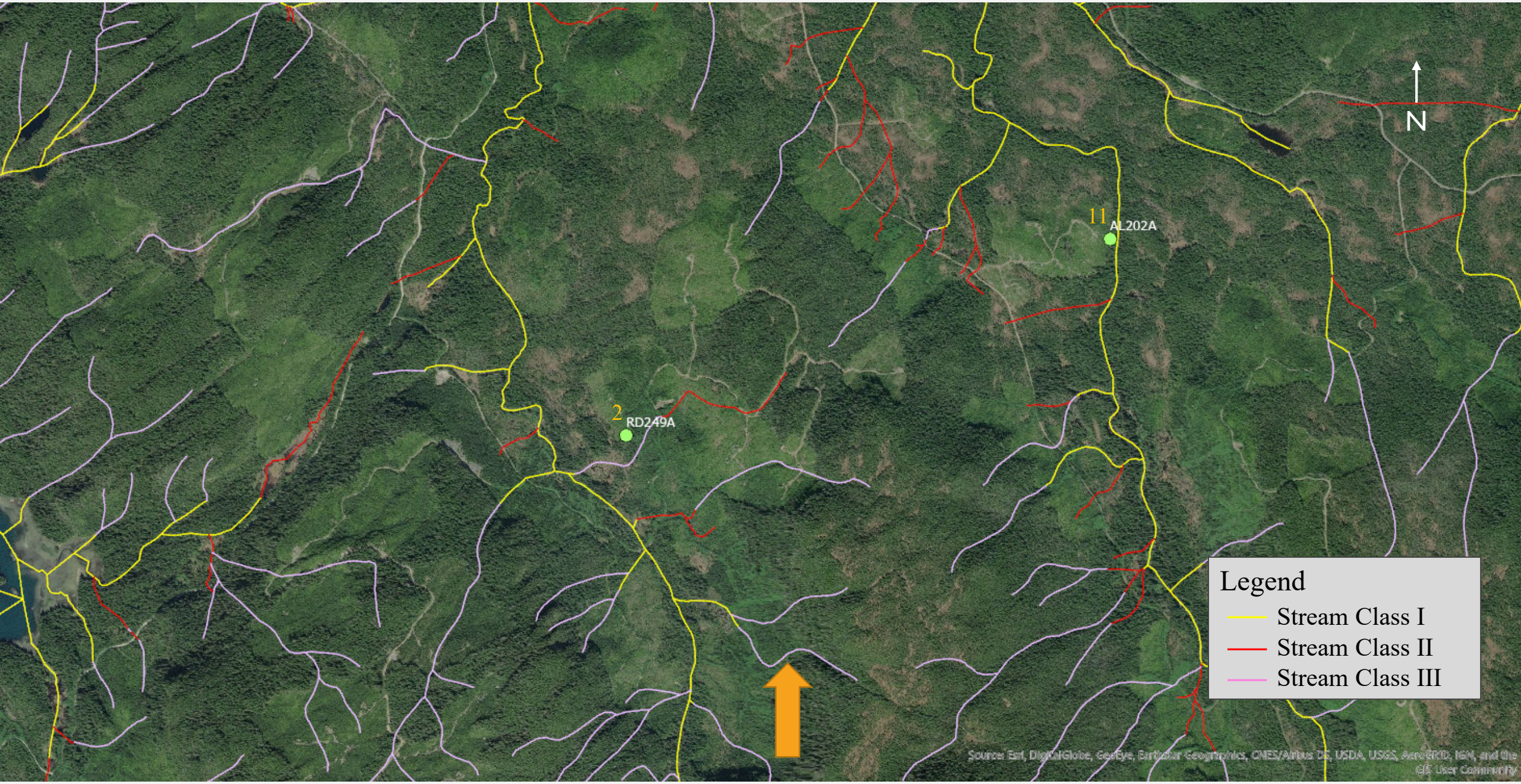
CL437A
12
CL437B
5
CL438B 0
1
CL438A
CL437C 0
N
Legend
Stream Class I
Stream Class II
