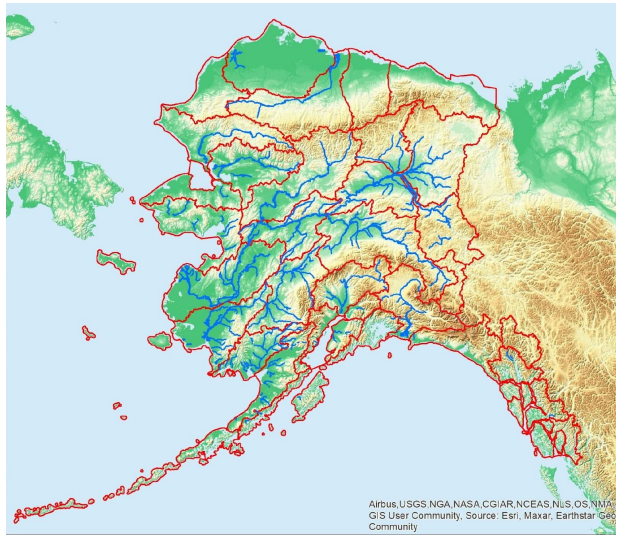
Alaska Water Use
Alaska Water Use Data System (AKWUDS)

Kevin Petrone, Adam Daniels,
Terry Schwarz, Jake Coate

Alaska Hydrologic Survey,
Water Management Section
Alaska Department of Natural Resources



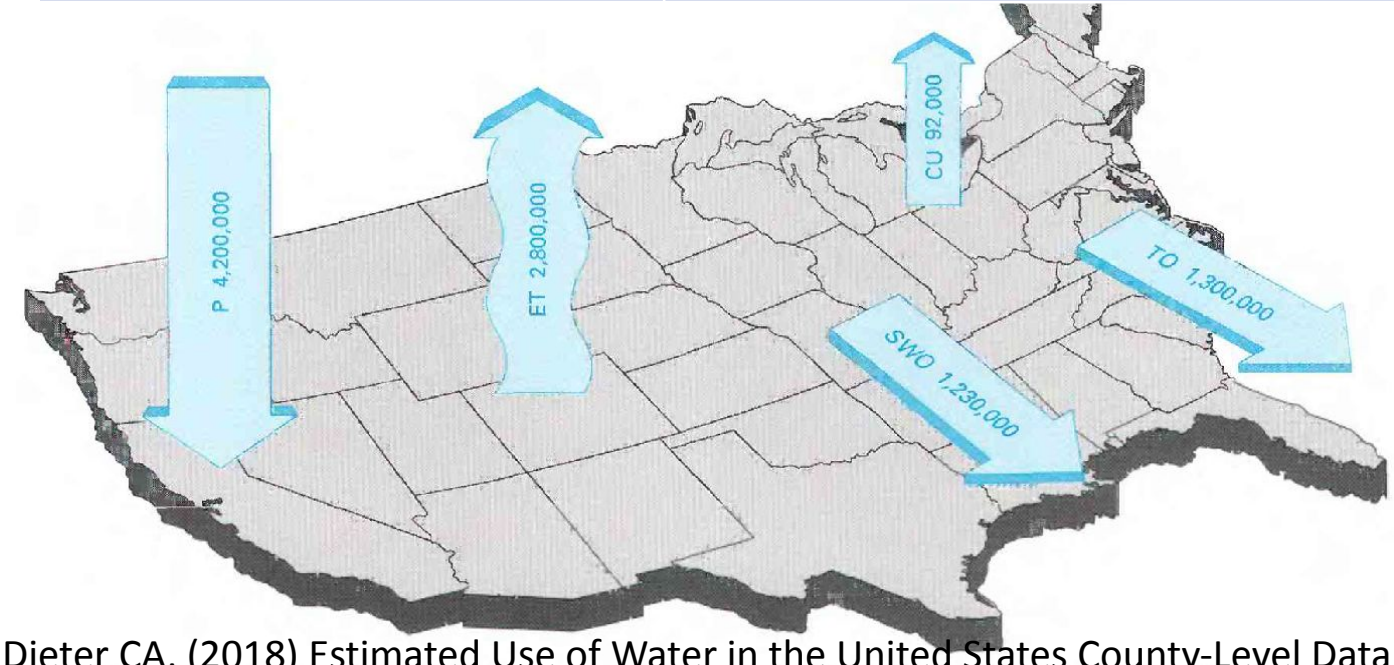
WSWC National Water Use Data Workshop
August 17 2022

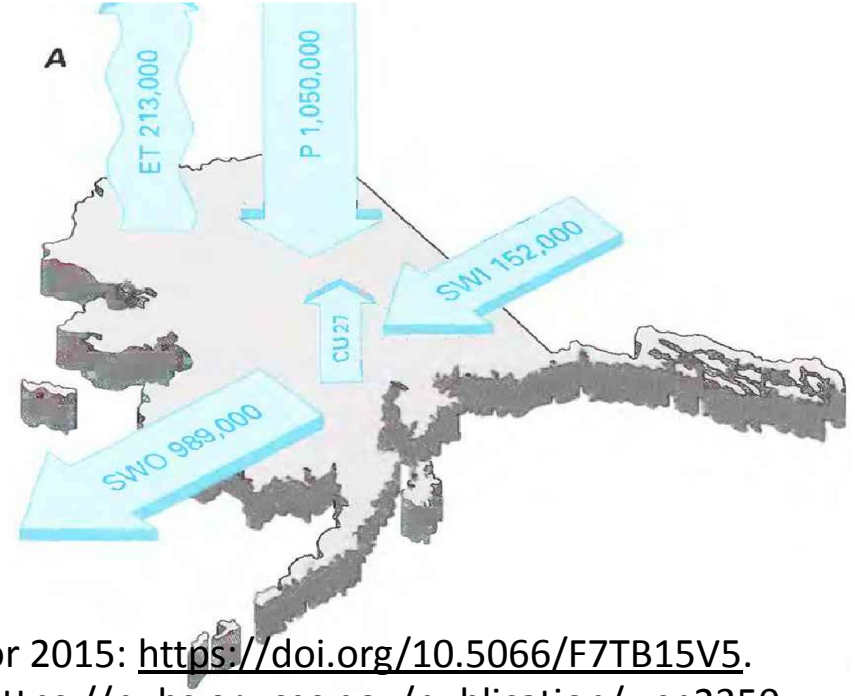




Water Budget Comparison in Million Gallons per Day (MGD)

	Lower 48 States	Alaska
Area (square miles)	3,119,884	586,412
Precipitation (MGD)	4,200,000	1,050,000
Evapotranspiration (MGD)	2,800,000	213,000
Surface Water Runoff (MGD)	1,230,000	989,000
Total Fresh Water Use (MGD)	279,684*	633*



