Kiugmek

One who watches river

April 2007

A newsletter for Alaska river and ice observers

Please Note. . . .

RFC will be staffed weekends beginning April 28-29

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Heavy October rains caused flooding in the city of Seward
Photo courtesy of local resident

Wind, Rain, Flooding Event across South Central Alaska October 8-12, 2006

Prepared by Anchorage Weather Forecast Office and River Forecast Center Staff

An area of low pressure over the western Pacific, with strong connections to tropical moisture, strengthened considerably as it moved east across the Aleutians during the Oct 7-8 weekend. By Sunday October 8th a long southerly fetch existed from the tropics northward over south central Alaska. As the system continued slowly eastward it produced a significant rain and wind event for south central Alaska, with heavy rain across the Susitna Valley and Kenai Peninsula areas on Sunday and Monday, and the Prince William Sound and Copper River Basin Monday into Tuesday. By Wednesday the system had weakened, with a secondary system producing showers in the Copper River Basin.

The heavy rain began Sunday October 8th over Kodiak Island and the Aleutian mountains and spread east across the Kenai Peninsula into Prince William Sound on the 9th of October. The heaviest rain fell on the 9th. Rain continued over eastern Prince William Sound and the Copper River Basin through the 10th and 11th. The continued rain in the eastern Prince William Sound area resulted in flood conditions persisting until October 12th in the Cordova area.

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Significant Rain Fall Measurements

(in inches)

Rain fall measurements ending at 4:00 a.m. Wednesday October 11

Location	24 hours	48 hours	72 hours
Mount Eyak near Cordova	4.1	13.5	14.6
Bradley Lake near Homer	0	9.39	14.07
Bering Glacier	1.2	11.53	12.83
Cordova Airport	1.68	8.58	9.21
Fourth of July Creek (Seward)	0.5	6.44	8.69
Resurrection Creek (Seward)	0.26	6.28	8.22
Seward Airport	0.06	5.66	7.46

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The Valdez Weather Service Office reported a storm total of 8.17 inches from October 8th through October 12th, with a 24 hour total of 4.8 inches on October 9th. This is a new 24 hour record rain fall for Valdez.

The Orca Power Plant in Cordova reported a storm total of 22 inches of rain.

Gauged streams in the Seward area crested 1.3 to 2.4 feet above flood stage in the afternoon of October 9th. Eyak River in Cordova crested 3.5 feet above flood stage during the afternoon of October 10th. Significant road damage was incurred on the Richardson Highway south of Tonsina. Other areas affected by the event were mountainous areas of southwest Alaska, and the Susitna River valley.

Copper River Hwy washouts near Sheridan River
Photo courtesy of local resident

Lowell Point in Seward
Photo courtesy of local resident

Overflow from Goldstream Creek surrounds
a cabin near Fairbanks back in February
Photo taken by Ed Plumb

Unusual Winter Across the Interior
by Ed Plumb

The weather was far from normal during the past winter across interior Alaska. Extremely dry conditions along with colder than average temperatures were observed in most areas. The spring snowpack by the end of the season was between 50 to 75 percent of normal over a broad area of the interior. Temperatures were quite cold early in the winter, with widespread subzero readings for much of November. The winter also finished on the chilly side. In fact, the combined period from February through March ended up being the coldest on record for Fairbanks. Conditions were similar elsewhere around the interior. The colder weather and lack of insulation from the meager snowpack allowed the ground to freeze quite deep, and many residents found themselves with frozen pipes and septic systems.

The cold and dry conditions resulted in considerable overflow icing of creeks and rivers during the winter. There were several reports of overflow inundating private property and causing groundwater levels to rise and dampen some home owners' crawl spaces. The excessive overflow ice has also kept the Department of Transportation busy trying to keep culverts thawed out and water from flowing over roadways. The abundance and thickness of ice on creeks and rivers does have some residents concerned that there may be a higher risk of ice jams during breakup. Fortunately the amount of water in the snowpack is low this year and the amount of runoff into the river systems will be much lower than normal.

