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GIS Specialist 2016 Internship with CDM Smith in Boston, Massachusetts

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Summer Internship at CDM Smith

GIS Specialist 2016 Internship with CDM Smith in Boston, Massachusetts

Suzanne Lynn Meek

Degree will be conferred May 2017

A GISDE final project paper

submitted to the faculty of Clark University, Worcester, Massachusetts,

in partial fulfillment of the requirements for the degree of

Masters of Science in Geographic Information Sciences for Development and
Environment

in the Department of International Development, Community, and Environment

Accepted on the recommendation of

Dr. Yelena Ogneva-Himmelberger

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Abstract

GIS Specialist 2016 Internship with CDM Smith in Boston, Massachusetts

Suzanne Lynn Meek

This report provides a detailed experience of my internship with CDM Smith during the summer of 2016. This was a formal 12-week internship that was extended an additional two weeks due to my success in the first few weeks. My title was listed as a GIS Specialist Intern. My responsibilities included applying GIS technologies to construction, water, and energy projects, digitizing various locations for cities and private clients, FEMA projects, and street light audits in two different towns in New England.

This internship was a great learning experience in regards to real world professionalism and field work etiquette. I was able to collaborate with both different and likeminded peers who guided me throughout my entire summer. I highly recommend the CDM Smith internship program. The following pages dive deeper into my projects, lessons learned, and my reflections on this internship.

Yelena Ogneva-Himmelberger, Project Advisor

Summer Internship at CDM Smith

Yelena Ogneve-Himmelberger, Ph.D., Chief Instructor

GIS Specialist Summer 2016 Internship with CDM Smith in Boston, Massachusetts

Academic History

Name: Suzanne Lynn Meek

Place of Birth: Hackensack, New Jersey

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Date: May, 2015

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Student – University of Hawaii at Manoa, Honolulu, Hawaii, Geology of the Hawaiian Islands (2013)

Student – Murdoch University, Freemantle, Australia, Marine Ecology and Research Methods (2014)

Captain – University of Massachusetts Boston Women’s Ice Hockey (2014-2015)

Biological Science Technician Intern – National Park Service, Boston Harbor Islands, Massachusetts (2015)

Dedication of Degree

For my Father, who answers my daily phone calls with advice, the knowledge of hard work, and the patience of knowing when to just listen.

My Mother, who answers my many text messages and empowers me to be loud.

My Brother, who never ceases to make me laugh (mostly at him) and makes any trip an adventure.

My Grammy Chmielowicz, who has taught me how to speak my mind bravely.

My Grammy Meek, who taught me the worth of genuine actions.

I would like to thank them for their continuous unconditional love that knows no boundary and allowing me the privilege of loving them back. I am one happy woman.

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Chapter 1: Introduction

It was the summer of 2013 and I had just returned from a two-month study abroad at the University of Hawaii, Manoa on O'ahu. That trip had me knee deep in the water looking at coral formations, walking along trails on volcanic formations, and eating the richest produce I had ever tasted. My adventures throughout this time were guided by a geophysicist professor who played soccer on the weekends and encouraged his students to be as active as well. I had the privilege to spend the rest of my summer studying geospatial technologies in the field at my undergrad, University of Massachusetts, Boston (UMB). In this summer course, I would study GIS field methods for two weeks then apply what I had learned in Nantucket for a week on UMB's 7-acre plot of land. My classmates and I tracked the location and extent of invasive species. I was island hopping and I could not get enough of applying GIS to geology and ocean science. My professor at UMB, Helenmary Hotz not only taught me the nuts and bolts of GIS, but how to dream of a career and pursue my vision. Helenmary was one of the two people at UMB who took the time to help me create a career path.

After that summer, I hunted for GIS and marine science classes to participate in. I created my daily schedule by accounting for my ice hockey practices, home and away games, and my work study at the library. There were many overwhelming days with too much to get done but I created and stuck to a regimen that made me the most productive. As a player, I was able to receive help, guidance, and wisdom from my athletic academic advisor, Marybeth Maneen. I was very lucky to have two strong women in my corner empowering me to pursue what I wanted. As a student, I knew when to turn on my academic sense and when to turn them off to recharge. Helenmary Hotz allowed me to have an independent study working through Esri's Model Builder software. Every week I finished a few chapters and kept a journal of exactly what I was

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doing and I still refer to that journal. By being enrolled simultaneously in a Spatial Database course with Michael Trust (a MA government GIS employee), I was able to apply my Model Builder skills to a final project, where I created an interactive online map of surfing spots in Hawaii. These two professors took the time to spark my interest, teach the best ways to answer environmental questions using GIS, and encouraged me to pursue a Master's degree.

The Geographic Information Science for Development and Environment (GISDE) Master's program at Clark University was the next step I was looking for. My senior year of my undergrad finally consisted of classes of my personal interest. My academic career was revived with a passion for the ocean and a new finding of my natural GIS skills. There was gas in my tank to keep learning and succeed at a higher level of learning. The spring semester of 2015, my year of graduation, I searched for a GIS internship. I was able to land a biological science technician internship on the Boston Harbor Islands with the National Park Service. There I was able to work in the field everyday with handheld Trimble units plotting invasive species with two peers who taught me the beauty of the natural landscape among the city.