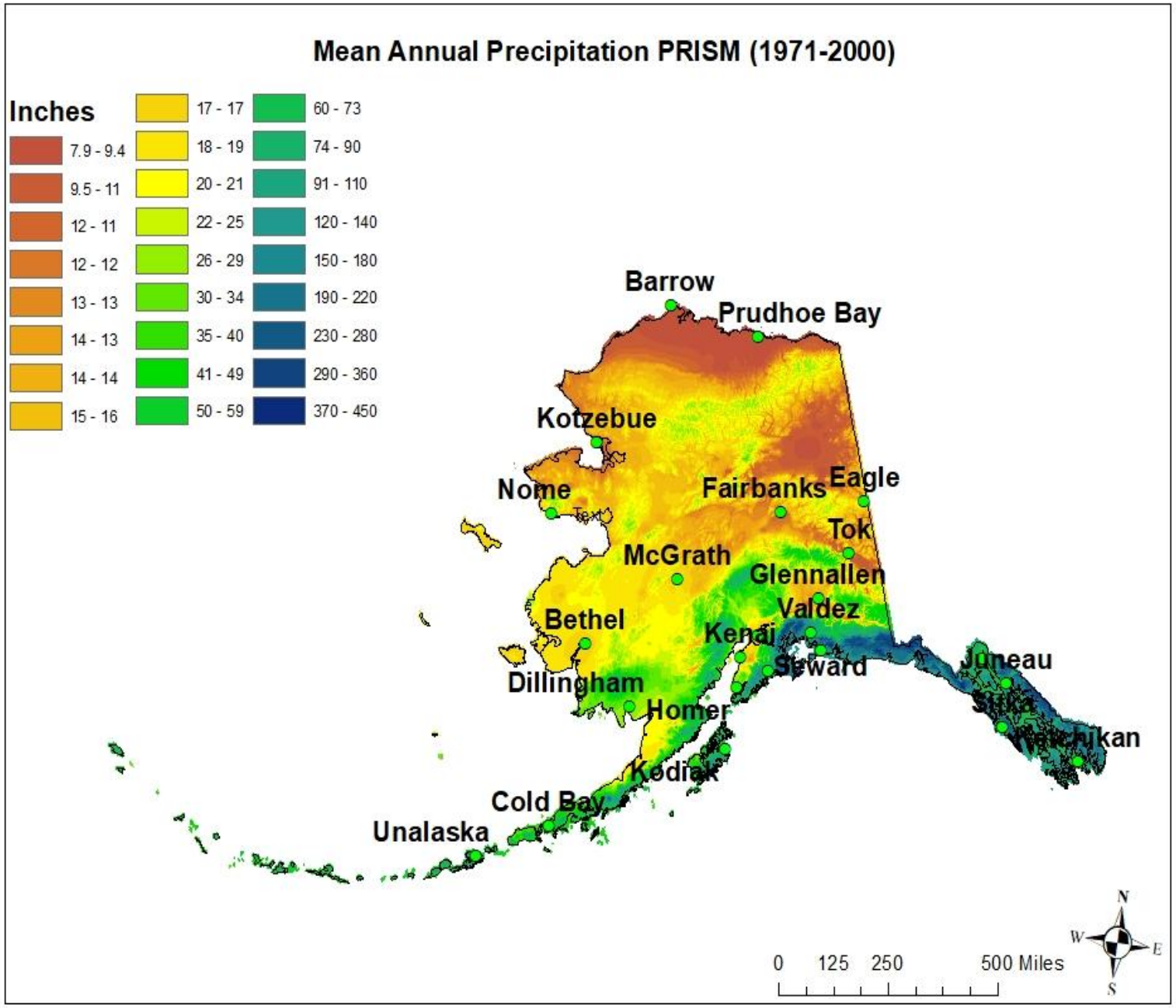


*Dieter CA, (2018) Estimated Use of Water in the United States County-Level Data for 2015: https://doi.org/10.5066/F7TB15V5.
Patrick LD (1990) Alaska Water Supply and Use. In National Water Summary 1987 https://pubs.er.usgs.gov/publication/wsp2350

Alaska Climate

Broad Range in Precipitation

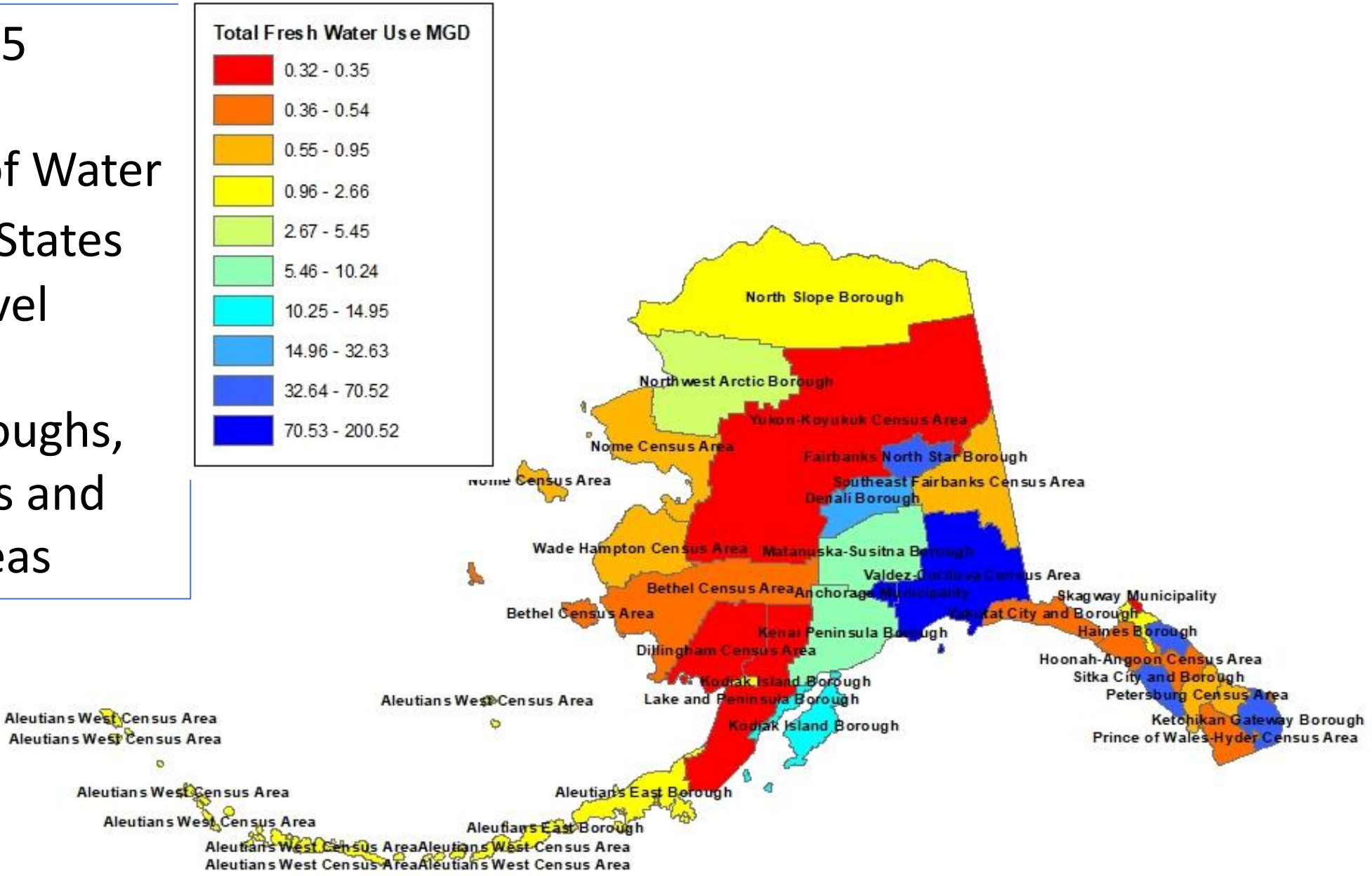
- Greatest precipitation in Southeast and Southcentral Coast
- Lower precipitation in interior Alaska
- Lowest precipitation in Arctic Alaska



USGS 2015

Estimated Use of Water in the United States County-Level

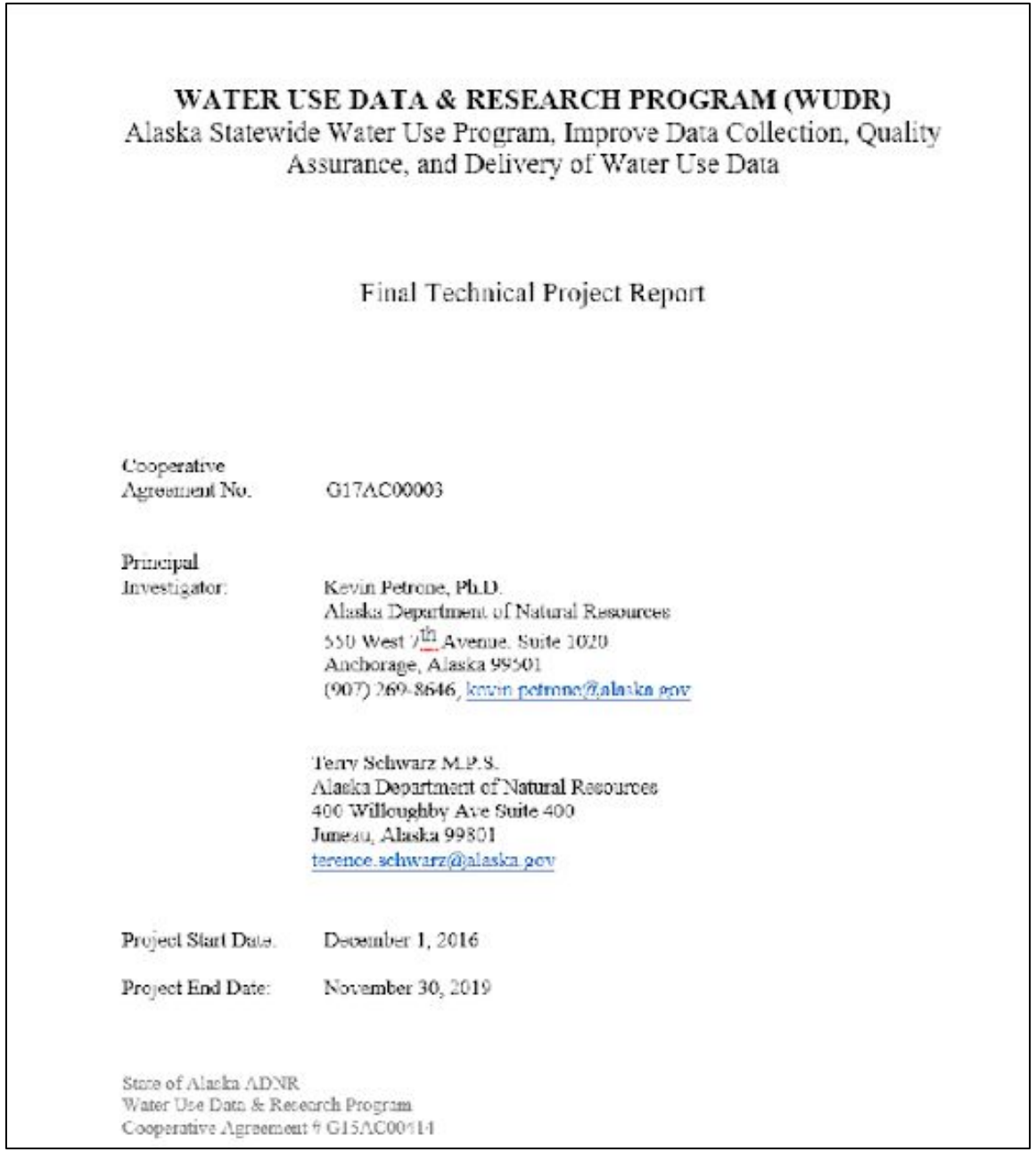
29 Alaska Boroughs, Municipalities and Census Areas



