

OBJECTIVE

Design a new storm drain system for the area around the Law School parking lot and Snell Building so as to control storm water run off during storms and prevent down stream flooding.

CONSTRAINTS

- Minimize cost
- Must be cleanable and maintainable
- Minimal construction
- Must be integrable with existing system
- Restrained by existing topography
- Pipe system must handle entire flow, no surface drainage or runoff

THE TEAM

Brandon Decker
Team Leader

Danny Brown Tommy Scherbel
Hydrologist Communications

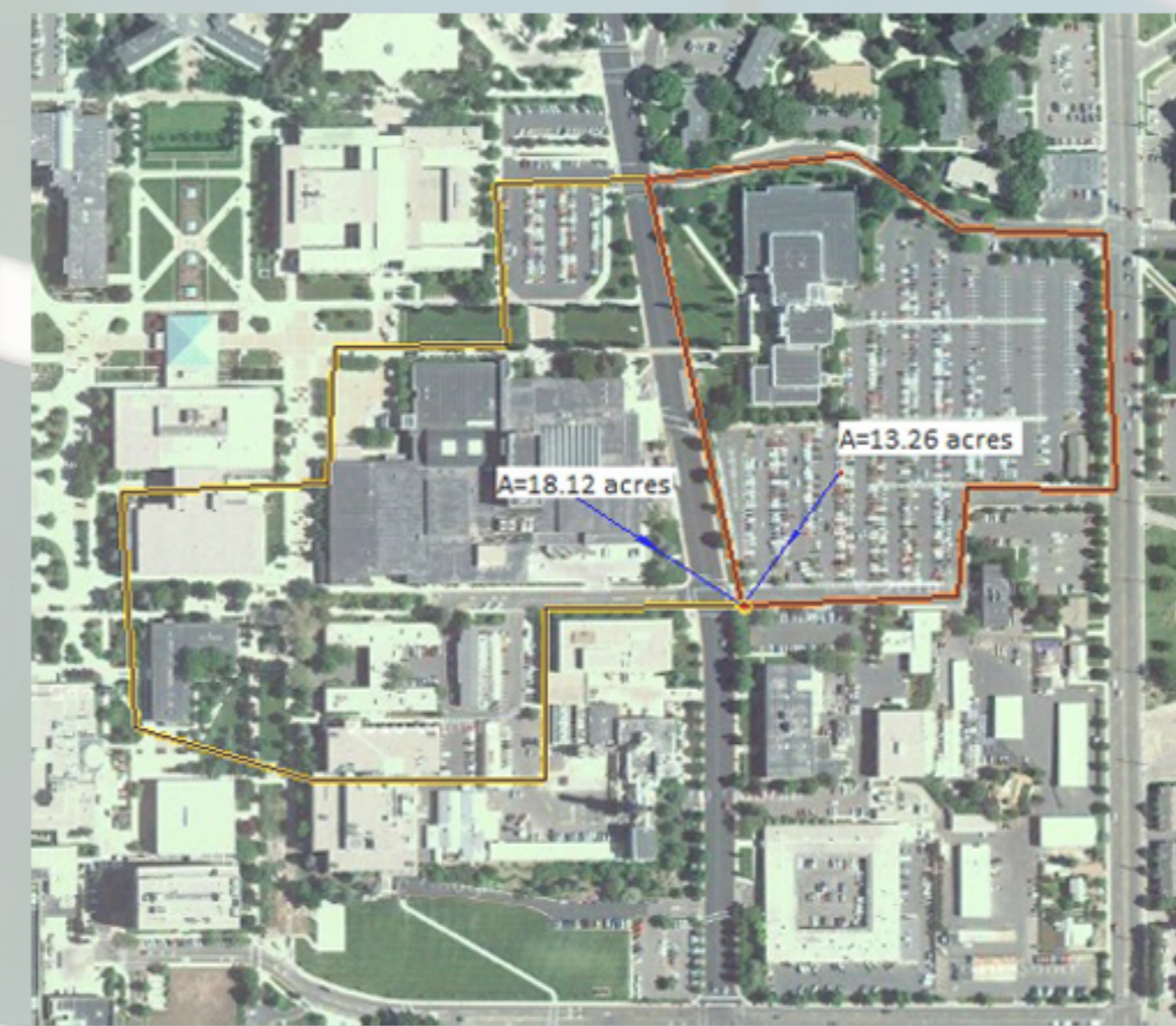
Andrew Van Every Yub Giri
BIM/Design WMS