Winter Glacier Dammed Lake Releases

by Larry Rundquist

While winter glacier dammed lake releases are rare, three glacier dammed lake releases in a single winter are extremely rare. That is what we experienced in South-Central Alaska this winter as the lower Kenai River, Tazlina River, and Kennecott River were impacted by glacier dammed lake releases. The reason for the timing of these releases is not clear. Winter releases are unusual since the inflow into the glacier dammed lake is typically minimal during the winter months. The triggers for this unusual set of releases may have begun with the heavy rain event in October that helped to fill the lakes to near release levels. November was very cold and an ice cover likely formed on the lakes. Substantial precipitation amounts in December and January, mostly in the form of snow, may then have added enough weight to the lake ice cover to trigger the releases.

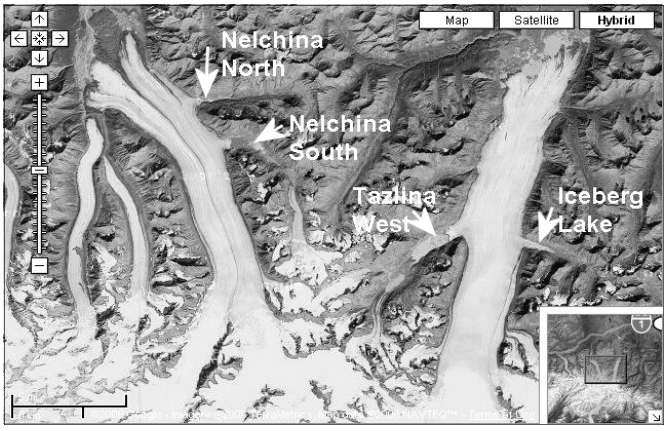
The Skilak glacier dammed lake in the Kenai River basin was expected to release in the fall of 2006, since its previous release was in October of 2004 and the lake typically has a 2 to 3 year filling cycle. When it did not release, we expected that it would release earlier than normal, but during open water season, in 2007. In open water conditions, the release of the Skilak glacier dammed lake typically causes a rise of several feet, but usually occurs in the fall when water levels are low, and thus is not a significant flood threat. In mid January an otherwise unexplained rise in river levels was indicated by the stream gages and was confirmed by river observers. The water level rise due to the release this winter was sufficient to break up the ice and cause ice jams. The peak water level at the Soldotna gage was 2.6 ft below the 1969 levels, but significant damage was still done to streamside structures such as fishing platforms, docks, and stairways. (The highest stage in 42 years of record at the Soldotna river gage was due to the release of Skilak glacier dammed lake in January of 1969, when the Kenai had an ice cover, and ice jams caused the high stages and significant damage.)

Skilak glacier dammed lake
Photo courtesy of Lyman Nichols

Damaged stairway at the Kenai River Center
Photo courtesy of Kenai Peninsula Borough

Damaged cabin on the Kenai River
Photo courtesy of Kenai Peninsula Borough

The Tazlina River basin contains four glacier dammed lakes, two are large and two are relatively small. The large



Google Earth map shows the four glacier dammed lakes in the Tazlina River basin

Nelchina South Lake, dammed by the Nelchina Glacier, released during September of 2006. The other large lake, dammed by the Tazlina Glacier, is called Tazlina West or Tazlione Lake. This lake was reported to be pretty full in September, but did not release before

Tazlina West glacier dammed lake
Photo courtesy of Joe Junker

winter. This lake likely began to release in late January, but without an automated gage on the river, the initial rise in water level on the Tazlina River was not detected. Rising water levels went unnoticed until Saturday February 3rd, when the ice breakup front that was caused by the rising water level progressed downstream to the Richardson Highway bridge and residences in the vicinity of the bridge. Water levels were reported to have risen very fast Saturday night, frightening the local