*Dieter CA, (2018) Estimated Use of Water in the United States County-Level Data for 2015: https://doi.org/10.5066/F7TB15V5

Alaska USGS WUDR Grant
Water Use for 2011-2015 period

Category	Agency	Water Use Reporting Interval	Water Use Reporting Frequency
Public supply	ADNR	month	monthly/quarterly
Industrial	ADNR	month/quart/ annual	monthly/quarterly/annual
Mining	ADNR	month/quart/ annual	monthly/quarterly/annual
Commercial	ADNR	variable	monthly/quarterly/annual
Self-supplied domestic	ADNR	exempt in practice	exempt
Hydroelectric power	ADNR	monthly	annually
Aquaculture	ADNR	variable	variable
Irrigation-crop	ADNR	variable	variable
Livestock	ADNR	variable	variable
Thermoelectric	ADNR	variable	variable
Irrigation-golf courses	ADNR	variable	variable
Wastewater	ADEC	variable	variable by permit



WATER USE DATA & RESEARCH PROGRAM (WUDR)
Alaska Statewide Water Use Program, Improve Data Collection, Quality Assurance, and Delivery of Water Use Data

Final Technical Project Report

Cooperative Agreement No. G17AC00003

Principal Investigator:
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Project Start Date: December 1, 2016

Project End Date: November 30, 2019

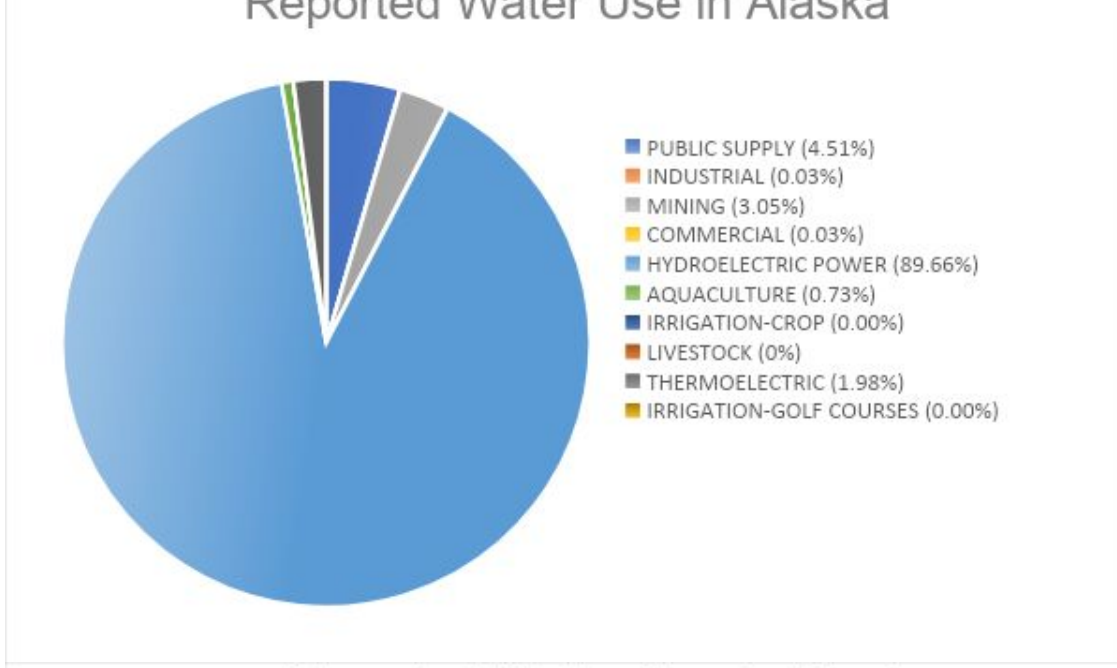
State of Alaska ADNR
Water Use Data & Research Program
Cooperative Agreement # G15AC00114

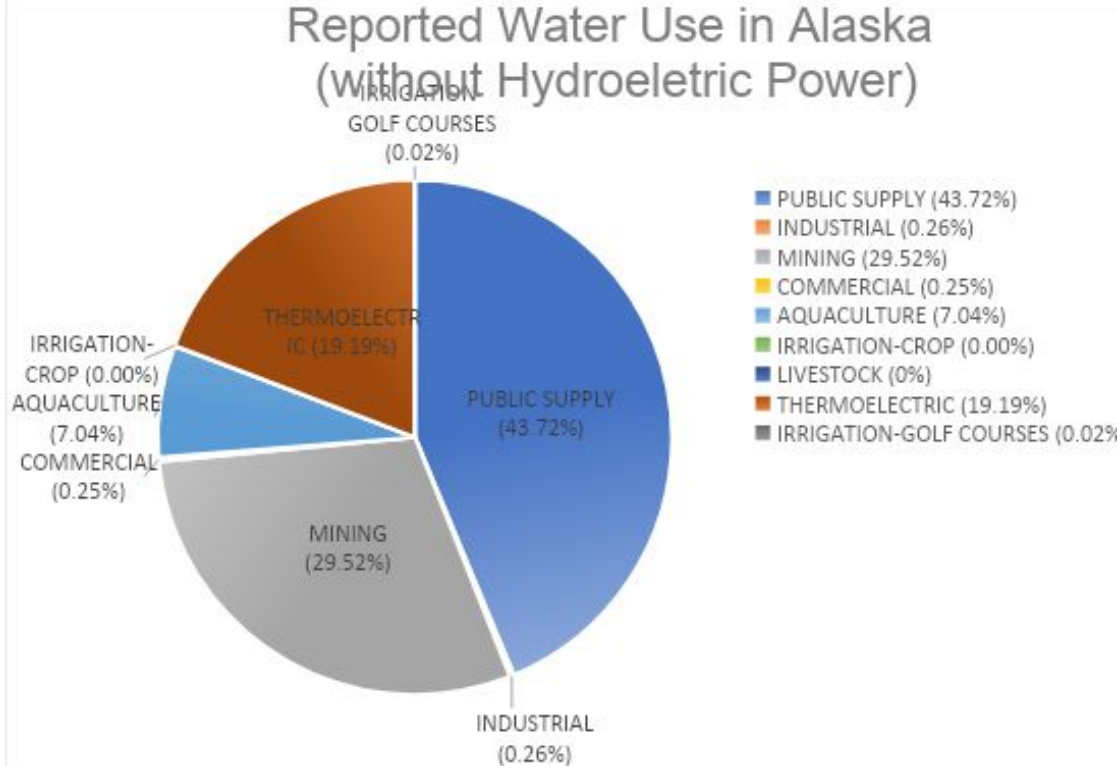
Alaska Water Use 2011-2015

Million Gallons Per Day (MGD)	USGS Category
989.1	HYDROELECTRIC

Million Gallons Per Day (MGD)	USGS Category
49.8	PUBLIC SUPPLY (43.72%)
33.7	MINING (29.52%)
21.9	THERMOELECTRIC (19.19%)
8.0	AQUACULTURE (7.04%)
0.3	INDUSTRIAL (0.26%)
0.3	COMMERCIAL (0.25%)
0.0	IRRIGATION-GOLF COURSES (0.02%)
0.0	IRRIGATION-CROP (0.00%)
0.0	LIVESTOCK (0%)
114	TOTAL REPORTED WATER USE
777*	TOTAL USGS ESTIMATED WATER USE

*Dieter CA, (2018) USGS https://doi.org/10.5066/F7TB15V5.