Project Manager
Tatevik "Tasha" Tadevosyan

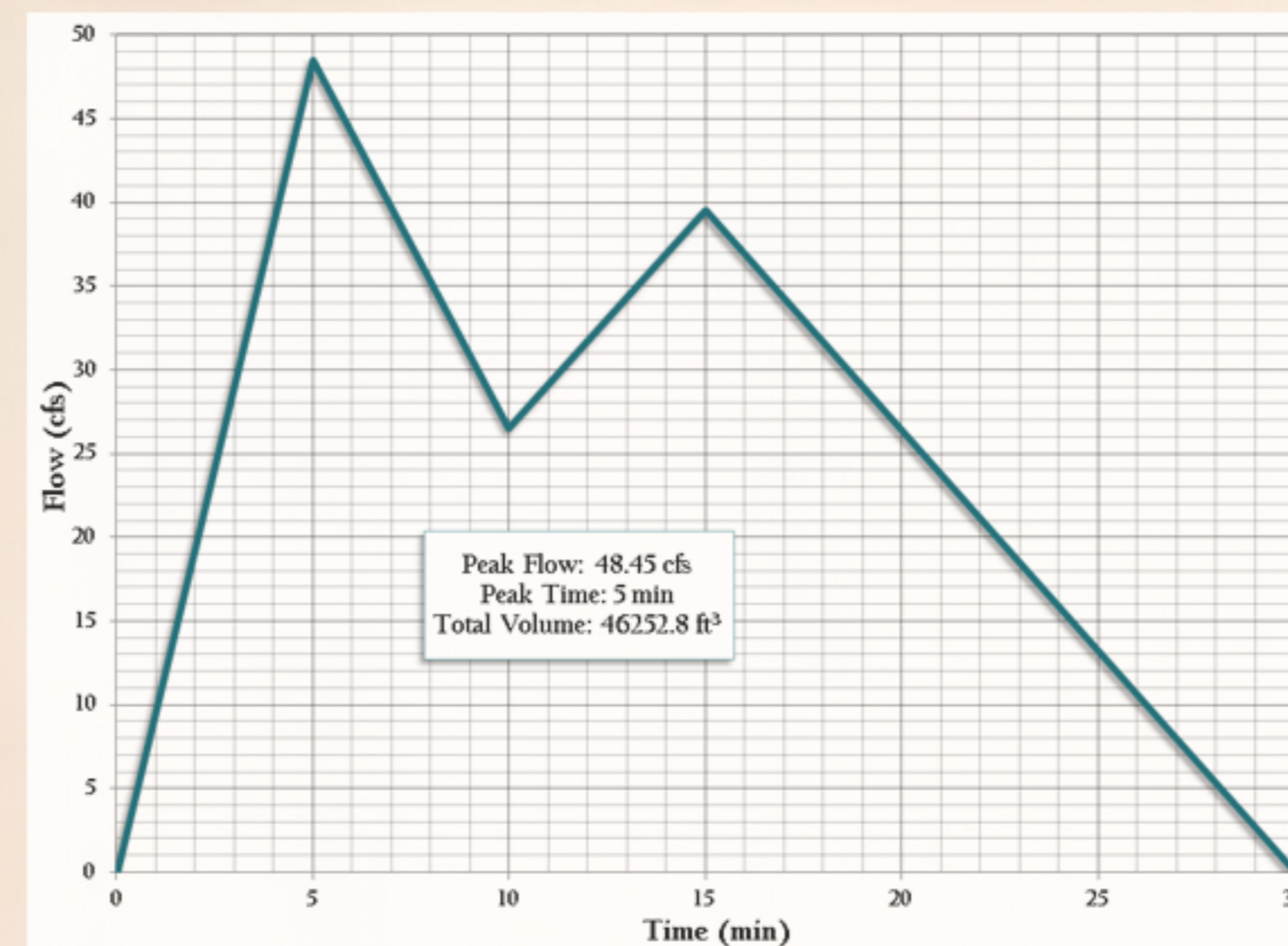
Project Sponsor
Paul Reese
BYU Physical Facilities Dept.

Consultants
Dr. Woodruff Miller
Hydrology & Hydraulics
Dr. James Nelson
Hydrology & WMS
Frans Lambrechtsen
WMS

WATERSHED



HYDROGRAPH



PROCEDURE

1. Determined peak flow rates and volumes from watershed and hydrograph analysis
2. Determined existing pipe lengths and elevations from given topographical data
3. Calculated pipe capacities for existing system using Hazen-Williams equation and compared them to peak flow rates and volumes
4. Identified cause of flooding, not enough pipes and those that were there were too small
5. Brainstormed several different solutions involving increasing size of existing pipes, adding new pipes to areas where there were previously none and even looked into implementing large storage tanks
6. Decided which was best idea and developed it into our final proposed design