Damage to an outbuilding caused by the
release of the Tazlina West glacier dammed lake
Photo courtesy of local resident

residents. The resulting ice breakup caused extensive flooding, with ice reportedly reaching nearly to the underside of the Richardson Highway bridge. Some homes along the river reported water up to the interior electric wall sockets. Besides inundation of an unknown number of homes, numerous cars, snow machines, and outbuildings were damaged or destroyed by ice. There

Car surrounded by ice following the release of
Tazlina West glacier dammed lake
Photo courtesy of local resident

is insufficient information to know if the ice formed an ice jam downstream of the bridge or if the breakup front continued to move downstream at a rate that caused significant backwater behind the front, but the front moved far enough on Sunday that the river fell below flood stage by Sunday morning between 9:00 and 11:00. Significant amounts of river ice, with pieces up to 3-4 feet thick, remain in the formerly inundated areas.

We received a report from our Kennicott River observer that Hidden Creek glacier dammed lake released in late January. This is very unusual for this lake, which released in July of 2006 and regularly releases each summer in late June, July, or early August. Although this is unusual, winter surges of water that may have come from this lake have been documented. A 1971 report by Post and Mayo of the U.S. Geological Survey documented a winter release reported in 1911, as well as a release in March 1968. The 1911 report stated that “a torrent of water rushes down the Kennicott and Nizina Rivers, sometimes flooding the ice all the way to the Copper River.” No damage was reported during this winters event, but there was damage during the lake release last summer. It will be interesting to see if this lake refills in time for its normal summer release this summer.

Hidden Creek glacier dammed lake
Photo courtesy of the US Geological Survey

Spring Breakup Outlook for Alaska

The following table gives an estimate of flood potential and basin runoff volumes for various locations around the state. The table was created from our Spring Breakup Outlook dated April 13, 2007. Check our web site for the most current product. The potential for minor flooding is not reflected in the table.
Snowmelt Runoff Volume...expected water volume from snowmelt during the melt season.
Flood Potential...the likelihood of flooding from snowmelt and/or ice jams.
Average Breakup Dates are for 1970 through 2006, and are calculated for locations with at least five years of data.

RIVER - REACH	SNOWMELT RUNOFF VOLUME	FLOOD POTENTIAL	AVERAGE BREAKUP DATE	NO. OF YEARS RECORD	FORECAST BREAKUP DATE
Southeast Panhandle	Above				
Kenai River	Average				
Anchor River	Below				
Matanuska River	Below	Low			
Susitna River	Below				
Gold Creek		Low			
Sunshine		Low	05/03	17	04/27-05/02
Yentna River	Below				
Lake Creek		Low	04/30	16	04/24-04/30
Skwentna River	Below				
Skwentna		Low	04/30	13	04/24-04/30
Copper River Basin	Average				
Gakona River		Low	04/29	20	04/22-05/02
Gulkana River		Low	04/28	18	04/22-04/30
Chena River	Below				
Chena Lakes Project		Low			
Fairbanks		Low	04/25	21	04/18-04/26
Tanana River	Below				
Northway		Low	04/22	20	04/14-04/24
Salcha		Low-Mod			
Fairbanks		Low	04/29	8	04/23-04/29
Nenana		Low	05/02	33	04/26-05/02
Manley		Low	05/03	17	04/24-05/06
Kuskokwim R (Upr)	Below				
Nikolai		Low	04/23	22	04/18-04/25
McGrath		Low-Mod	05/07	33	05/02-05/09
Kuskokwim R (Lwr)	Below				
Stony River		Low	05/06	19	05/01-05/08
Sleetmute		Low-Mod	05/05	18	04/29-05/07
Red Devil		Low-Mod	05/06	21	05/01-05/08
Crooked Creek		Low-Mod	05/07	21	05/01-05/08
Aniak		Low-Mod	05/07	24	05/02-05/09
Kalskag		Low	05/08	18	05/02-05/09
Tuluksak		Low	05/10	15	05/04-05/11
Akiak		Low	05/10	21	05/05-05/13
Kwethluk		Low-Mod			
Bethel		Low	05/12	36	05/07-05/14
Yukon River (Upr)	Average				
Eagle		Low	05/05	27	04/29-05/05
Circle		Low-Mod	05/10	24	05/04-05/09
Fort Yukon		Low	05/10	24	05/05-05/10
Beaver		Low	05/12	11	05/07-05/12
Stevens Village		Low	05/14	10	05/09-05/14
Rampart		Low	05/14	11	05/09-05/14