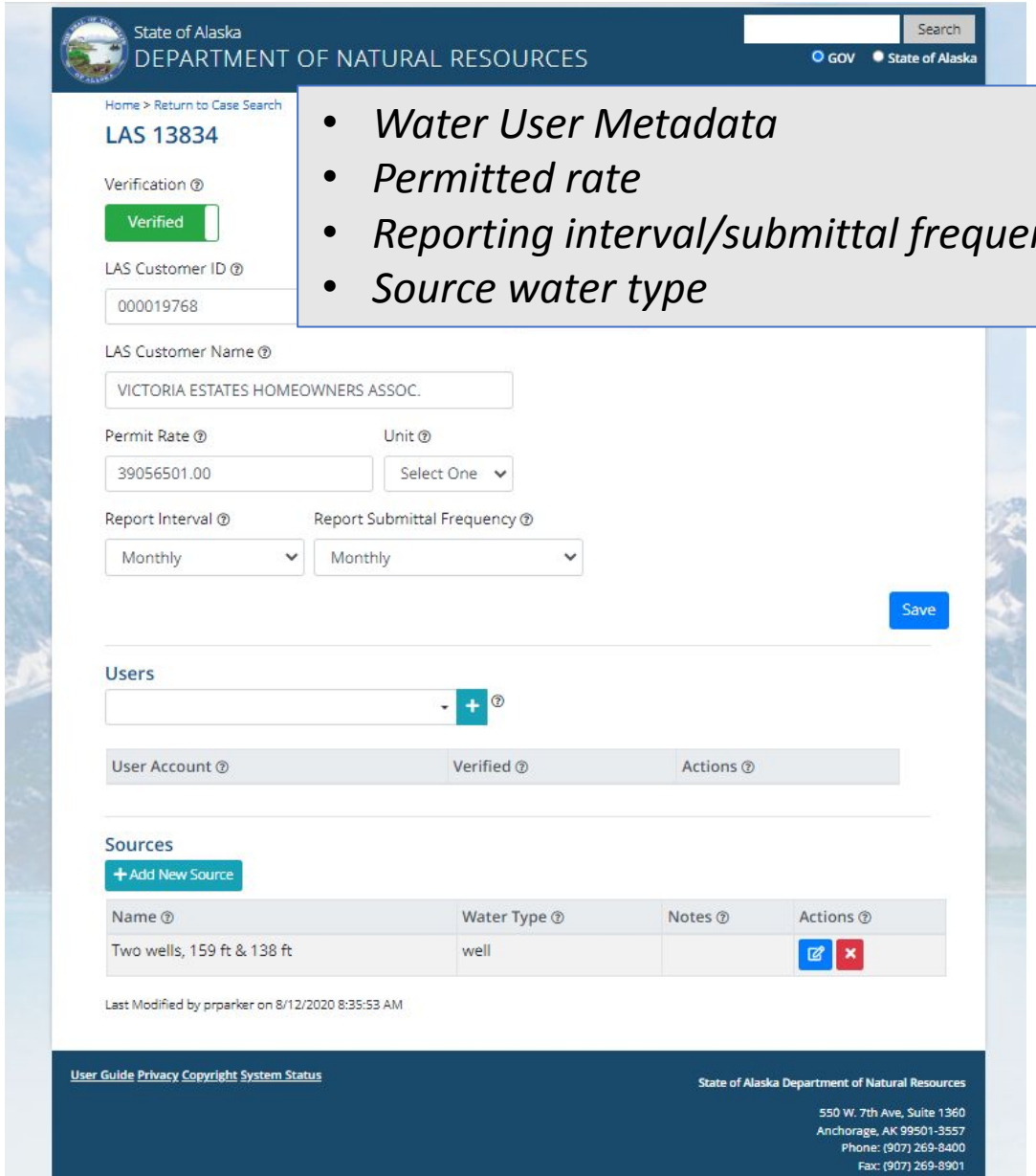




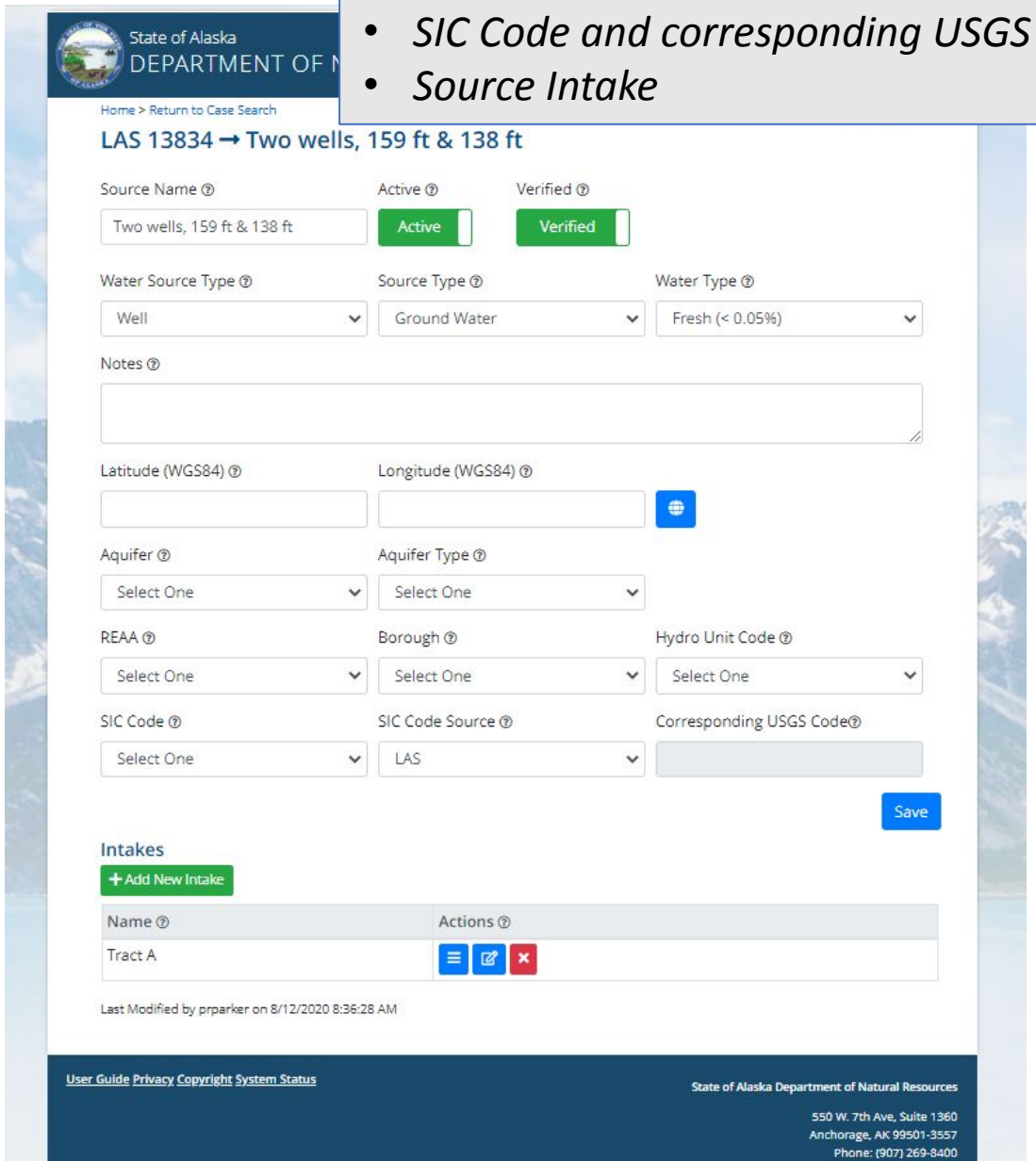
Software Update in 2022

Streamlining the Alaska Water Use Data System(AKWUDS)

- *Water User Metadata*
- *Permitted rate*
- *Reporting interval/submittal frequency*
- *Source water type*

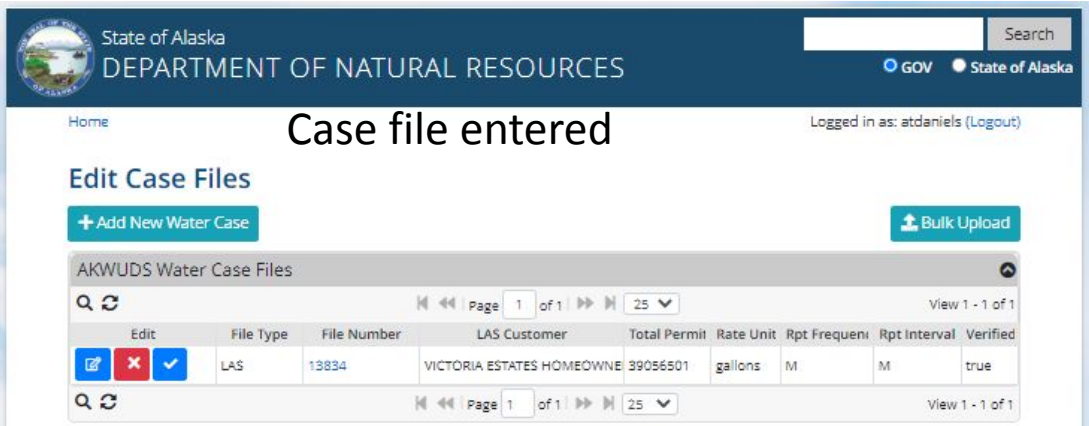


- *Source well and water type*
- *Aquifer, aquifer type*
- *Location – REE, Borough, HUC code*
- *SIC Code and corresponding USGS code*
- *Source Intake*