Stream Class III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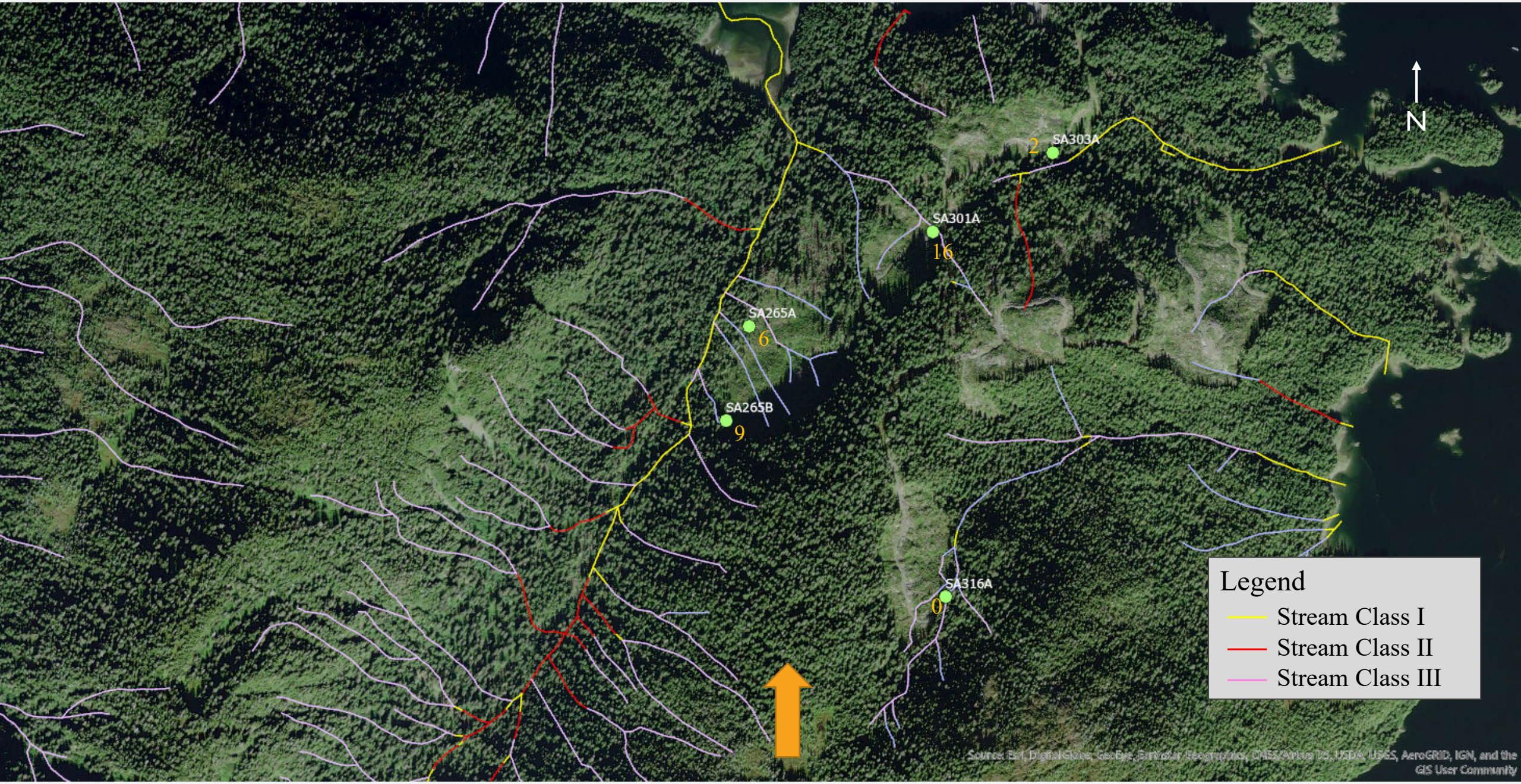
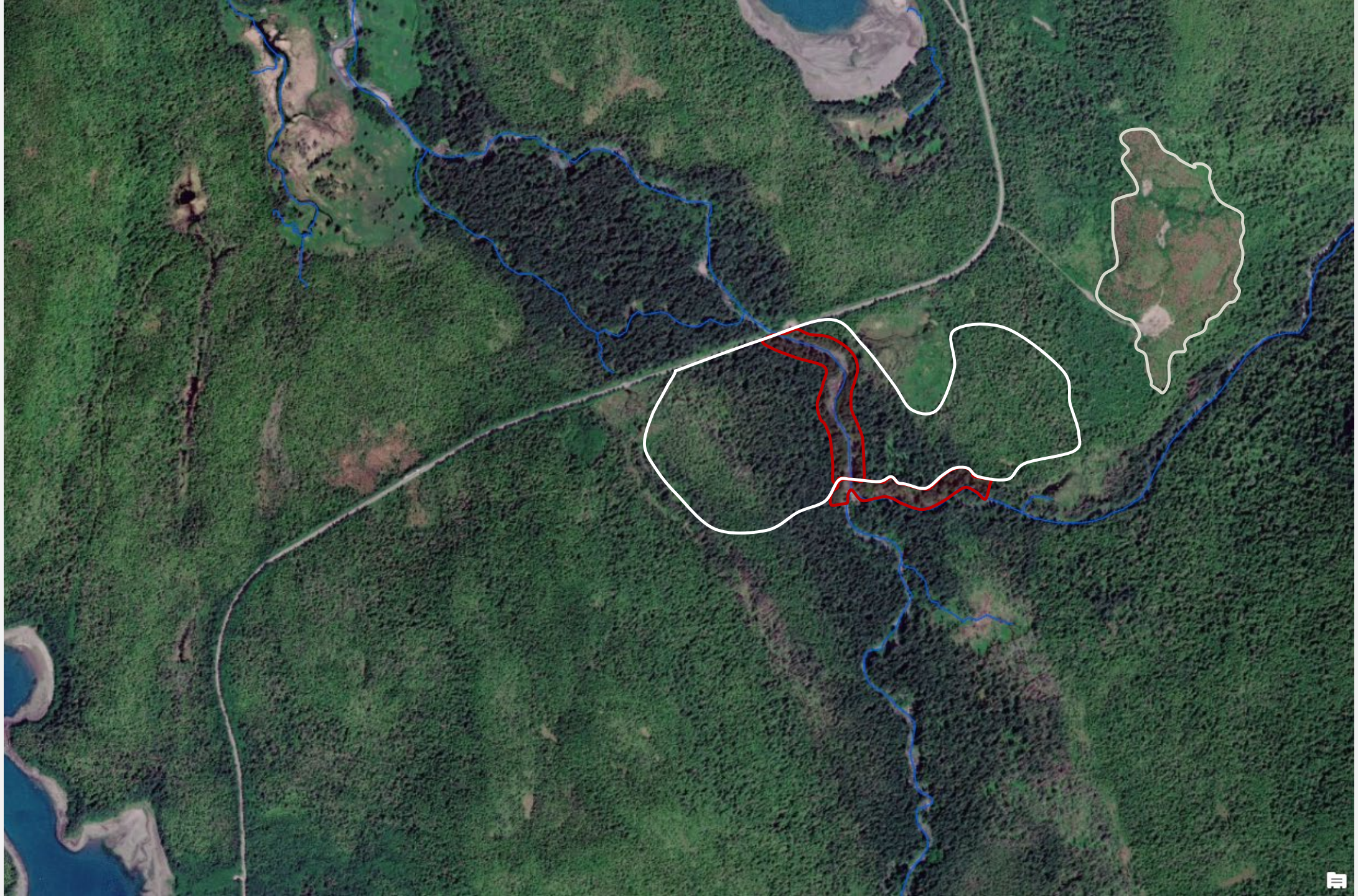
