

# DAM REMOVAL COST FACTORS

Rory Corrigan and Desiree Tullos, PhD PE (OR)

## OBJECTIVE

The goal of this project is to develop guidelines for more accurately estimating costs for potential dam removal projects. While the popularity of dam removal projects has risen in recent years, there are not accurate tools or clear cost information to inform research and decision makers. With aging infrastructure and a clearer understanding of the negative impact that dams have on the health of our rivers, this trend is likely to continue, so understanding the economics of dam removal could be key moving forward. The hypothesis is that alternate cost sources such as litigation, monitoring, environmental mitigation and tasks to appease stakeholders would be a significant driver of cost.

## RESULTS

Fig. 1: Dam Cost by Category

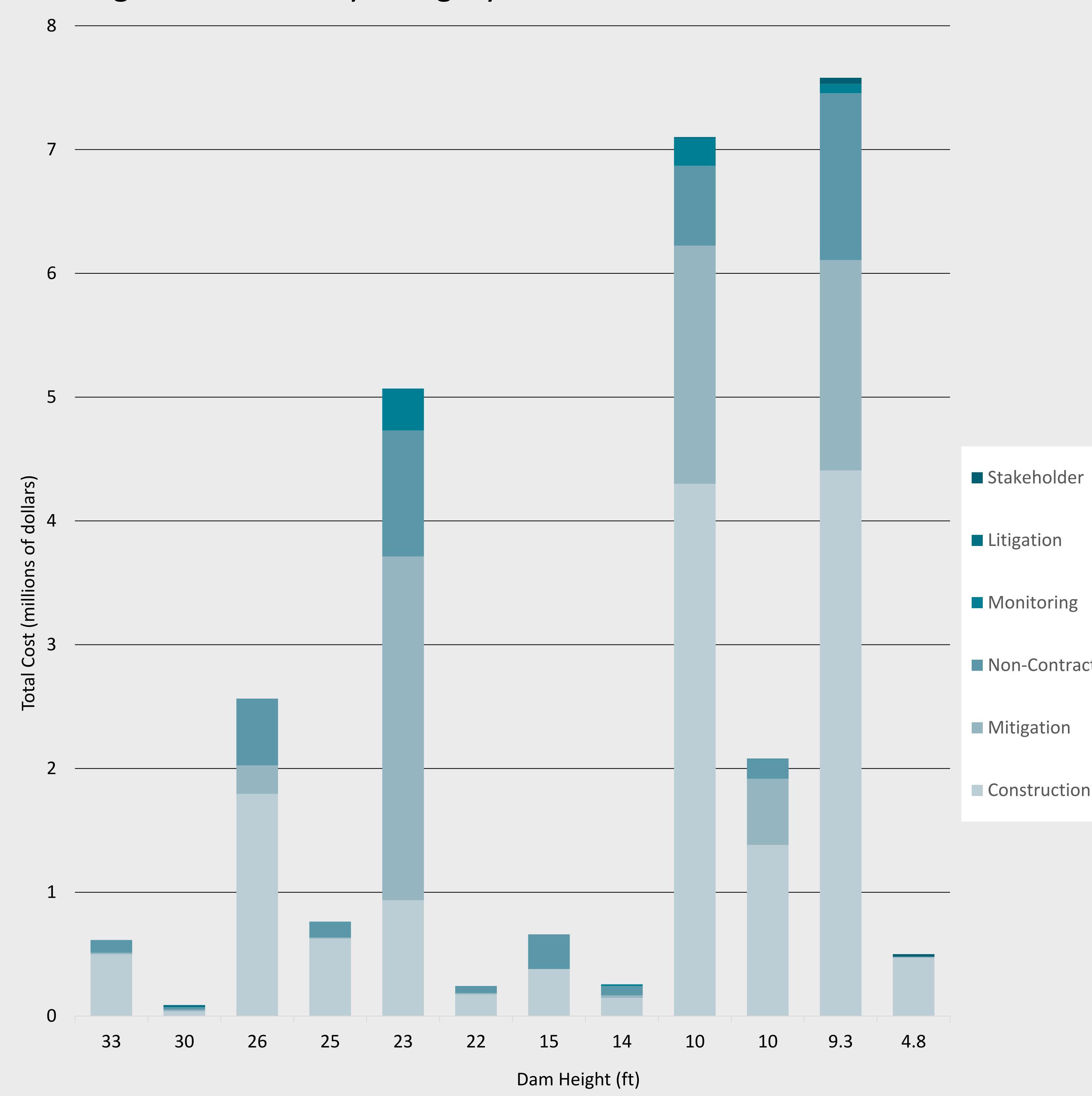
*Savage Rapids Dam Removal* (Northwest Demolition and Dismantling)