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RIVER - REACH	SNOWMELT RUNOFF VOLUME	FLOOD POTENTIAL	AVERAGE BREAKUP DATE	NO. OF YEARS RECORD	FORECAST BREAKUP DATE
Yukon R (Mid)	Below				
Tanana		Low	05/11	21	05/05-05/11
Ruby		Low	05/12	23	05/06-05/12
Galena		Low-Mod	05/12	24	05/06-05/12
Koyukuk		Low-Mod			
Nulato		Low-Mod	05/14	10	05/08-05/14
Kaltag		Low	05/14	30	05/08-05/14
Anvik		Low	05/18	18	05/11-05/18
Yukon R (Lwr)	Below				
Holy Cross		Low	05/16	18	05/10-05/16
Russian Mission		Low	05/15	21	05/09-05/16
Pilot Station		Low	05/18	9	05/11-05/19
Mountain Village		Low	05/19	18	05/12-05/20
Alakanuk/Emmonak		Low-Mod	05/22	23	05/16-05/23
Koyukuk River	Below				
Bettles		Low	05/10	25	05/04-05/12
Allakaket		Low	05/11	20	05/05-05/12
Hughes		Low-Mod	05/12	19	05/06-05/13
Buckland River	Below	Low-Mod	05/19	15	05/14-05/24
Kobuk River	Below				
Kobuk		Low-Mod	05/17	26	05/13-05/20
Shungnak		Low	05/19	16	05/15-05/22
Ambler		Low	05/19	23	05/15-05/22
Noatak River	Below	Low	05/20	12	05/16-05/24
N Brooks Range	Below				
Colville River					
at Umiat		Low	05/24	9	05/20-05/28
at Colville		Low	05/31	10	05/26-06/04

The flood potential from snowmelt and ice jams this spring breakup season is currently rated as above average for Southeast Alaska and average for mainland Alaska. This forecast is based on ice thickness reports, observed snowpack, and long range temperature forecasts.

Ice - April 1 ice thickness data are available for a limited number of observing sites in Alaska. Measurements indicate that ice thicknesses are generally 30-50" and between 90 and 120% of normal for much of Alaska. As of April 10 accumulated freezing degree days are around 95% of normal along the west coast and between 100 and 120% of normal for the remainder of mainland Alaska.

Snow - an analysis of the April 1 snowpack indicates below normal conditions throughout much of mainland Alaska. Many interior locations have only 50 - 75% of normal snowpack. The central and northern Kenai Peninsula and the western Copper River basin generally have 100 - 120% of normal snowpacks. The northeast gulf coast and southeast Alaska have well above normal snowpacks, with some areas reporting upwards of 300% of normal snow water contents. Regardless of climate averages, there is enough snow in most areas to produce significant snowmelt runoff peaks if subjected to a rapid warming pattern. For more details on the April 1 snowpack, please refer to the various snow graph options at the APRFC web site at http://aprfc.arh.noaa.gov or on the NRCS web site at http://ambcs.org.

Weather - Most of Alaska has been much colder than normal from mid-February through the fourth week of March. The average temperature in March was the second coldest on record for Fairbanks and the fourth coldest on record for Anchorage. A pattern shift has led to mild southerly flow across much of Alaska for the first two weeks in April. Lower elevation snowmelt has begun, and river and lake ice have started the initial stages of degradation. The latest forecasts extending out through the third week in April indicate normal to above normal air temperatures over most of the state except for the west coast. The greatest factor in determining the severity of breakup remains the weather during April and May. The 30 day outlook for April and the 90 day outlook for April through June suggest above normal temperatures for Alaska. Please refer to the Climate Prediction Center web site at:

http://www.cpc.ncep.noaa.gov