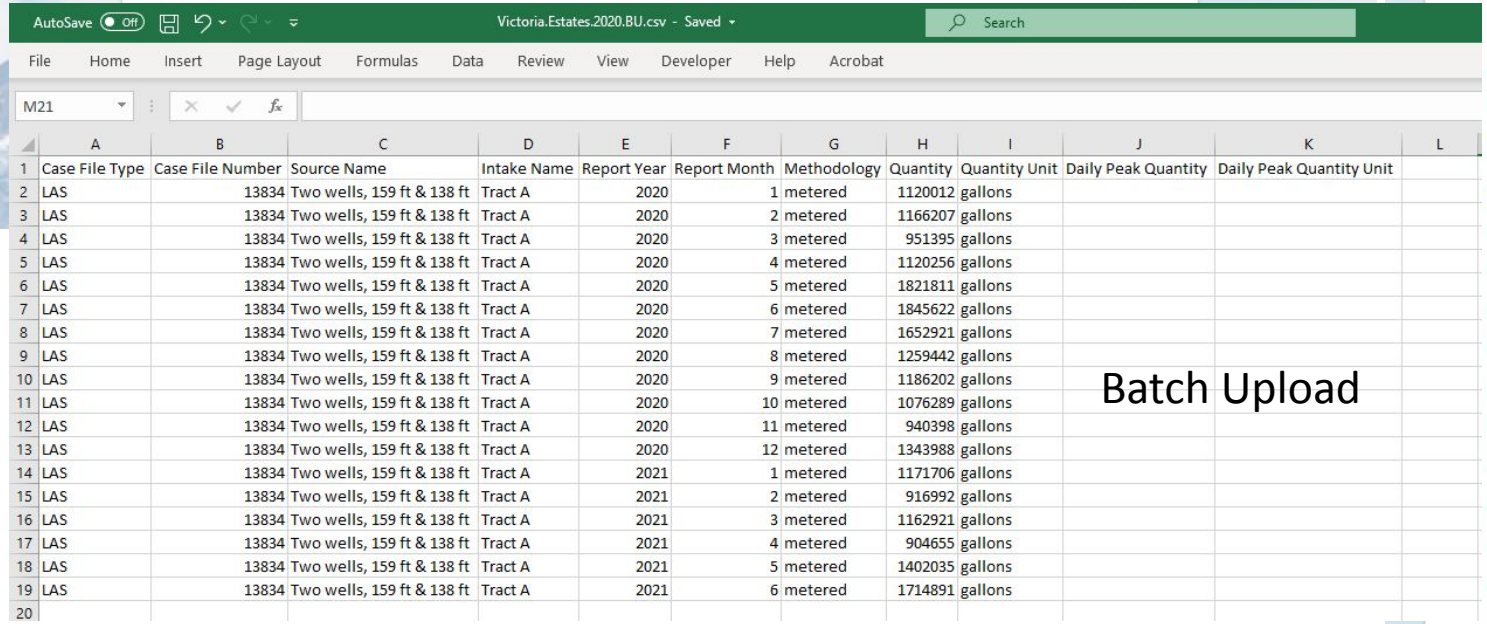


Software Update in 2022

Streamlining the Alaska Water Use Data System(AKWUDS)