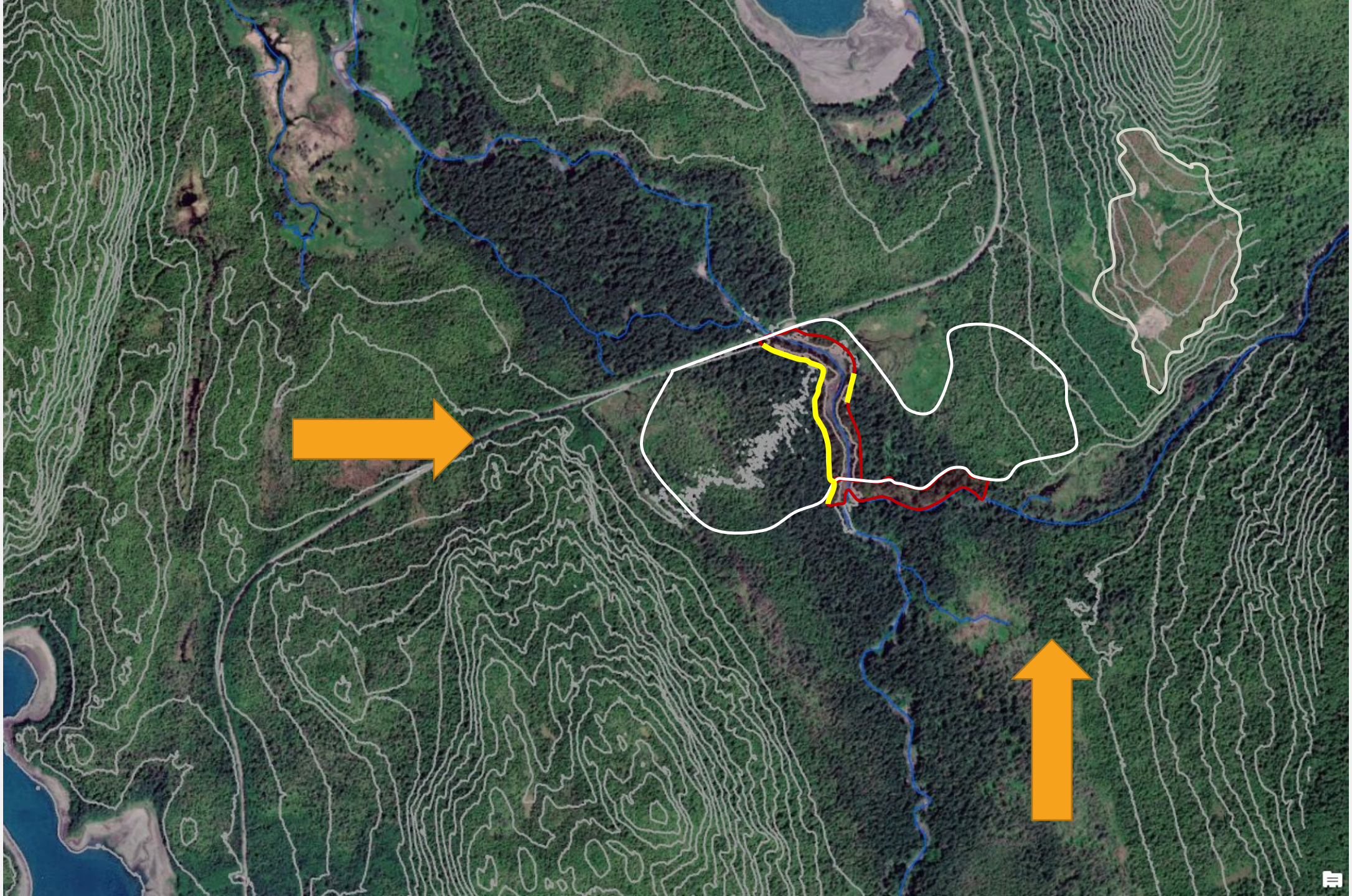
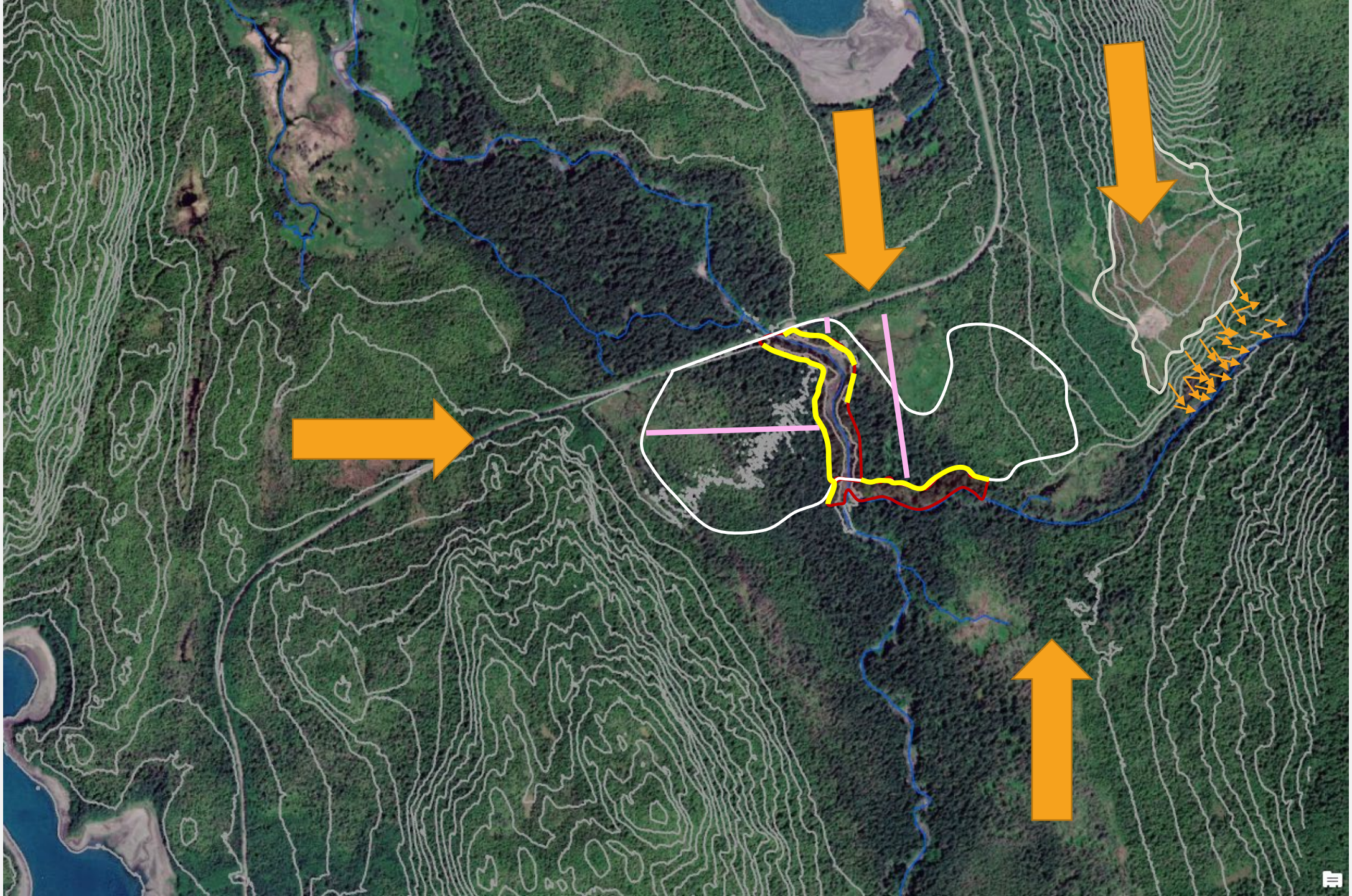
Stream Class II
Stream Class III


N
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SA301A
16
SA265A
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SA265B
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SA316A
0
Legend
Stream Class I
Stream Class II
Stream Class III
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community