Mission\_Creek\_flow\_analysis

Sam Bankston

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Load packages

library(tidyverse)  
library(lubridate)

Read in data

all\_flow <- read\_csv("mission\_creek\_flow.csv") %>% mutate(date\_time = paste(Date, " ", Time), date\_time = mdy\_hms(date\_time)) %>% rename(flow = Flow) %>% select(date\_time, flow) %>% mutate(Day = date(date\_time), Year = year(date\_time))

Summary of daily flow values

daily\_flow\_summary <- all\_flow %>% filter(month(date\_time) >= 1 & month(date\_time) < 6) %>% group\_by(Year, Day) %>% summarize(mean\_daily\_flow = mean(flow, na.rm = TRUE)) %>% ungroup()

Calculate low and high flow thresholds

low\_high <- daily\_flow\_summary %>% summarize(low\_flow = quantile(.$mean\_daily\_flow, probs = .50, na.rm = TRUE), high\_flow = quantile(.$mean\_daily\_flow, probs = 0.99, na.rm = TRUE)) %>% print()

## # A tibble: 1 x 2  
## low\_flow high\_flow  
## <dbl> <dbl>  
## 1 0.260 104.

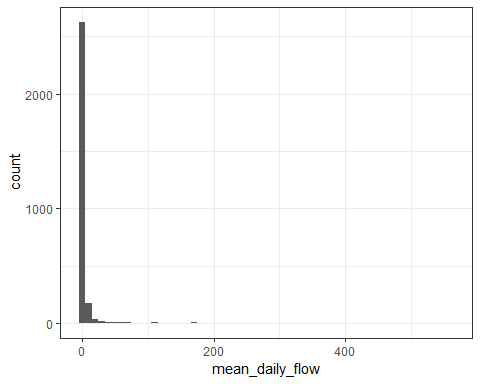
top 20 mean daily flow values

top\_20 <- daily\_flow\_summary %>% top\_n(n = 20, wt = mean\_daily\_flow) %>% arrange(desc(mean\_daily\_flow))   
  
top\_20

## # A tibble: 20 x 3  
## Year Day mean\_daily\_flow  
## <dbl> <date> <dbl>  
## 1 2005. 2005-01-09 556.  
## 2 1998. 1998-02-03 519.  
## 3 2005. 2005-01-10 470.  
## 4 2001. 2001-03-05 439.  
## 5 1998. 1998-02-02 407.  
## 6 2011. 2011-03-20 389.  
## 7 2017. 2017-02-17 344.  
## 8 2005. 2005-02-21 302.  
## 9 2006. 2006-04-04 261.  
## 10 2005. 2005-01-08 258.  
## 11 2001. 2001-03-06 232.  
## 12 2005. 2005-01-11 230.  
## 13 2003. 2003-03-15 184.  
## 14 2005. 2005-01-03 181.  
## 15 2010. 2010-02-27 177.  
## 16 1998. 1998-02-04 171.  
## 17 2005. 2005-02-22 169.  
## 18 2017. 2017-02-18 168.  
## 19 2008. 2008-01-27 166.  
## 20 2008. 2008-01-23 160.

histogram of mean daily flow

daily\_flow\_summary %>% ggplot(aes(x = mean\_daily\_flow)) + geom\_histogram(binwidth = 10) + theme\_bw()



Flow summary statistics

mean\_daily\_flow <- mean(daily\_flow\_summary$mean\_daily\_flow, na.rm = TRUE) %>% print()

## [1] 4.601974

percent\_days\_zero <- mean(daily\_flow\_summary$mean\_daily\_flow == "0") %>% print()

## [1] 0.0006858711

num\_days\_zero <- sum(daily\_flow\_summary$mean\_daily\_flow == "0") %>% print()

## [1] 2

num\_days\_total <- n\_distinct(daily\_flow\_summary$Day) %>% print()

## [1] 2916

num\_years <- n\_distinct(daily\_flow\_summary$Year) %>% print()

## [1] 21