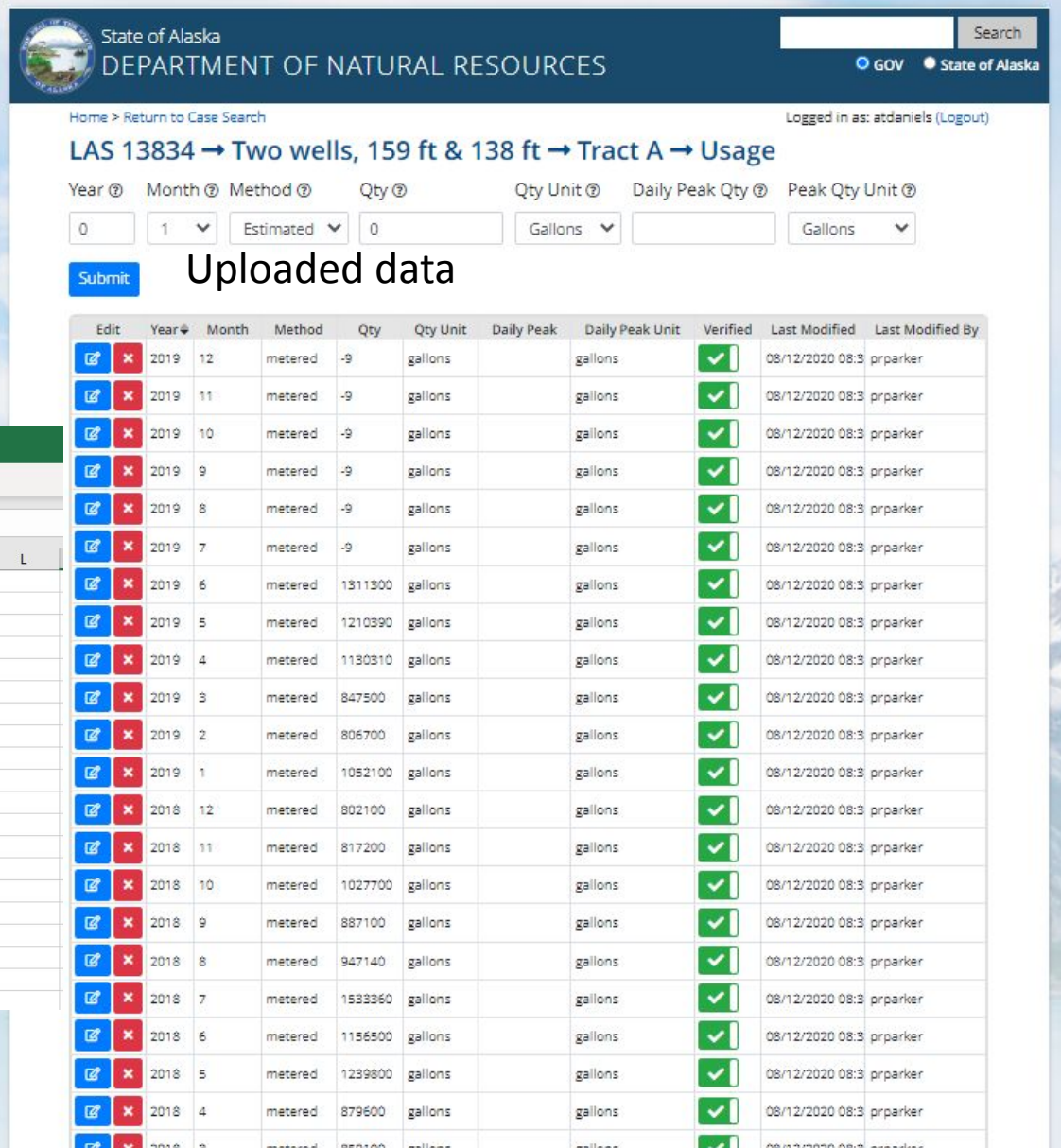


Case file entered



	A	B	C	D	E	F	G	H	I	J	K	L
1	Case File Type	Case File Number	Source Name	Intake Name	Report Year	Report Month	Methodology	Quantity	Quantity Unit	Daily Peak Quantity	Daily Peak Quantity Unit	
2	LAS	13834	Two wells, 159 ft & 138 ft	Tract A	2020	1	metered	1120012	gallons			
3	LAS	13834	Two wells, 159 ft & 138 ft	Tract A	2020	2	metered	1166207	gallons			
4	LAS	13834	Two wells, 159 ft & 138 ft	Tract A	2020	3	metered	951395	gallons			
5	LAS	13834	Two wells, 159 ft & 138 ft	Tract A	2020	4	metered	1120256	gallons			
6	LAS	13834	Two wells, 159 ft & 138 ft	Tract A	2020	5	metered	1821811	gallons			
7	LAS	13834	Two wells, 159 ft & 138 ft	Tract A	2020	6	metered	1845622	gallons			
8	LAS	13834	Two wells, 159 ft & 138 ft	Tract A	2020	7	metered	1652921	gallons			
9	LAS	13834	Two wells, 159 ft & 138 ft	Tract A	2020	8	metered	1259442	gallons			
10	LAS	13834	Two wells, 159 ft & 138 ft	Tract A	2020	9	metered	1186202	gallons			
11	LAS	13834	Two wells, 159 ft & 138 ft	Tract A	2020	10	metered	1076289	gallons			
12	LAS	13834	Two wells, 159 ft & 138 ft	Tract A	2020	11	metered	940398	gallons			
13	LAS	13834	Two wells, 159 ft & 138 ft	Tract A	2020	12	metered	1343988	gallons			
14	LAS	13834	Two wells, 159 ft & 138 ft	Tract A	2021	1	metered	1171706	gallons			
15	LAS	13834	Two wells, 159 ft & 138 ft	Tract A	2021	2	metered	916992	gallons			
16	LAS	13834	Two wells, 159 ft & 138 ft	Tract A	2021	3	metered	1162921	gallons			
17	LAS	13834	Two wells, 159 ft & 138 ft	Tract A	2021	4	metered	904655	gallons			
18	LAS	13834	Two wells, 159 ft & 138 ft	Tract A	2021	5	metered	1402035	gallons			
19	LAS	13834	Two wells, 159 ft & 138 ft	Tract A	2021	6	metered	1714891	gallons			
20												

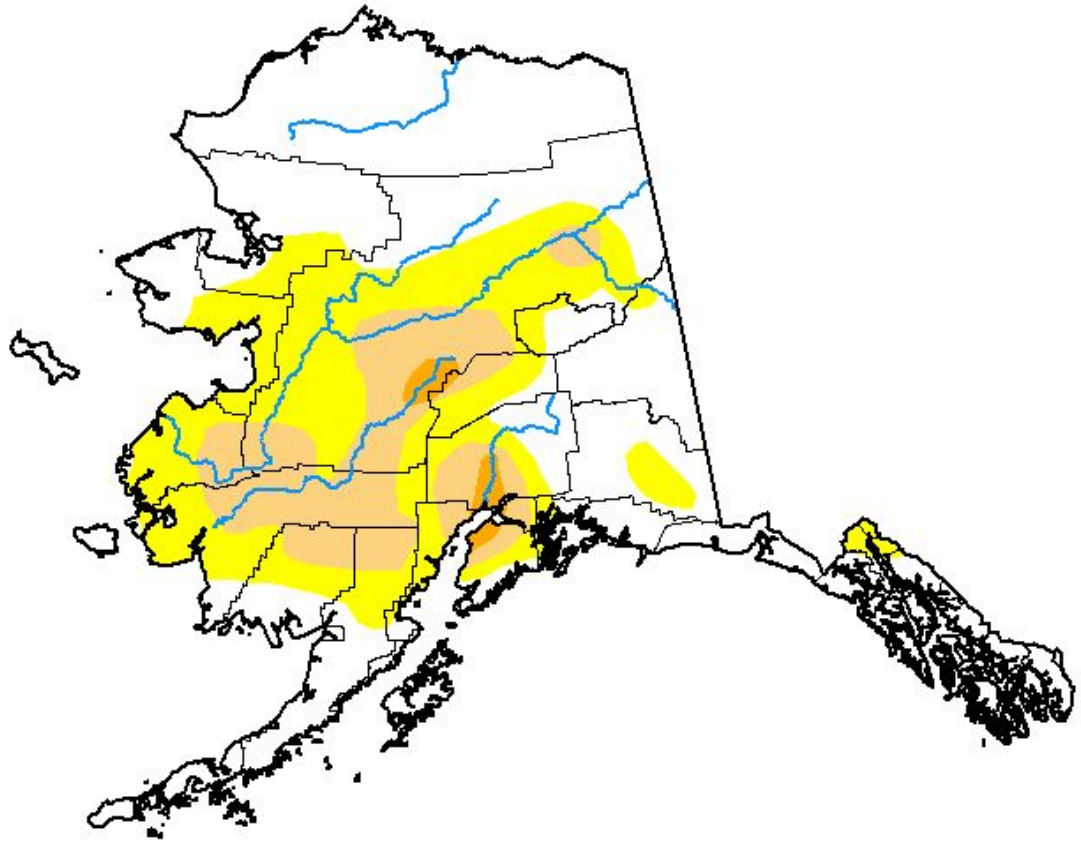
Batch Upload

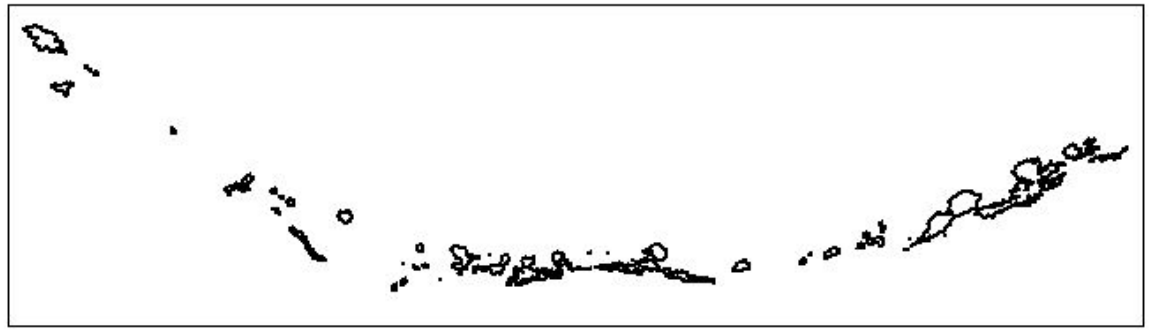


Uploaded data

Edit	Year	Month	Method	Qty	Qty Unit	Daily Peak	Daily Peak Unit	Verified	Last Modified	Last Modified By
	2019	12	metered	-9	gallons		gallons	✓	08/12/2020 08:3	prparker
	2019	11	metered	-9	gallons		gallons	✓	08/12/2020 08:3	prparker
	2019	10	metered	-9	gallons		gallons	✓	08/12/2020 08:3	prparker
	2019	9	metered	-9	gallons		gallons	✓	08/12/2020 08:3	prparker
	2019	8	metered	-9	gallons		gallons	✓	08/12/2020 08:3	prparker
	2019	7	metered	-9	gallons		gallons	✓	08/12/2020 08:3	prparker
	2019	6	metered	1311300	gallons		gallons	✓	08/12/2020 08:3	prparker
	2019	5	metered	1210390	gallons		gallons	✓	08/12/2020 08:3	prparker
	2019	4	metered	1130310	gallons		gallons	✓	08/12/2020 08:3	prparker
	2019	3	metered	847500	gallons		gallons	✓	08/12/2020 08:3	prparker
	2019	2	metered	806700	gallons		gallons	✓	08/12/2020 08:3	prparker
	2019	1	metered	1052100	gallons		gallons	✓	08/12/2020 08:3	prparker
	2018	12	metered	802100	gallons		gallons	✓	08/12/2020 08:3	prparker
	2018	11	metered	817200	gallons		gallons	✓	08/12/2020 08:3	prparker
	2018	10	metered	1027700	gallons		gallons	✓	08/12/2020 08:3	prparker
	2018	9	metered	887100	gallons		gallons	✓	08/12/2020 08:3	prparker
	2018	8	metered	947140	gallons		gallons	✓	08/12/2020 08:3	prparker
	2018	7	metered	1533360	gallons		gallons	✓	08/12/2020 08:3	prparker
	2018	6	metered	1156500	gallons		gallons	✓	08/12/2020 08:3	prparker
	2018	5	metered	1239800	gallons		gallons	✓	08/12/2020 08:3	prparker
	2018	4	metered	879600	gallons		gallons	✓	08/12/2020 08:3	prparker

U.S. Drought Monitor
Alaska





July 12, 2022
(Released Thursday, Jul. 14, 2022)
Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	56.37	43.63	15.95	1.27	0.00	0.00
Last Week *07-05-2022*	54.78	45.22	17.90	1.27	0.00	0.00
3 Months Ago *04-12-2022*	100.00	0.00	0.00	0.00	0.00	0.00
Start of Calendar Year *01-04-2022*	100.00	0.00	0.00	0.00	0.00	0.00
Start of Water Year *09-28-2021*	100.00	0.00	0.00	0.00	0.00	0.00
One Year Ago *07-13-2021*	74.35	25.65	0.00	0.00	0.00	0.00