Fig. 2: Dam Width vs. Total Removal Cost

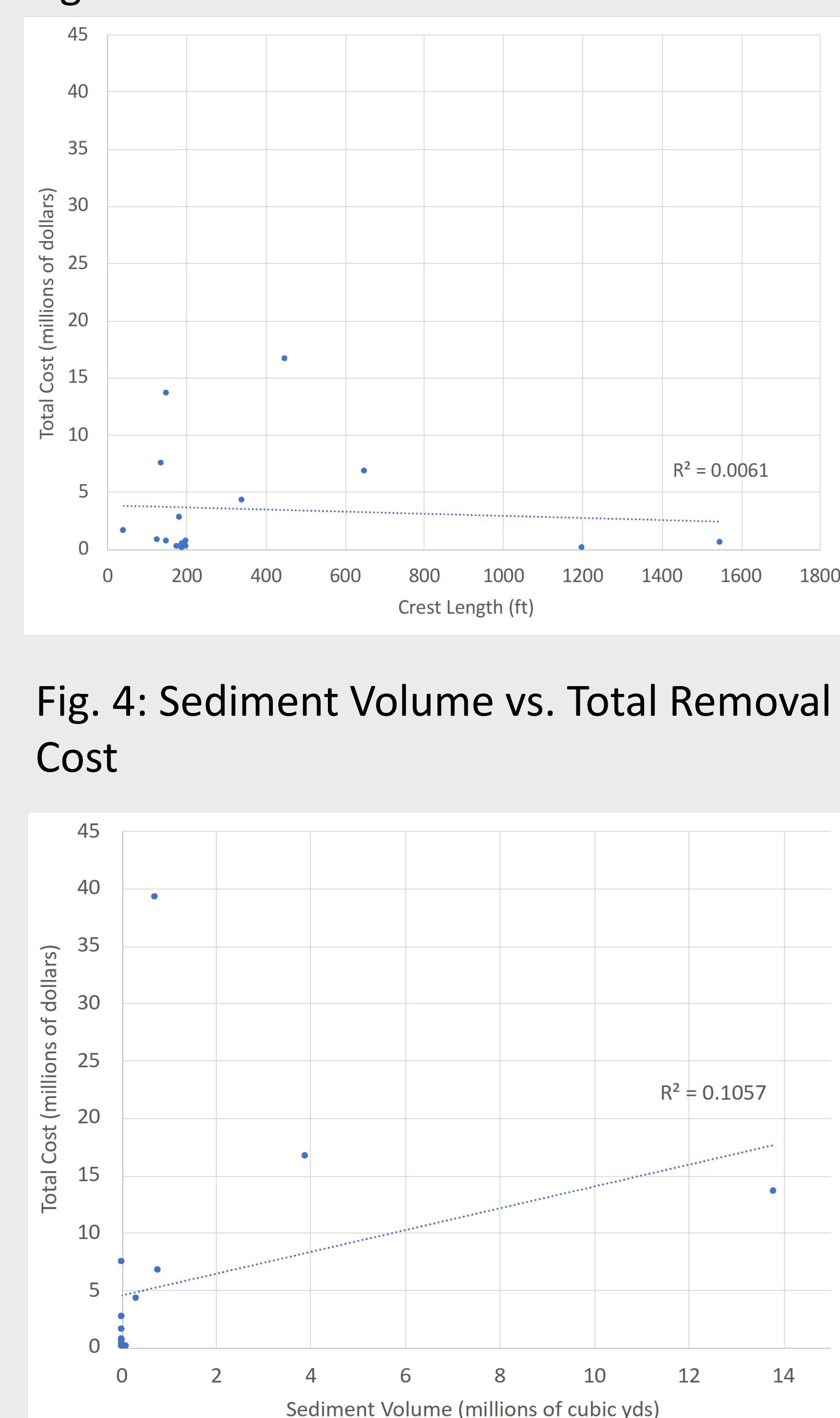
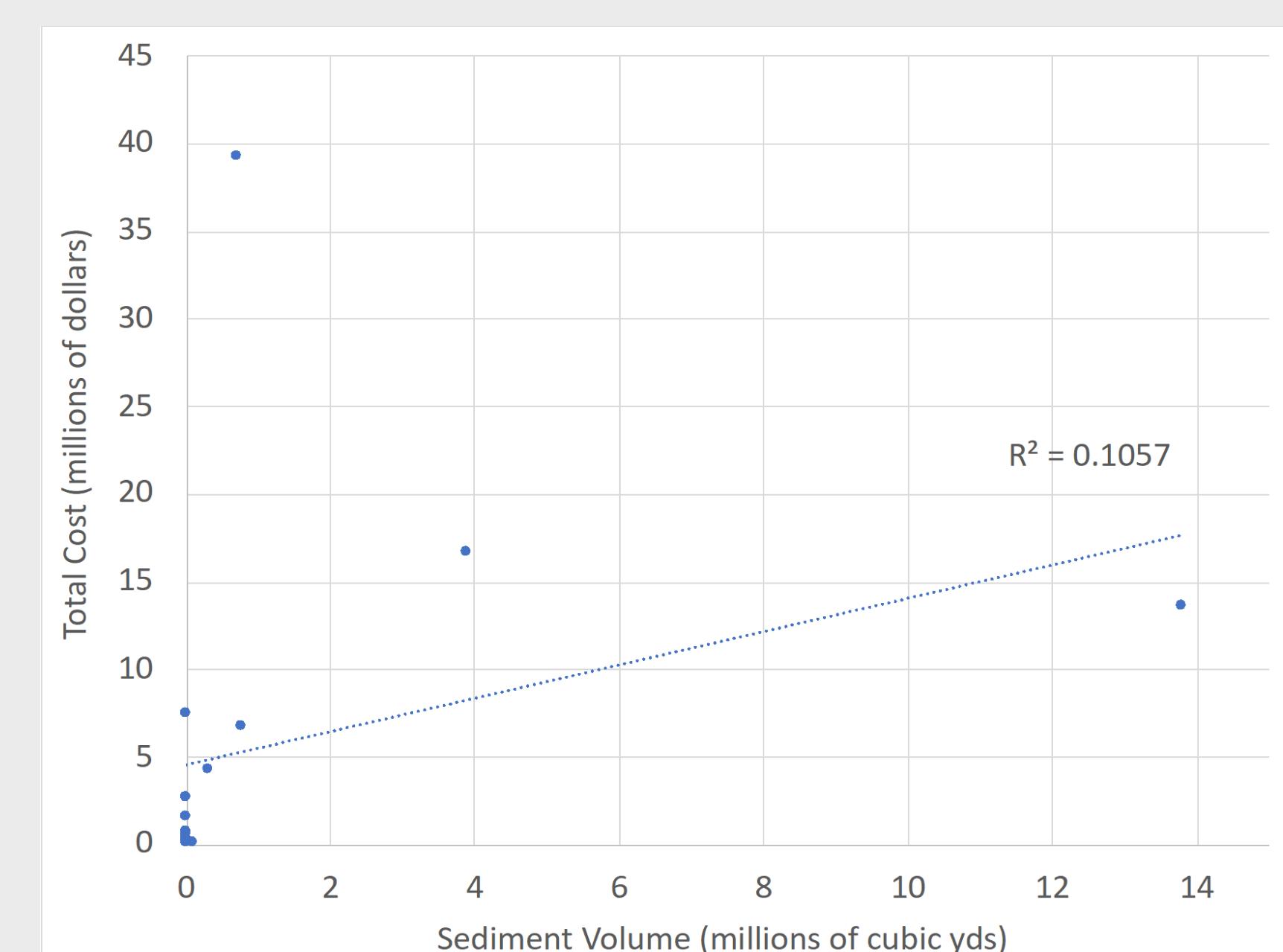


