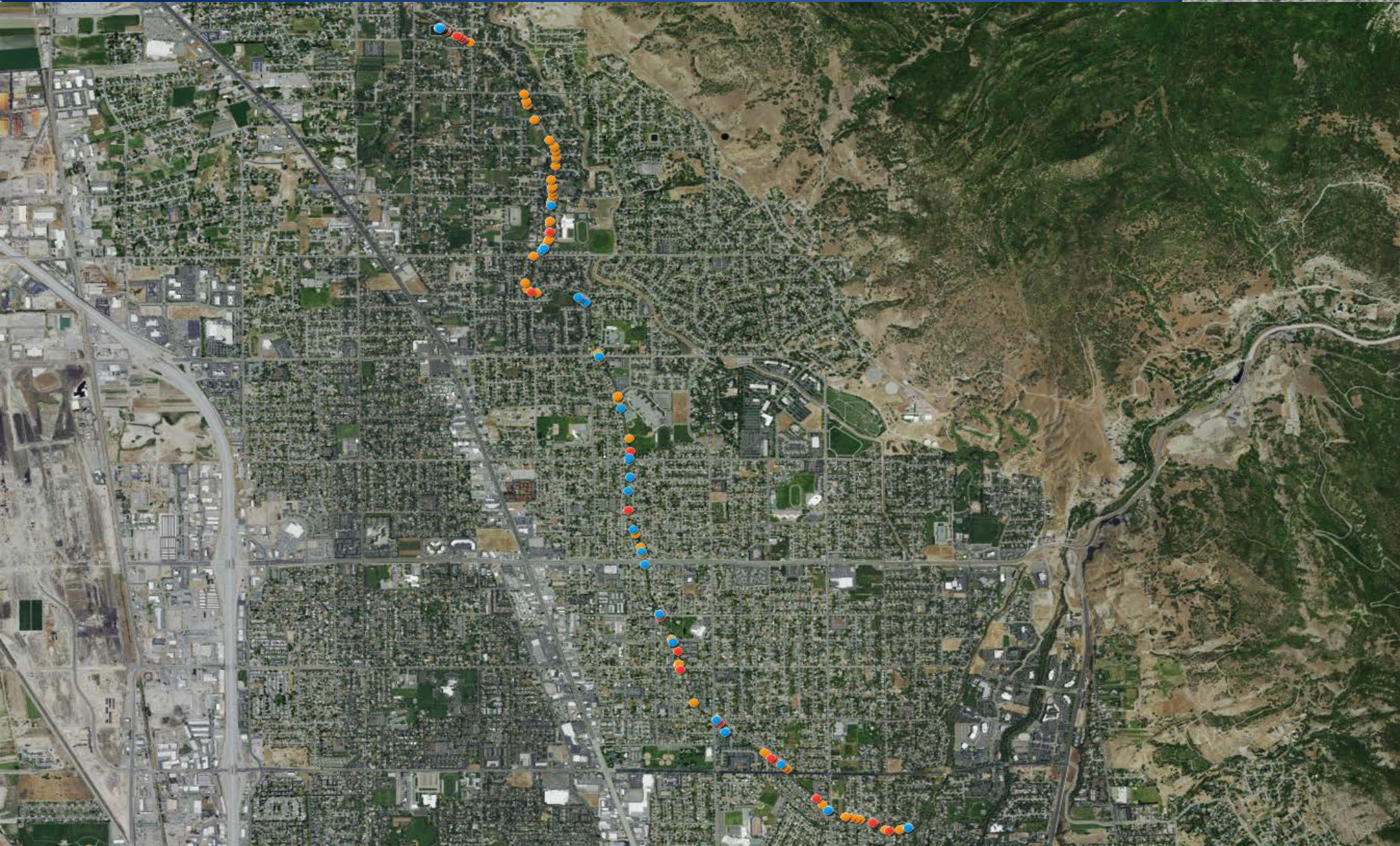


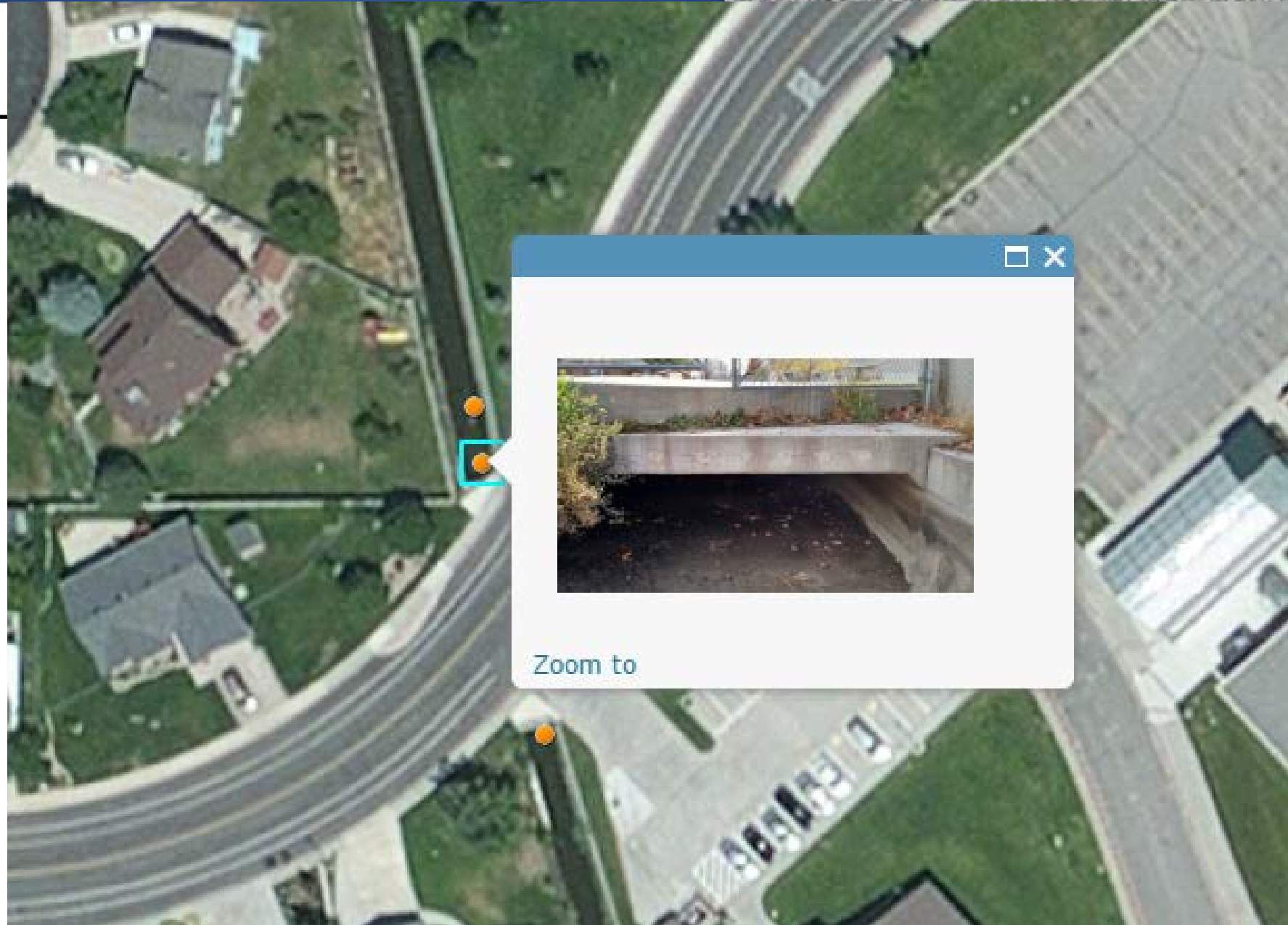
50% Status Report: CEE-2016CPST-012: Water Supply Feasibility Study**Team Members: Josh Reidhead, Daniel Schwicht, Jeffrey Schwicht****Date: 27 February 2017**