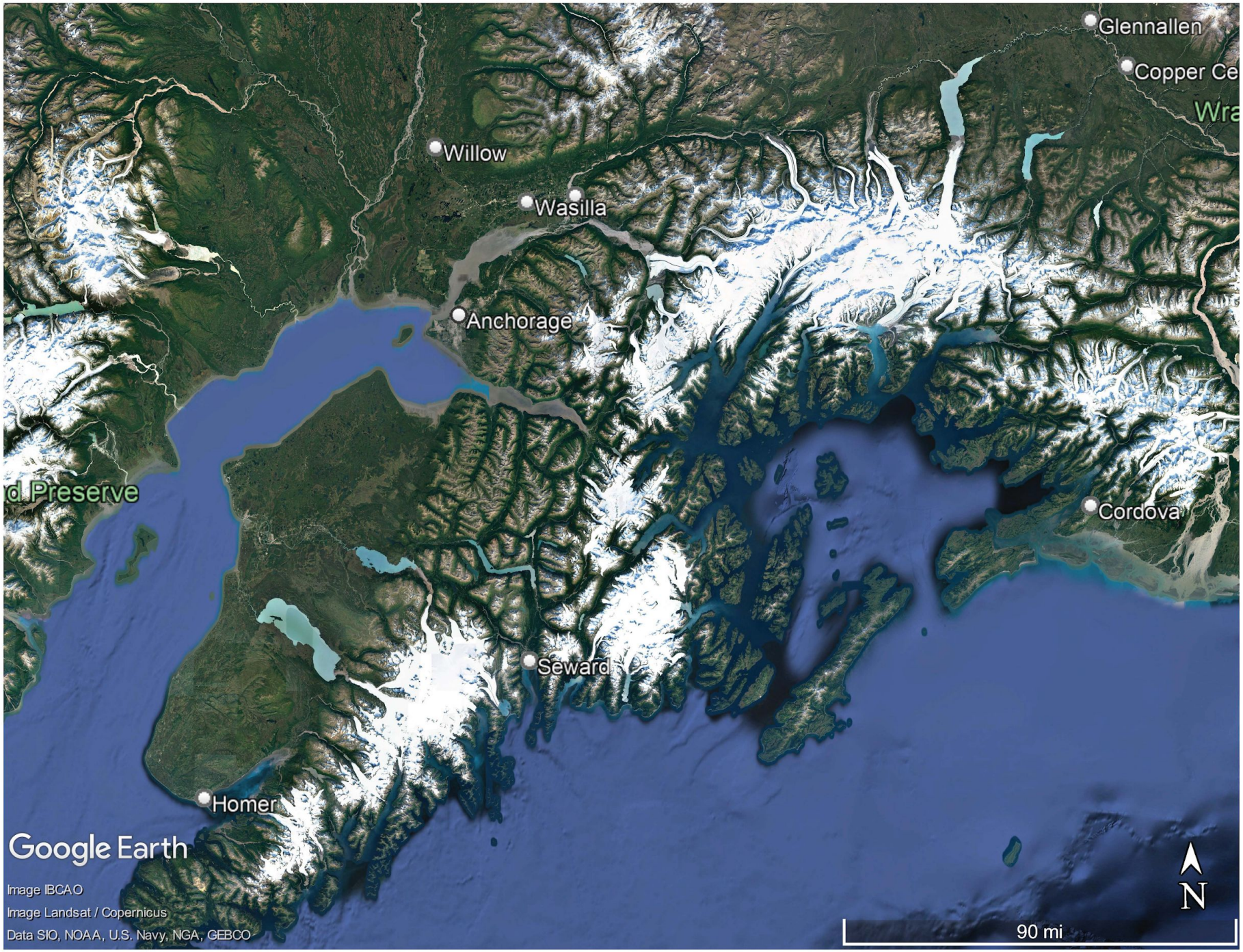
Intensity:

- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to https://droughtmonitor.unl.edu/About.aspx