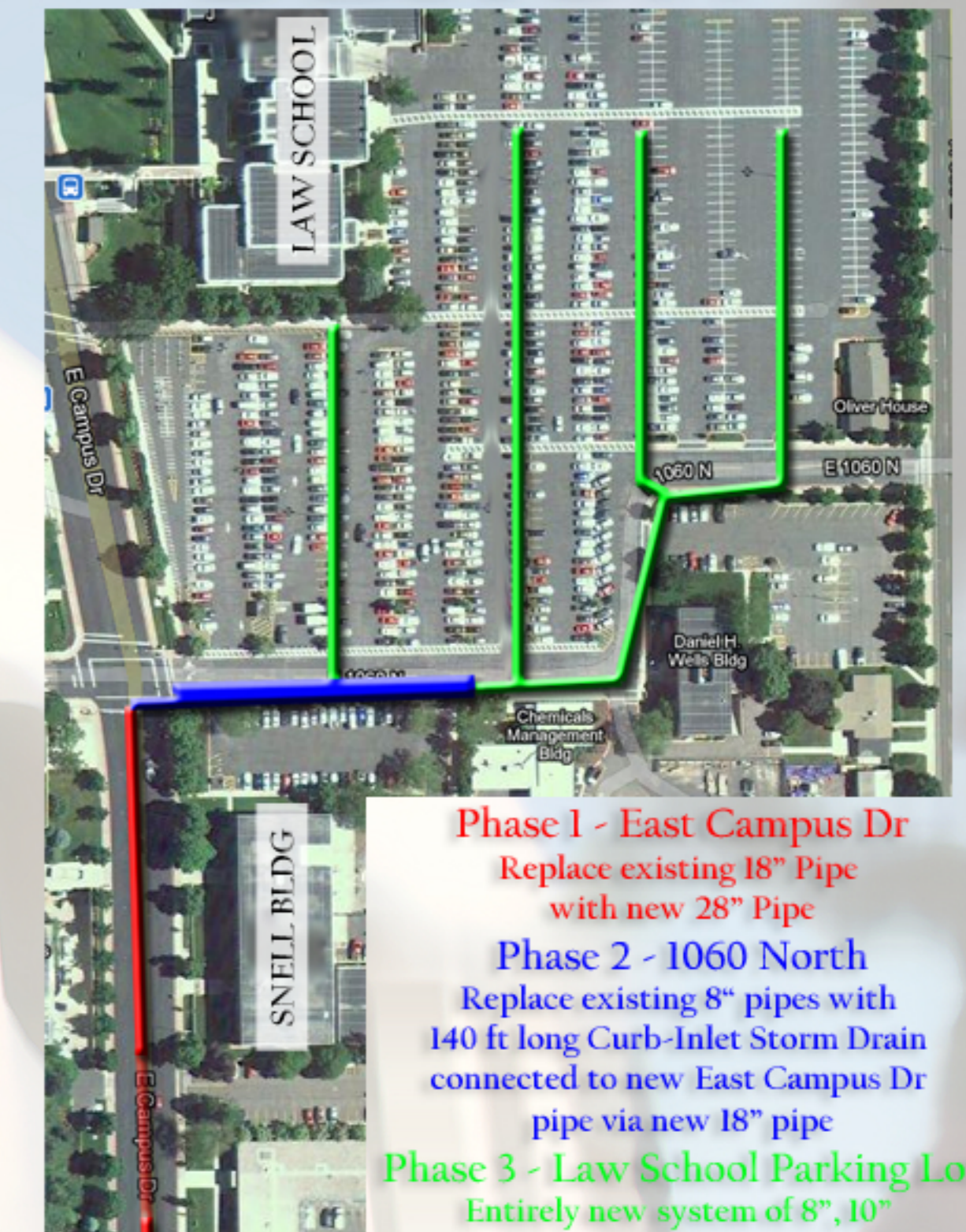
THE NUMBERS

Total Peak Flow = 48.45 cfs
Peak Capacity of Existing System = 20 cfs
Peak Capacity of Proposed Design = 50 cfs

TOOLS & RESOURCES

- | | |
|---------------------|---------------------------------------------|
| WMS | Provo City |
| -Watershed Area | -IDF curves for rainfall intensities |
| AutoCAD | BYU Physical Facilities |
| -Mapping & Modeling | -Topography and Existing Storm Drain Layout |
| MS Excel | |
| -Hazen-Williams Eq. | |

PROPOSED DESIGN



- Phase 1 - East Campus Dr**
Replace existing 18" Pipe with new 28" Pipe
- Phase 2 - 1060 North**
Replace existing 8" pipes with 140 ft long Curb-Inlet Storm Drain connected to new East Campus Dr pipe via new 18" pipe
- Phase 3 - Law School Parking Lot**
Entirely new system of 8", 10" and 12" pipes and storm drains throughout parking lot connected to new Curb-Inlet Storm Drain via new 18" pipe

ESTIMATED CONSTRUCTION COSTS

Phase 1	\$76,750.00
Phase 2	\$39,850.00
Phase 3	\$136,000.00
TOTAL	\$252,600.00