- There exists an open, concrete-lined channel which delivers Provo River water to the residents of Orem, Lindon, and Pleasant Grove, as well as to the City of Lindon, primarily for irrigation purposes. The portion of the channel which runs from the Provo River near the mouth of Provo Canyon to 800 N in Orem is called the Provo Bench Canal. The portion of the channel running from 800 N in Orem into Pleasant Grove is called the North Union Canal. The canals, constructed more than 150 years ago, have begun showing signs of deterioration. Homes along portions of the canals have begun experiencing flooding due to leaks. Homeowners and civic leaders are concerned about water loss, flooding, potential failure of the canal structure, and the subsequent inability to transport water to its intended recipients.
- J-U-B Engineers has been involved in analyzing the existing state of the North Union Canal and Provo Bench Canal. Currently, discussions are underway to determine the best viable solution for the aged canals. J-U-B Engineers is needing additional information to better assess the situation along the canals from the crossing of the Provo Bench Canal and Palisade Drive in Orem to the diversion of the North Union Canal at the Lindon Pressure Irrigation Reservoir III. J-U-B Engineers is requesting the collection of data along the canals as well as a study of the feasibility of piping the canal, a conceptual design for a piped canal solution and automated diversion device at the head of the Lindon Reservoir III, and evaluations of alternatives to piping that would meet the project objectives. A report is also requested which details water needs, water savings associated with the provided designs, and recommendations for project funding.
- Our team of students has been offered the opportunity to offer our services to J-U-B Engineers to complete the study of current canal conditions and feasibility of piping and alternatives. After meeting with J-U-B and Grad-Student Mentor Jake Nelson, our team traveled the relevant length of the canal (roughly 5.5 miles) on 23 November, photographing existing canal conditions.
- J-U-B Engineers requested an accelerated submission of the mapped current conditions of the North Union Canal in order to assist in planning and carrying out small-scale repairs beginning in the next months. Photographs and other data were compiled in an online map resource with approximate locations and color coding designating damage, hydraulic structures, and general canal conditions. The map was submitted to J-U-B by the requested deadline of mid-February.
- Remaining tasks include analysis of current water loss in the canal and a cost-benefit analysis of two plans, including piping the canal. Analysis of existing data from previous research and climatological databases will allow an estimate of current water loss. Costs of plans will focus primarily on estimated monetary cost of implementing plans and projected upkeep cost estimates. Benefits of plans will primarily focus on water savings and improved safety.



Data points along the canal are color coded according to type of data mapped.

Points are in an online format available to anyone with the URL. Clicking points shows the corresponding photograph.





We began at the several turnouts located just before the canal crosses Palisade Drive.

We took several measurements of the canal and photographed various examples of damage, from mild to severe.



We took several measurements of the canal and photographed various examples of damage, from mild to severe.





We took several measurements of the canal and photographed various examples of damage, from mild to severe.



**We photographed
all hydraulic
structures along
the canal.**

**Our final destination
was the reservoir
turnout in Lindon.**



Project Status Report: CEE-2016CPST-012: Water Supply Feasibility Study

Team Members: Josh Reidhead, Daniel Schwicht, Jeffrey Schwicht

Date: 30 January 2017

1) Summary of technical/non-technical challenges encountered

- J-U-B has requested an additional deliverable NLT 14 February. It is a map document with reference to all observed hydraulic structures, take-off devices, and recorded canal dimensions. Preparing this product is directly in-line with other deliverables, so will not delay any of the originally requested deliverables.
- Survey notes and photographs need to be organized and put in most helpful format.

2) Team approaches/resolutions to overcome challenges

- Weekly meeting with project manager keeps team on track, reinforced by daily contact between team members.
- Use of online instruction tools allows production of somewhat challenging deliverables.

3) Status of challenge resolutions & potential project impacts

- Deliverable for 14 February on schedule, map 60% complete, photos 100% organized, survey notes 100% digitized.
- Work schedule appears to be convenient for all parties. We'll continue with it.

4) Project Status & Summary

- Yep, J-U-B asked for a map because they want to see where they'd be most interested in starting work. We're on it.
- We put in a whole crap-ton of work last semester, so we're sitting pretty. Lots to do still, but we're feeling good.
- Also feeling pretty good about the job Jake Nelson is doing. He's really all the accountability we need, so unless this *really* makes someone in the corner office happy to read, I think we could dispense with this and never talk about it again.



Project Status Report: CEE-2016CPST-012: Water Supply Feasibility Study
Team Members: Josh Reidhead, Daniel Schwicht, Jeffrey Schwicht
Date: 27 February 2017

<p>1) Summary of technical/non-technical challenges encountered</p> <ul style="list-style-type: none">• J-U-B requested a damage map referring to all observed hydraulic structures, take-off devices, and recorded canal dimensions and damage. Preparing this product required significant research, trial and error, and help from GIS experts.	<p>2) Team approaches/resolutions to overcome challenges</p> <ul style="list-style-type: none">• Weekly meeting with project manager keeps team on track, reinforced by daily contact between team members.• Use of online instruction tools allows production of somewhat challenging deliverables.• Consultations with local GIS experts available through University geography program.
<p>3) Status of challenge resolutions & potential project impacts</p> <ul style="list-style-type: none">• 14 February deadline for map met with J-U-B pleased with product.• Upcoming tasks clarified by weekly meetings with grad-student mentor Jake Nelson.	<p>4) Project Status & Summary</p> <ul style="list-style-type: none">• We have successfully delivered the requested damage map.• Multiple designs are underway.• Weekly meetings continue with Jake Nelson, with frequent communication and feedback from J-U-B.