Author:
Brian Fuchs
National Drought Mitigation Center

droughtmonitor.unl.edu


Glennallen
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Cordova
Seward
Homer
Google Earth
Image IBCAO
Image Landsat / Copernicus
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
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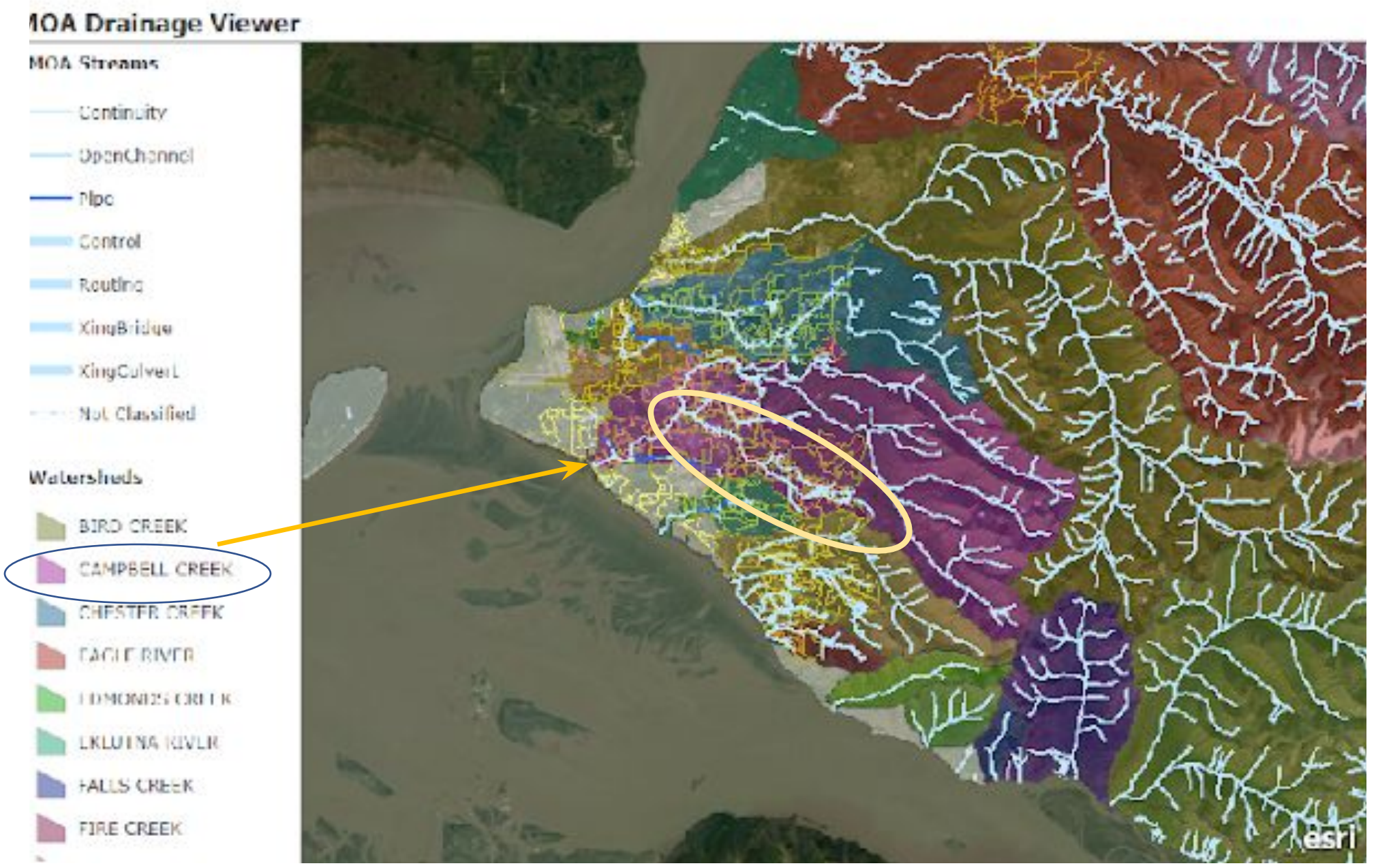
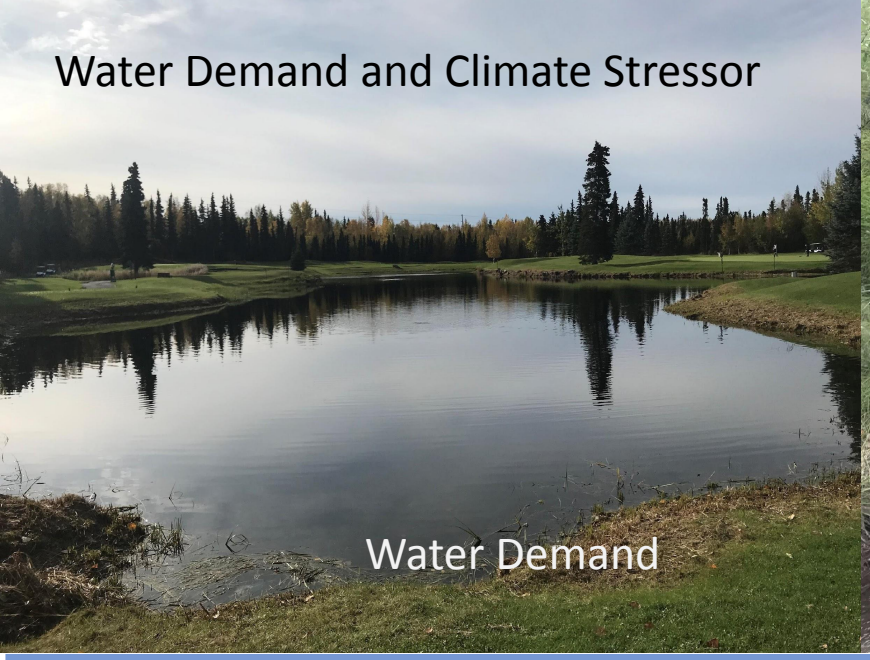
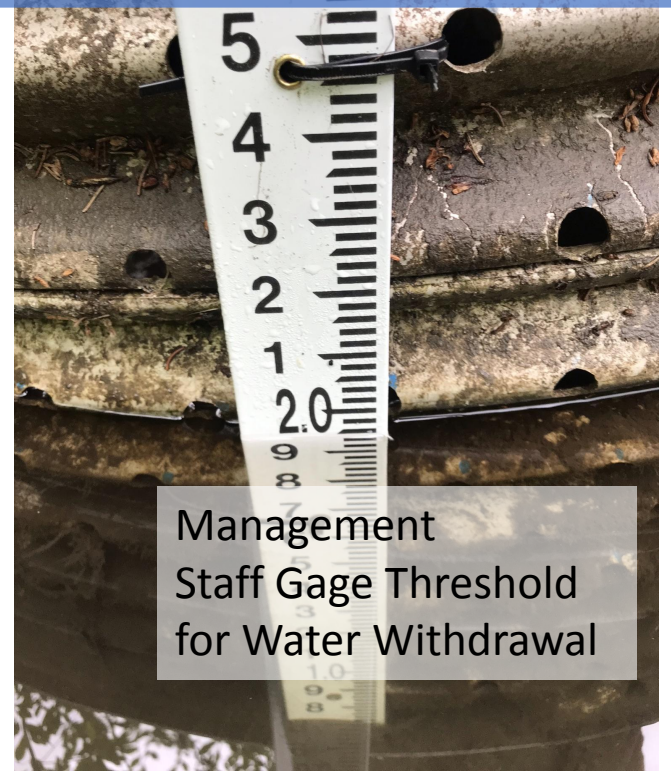
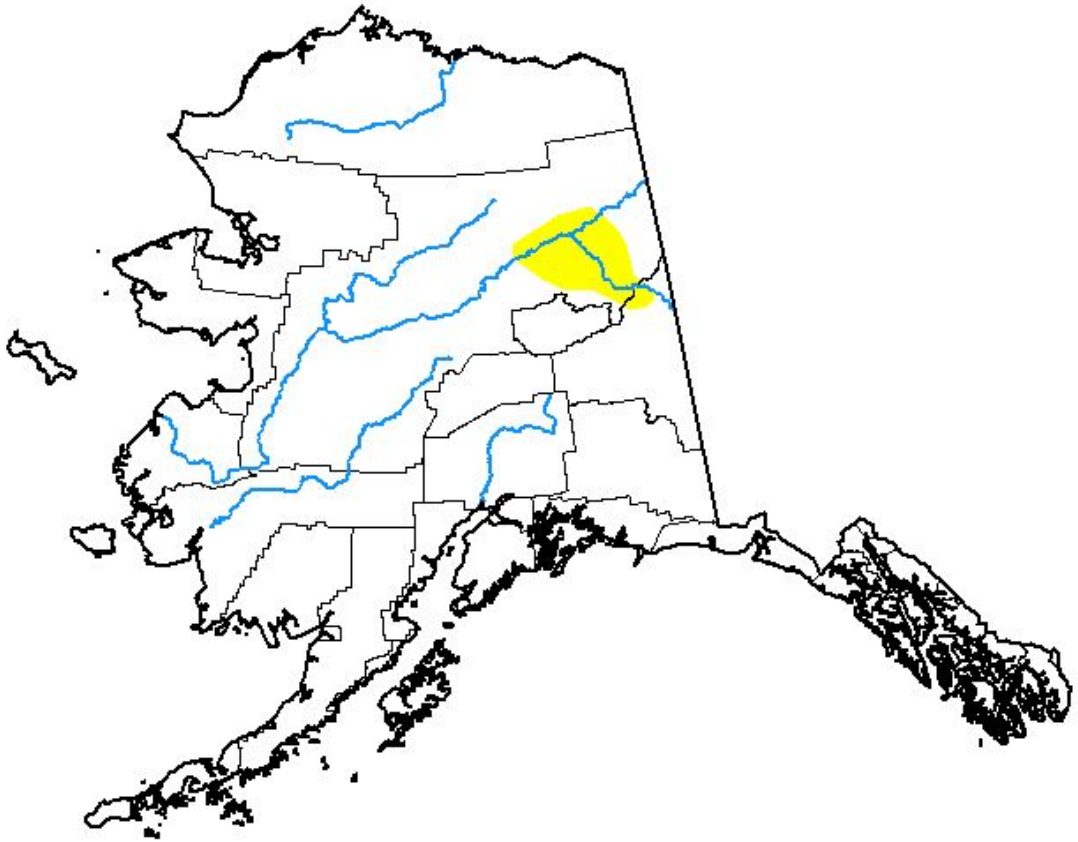

MOA Drainage Viewer
MOA Streams
Continuity
OpenChannel
Pipe
Control
Routing
XingBridge
XingCulvert
Not Classified
Watersheds
BIRD CREEK
CAMPBELL CREEK
CHESTER CREEK
EAGLE RIVER
ELMENDORF CREEK
LKLUTNA RIVER
HALLS CREEK
FIRE CREEK
esri

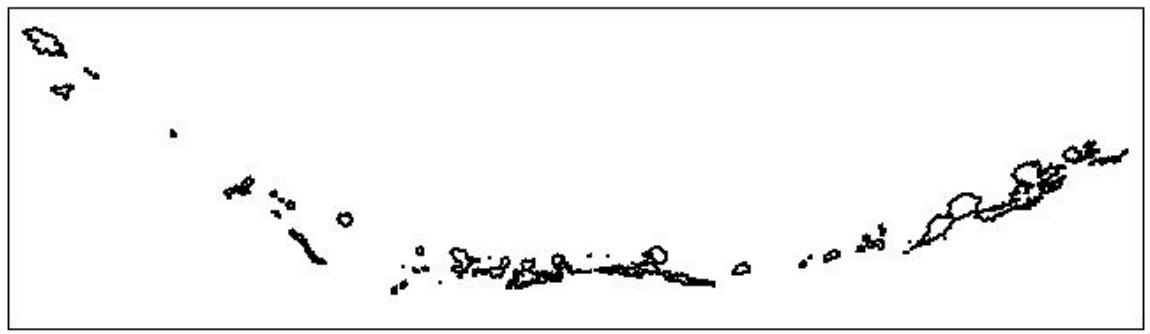


Water Measurement, Monitoring, Engagement and Management



U.S. Drought Monitor
Alaska





August 9, 2022
(Released Thursday, Aug. 11, 2022)
Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	97.25	2.75	0.00	0.00	0.00	0.00
Last Week *08-02-2022*	94.07	5.93	0.72	0.00	0.00	0.00
3 Months Ago *05-10-2022*	96.97	3.03	0.00	0.00	0.00	0.00
Start of Calendar Year *01-04-2022*	100.00	0.00	0.00	0.00	0.00	0.00
Start of Water Year *09-28-2021*	100.00	0.00	0.00	0.00	0.00	0.00
One Year Ago *08-10-2021*	80.18	19.82	4.85	0.00	0.00	0.00

Intensity:

- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to https://droughtmonitor.unl.edu/About.aspx

Author:
Richard Tinker
CPC/NOAA/NWS/NCEP

droughtmonitor.unl.edu

Summary

Alaska Water Use Data System (AKWUDS)

- Ongoing monthly water use compiled and entered into AKWUDS database
- New AKWUDS software platform online in 2022
- Greater direct entry from water users/clients into AKWUDS

Alaska Water Management (*hydrologists perspective*)

- Water Use reporting – high quality for public supply and mining, not always required for long-term use
- Alaska has extensive water resources but water not always available when and where it is needed
- Active Management of Water Usage when water is limited

Thanks!

Kevin Petrone, Hydrologist 4
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Alaska Hydrologic Survey
Water Management Section
Division of Mining Land and Water
Alaska Department of Natural Resources

Yukon River upstream from Rampart