Fig. 4: Sediment Volume vs. Total Removal Cost



## METHODS

With the help of industry partners who consulted on various individual dam removals, both qualitative and categorical data was collected. A detailed survey was developed to identify key cost categories and characteristics of the dams that are likely to be the key drivers of cost. The primary method of data collection was scouring environmental assessments and engineering reports. Once the survey questions were filled out as public information allowed the remaining questions were sent along to our industry partners to help fill in the gaps.

Fig. 3: Dam Height vs. Total Removal Cost

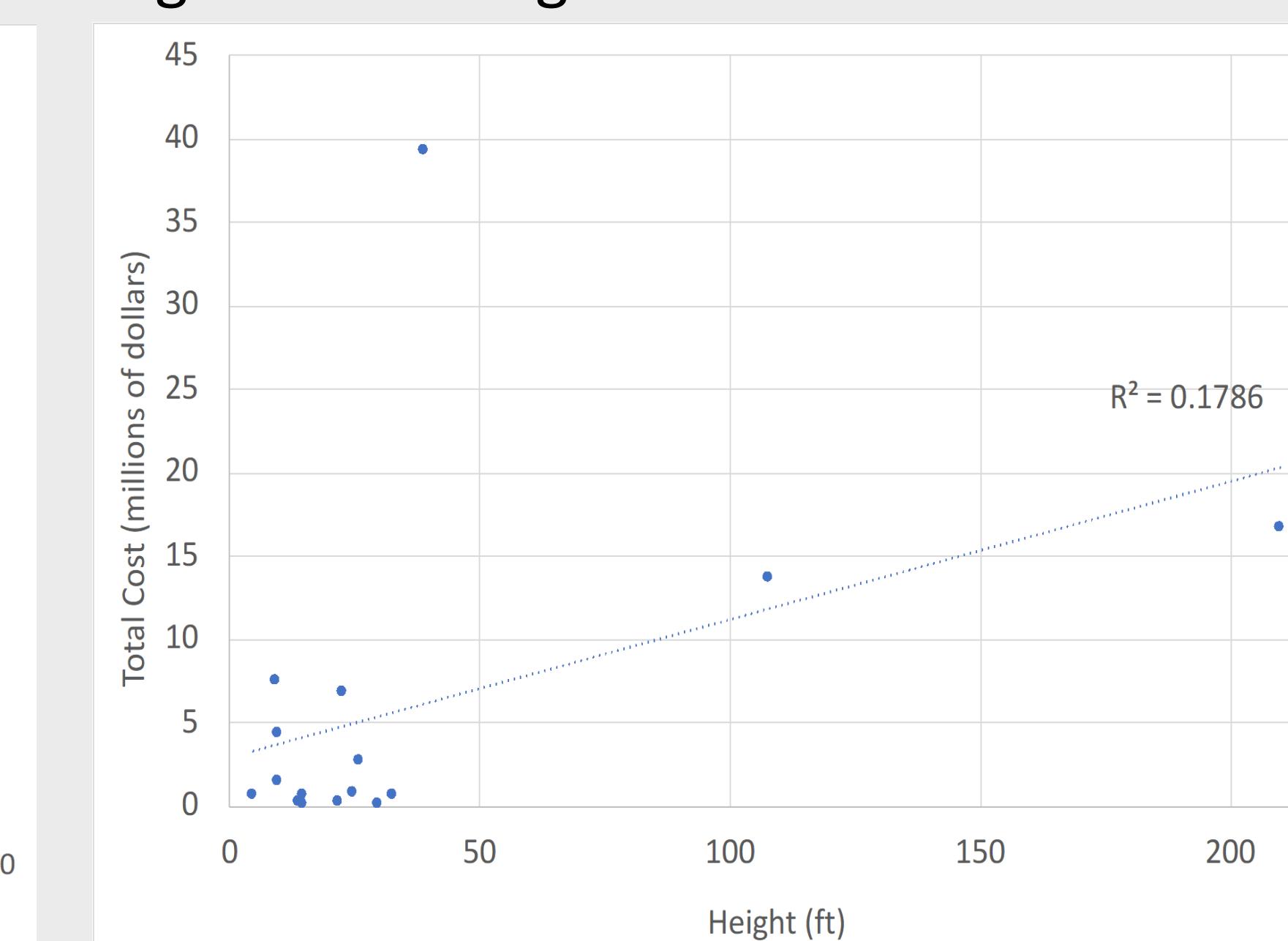
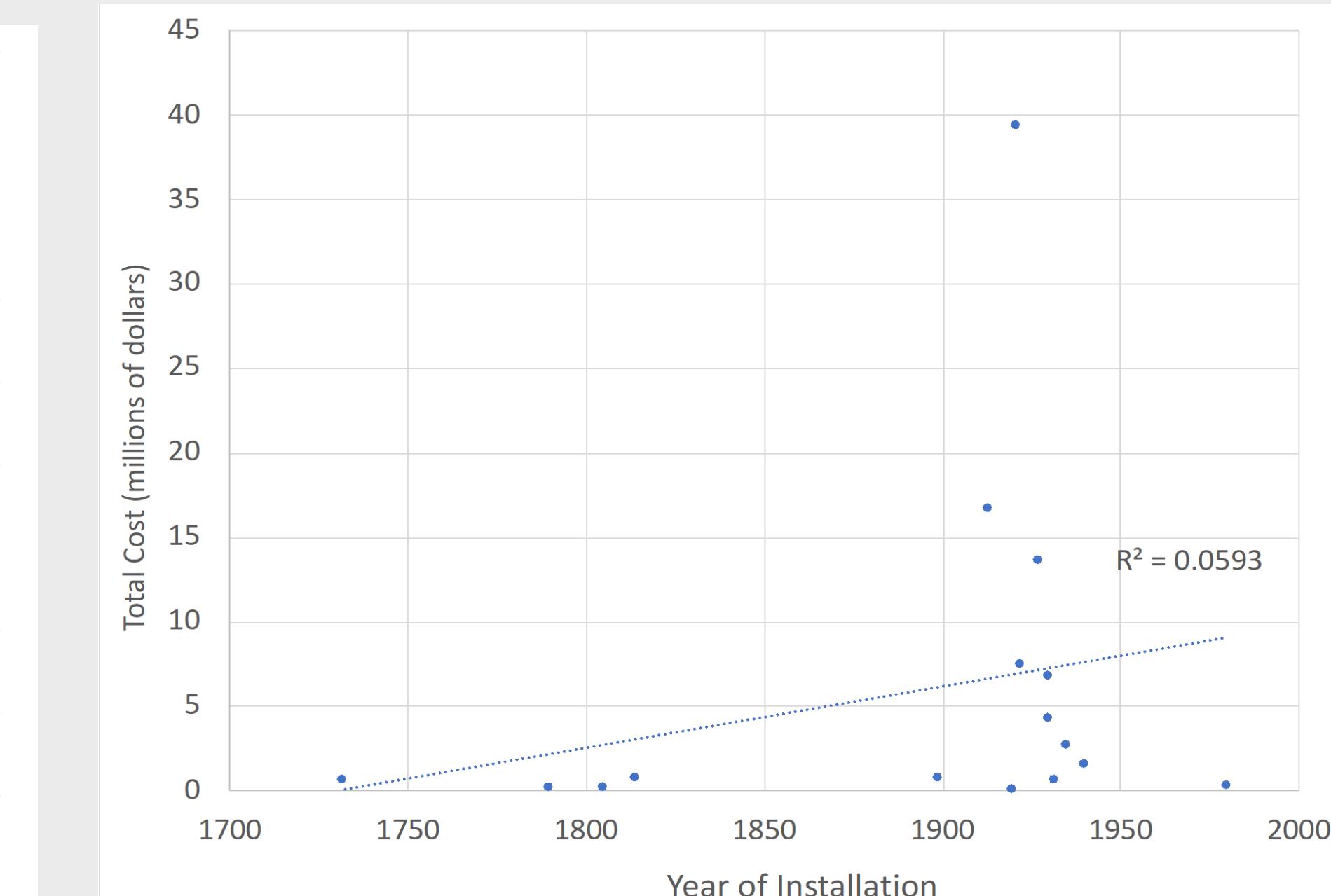


Fig. 5: Dam Age vs. Total Removal Cost

*Elwha Dam Removal* (AP Photo/The Seattle Times, Steve Ringman)

## DISCUSSION

- Fig. 1 shows that, of the sample size of complete case studies, construction (i.e. deconstruction of the standing dam) was the largest factor in overall cost.
- The second most impactful cost category in Fig. 1 is mitigation. Mitigation refers to the range of activities that are included as part of the project to mitigate impacts of the dams and their removals. Examples include: water treatment plants, pumping plants, habitat features, levees to reduce flood downstream flood risk, etc.
- Non-contract costs (i.e. engineering design, permitting) play a significant role in the overall cost a project, but do not appear to be a primary cost driver.
- Fig. 2, 3, 4 and 5 display the characteristics expected to impact project costs. Dam height shows the strongest positive correlation, but the relationship is weak. Instead, cost drivers are highly case dependent and variable.
- Moving forward further research could incorporate a greater number of cases to improve the statistical significance of results.

## ACKNOWLEDGEMENTS

We gratefully acknowledge all of the practitioners who committed their valuable time in sharing project information with us. In addition, we acknowledge our project partners at USGS, USBR, and USACE for the project leadership and financial support. Thanks also to the E.R. Jackman Alumni & Friends, College of Agricultural Sciences, and the Beginning Undergraduate Researchers Support Program.



Oregon State  
University