At Clark University, I have been able to fill my curiosity with new GIS technologies and ways of thinking. Everyday has been different and continues to pose new challenges. While searching for an internship, I wanted something totally different than the environmental science path I had been on. I applied for the GIS Specialist internship at CDM Smith in February of 2016. I was hungry to be exposed to the corporate America I had heard about and wanted to know how the skills I have acquired could be applied to real world problems.

My summer proved to be not what I had imagined. This position at CDM Smith exposed me to real world instances which GIS was able to find a solution to a problem. I worked hard for 14 weeks straight, with a 40-hour week schedule. I was over the moon with my new found love

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for GIS in construction, energy, water, and transportation planning. I met many people who took the time to teach me why GIS was special, needed, and how it was growing. It was a privilege to work at CDM Smith, to be exposed to a different work environment than I had been accustomed to, and an honor to work with people who saw the numerical and physical value of GIS technologies.

Chapter 2: Describing CDM Smith

History of Firm

CDM had a rich history prior to becoming CDM Smith. CDM Smith began when Thomas Camp, chair to the Department of Sanitary Engineering at Massachusetts Institute of Technology, left to create a consulting practice with Herman Dresser and Jack McKee; coining the name CDM in 1947. While Camp continued to look into drinking water treatment technologies, McKee advanced engineering in regards to water quality protection and groundwater recharge. Dresser then created the business practices of the firm while emphasizing and setting up the standards of teamwork, employee development, and exceptional client service. To date, dual media filters and direct filtration practices started by Camp are still in use.

As the automobile industry flourished, South Carolina's first state traffic engineer, Wilbur Smith, capitalized on contributing to transportation and infrastructure investments. In 1952, Wilbur Smith and his brother, James M. Smith began a consulting practice titled Wilbur Smith Associates. For over six decades, both consulting practices grew by catering to local public and private clients before eventually serving clients globally. In 2011, CDM and Wilbur Smith Associates came together to form CDM Smith. This newly formed consulting firm would go on to lead operations in consulting, engineering, and construction utilizing over 5,000 professionals. The firm would take on operations in fields like water, the environment, transportation, energy, and facilities worldwide¹.

1. "Facts About CDM Smith." *About Us*. <http://cdmsmith.com/en-US/Discover-Us/About-Us/Facts-about-CDM-Smith.aspx>. 09 Nov. 2016

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CDM Smith states their mission as to provide exceptional service along the entire life cycle of a project. Their website states:

“CDM Smith provides lasting and integrated solutions in water, environment, transportation, energy and facilities to public and private clients worldwide. As a full-service engineering and construction firm, we deliver exceptional client service, quality results and enduring value across the entire project life cycle. The firm is distinguished by our leadership and flexibility in design-build and alternative delivery approaches for environmental and infrastructure projects.

We’re passionate about what we do. We work together—in teams and in partnership with our clients—to solve complex environmental and infrastructure challenges. Together, we create a learning culture, dedicated to always finding a better way for our clients, for the planet, and for each other.”²

While the organization’s headquarters are in Boston, MA, the company has offices all over the world. Offices can be found in Europe (Germany, Ireland, Poland, and Turkey), Asia Pacific (Australia, Guam, India, Pakistan, Singapore, and Vietnam), Latin America (Colombia, Chile, El Salvador, and Puerto Rico), Egypt, Jordan, Saudi Arabia, Lebanon, Lesotho, Qatar, South Africa, Tanzania, United Arab Emirates, and West-Bank) and in North America (Over 40 states, and Canada). It should be noted that the company’s projects occur all over the world near and far from offices.

CDM Smith is employee owned and is made up of three major business units, The North America Unit, Federal Services Unit, and the International Unit. Within these units is the Technical Services Unit and the Construction Unit- who work together to produce integrated engineering and construction services worldwide. CDM Smith carries out its mission to the government, business, and industry clients. The services provided includes consulting, engineering, construction, and operations in fields such as water (lakes, rivers, oceans), the

2. "Times Change, and We Change with Them." *History*. <http://cdmsmith.com/en-US/Discover-Us/About-Us/History.aspx>. 09 Nov. 2016.

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environment (terrestrial, oceanic, and industrial landscapes), transportation (railways, and inner city subway infrastructure), energy (utilities, electrical, pipe systems), and facilities³.

Organizational Structure

CDM Smith is made up of over 5,000 employees worldwide. The executive team consists of Stephen J. Hickox, Chairman and Chief Executive Officer, Timothy B. Wall, President and Chief Operating Officer (Whom I met at an intern lunch and learn), and Theirry Desmaris, Executive Vice President, Finance. Specific to my GIS team, I had a direct manager, Mark Zito. Zito was head of the GIS team in Boston. I also worked under other employees that were not a part of the team and under other managers for various projects. When working on other projects, managers from other offices of GIS teams would instruct me. Higher up employees on the team were also able to allocate work to me. The company created a buddy program and paired each intern with a coworker for the summer. This buddy would assist with the small every day needs of the intern. My buddy was Dave Kealey, who I enjoyed working with greatly. He was very approachable and included me in as much as he could.

GIS in the Company

Within the CDM Smith, GIS is done on all different scales, for example publishing images to be used in PDF pamphlets, or digitizing a university's campus, and even farther to a bigger project using specific attributes from engineers. Scripts, tools, and coworkers' notes were vital to any project. The handing off of different tools, packages, and software was made possible by a social media platform, Yammer. This website allowed all employees to post a question that coworker throughout the company could answer. This would begin a full discussion of possibilities and users could tag coworkers who may be experts needed to answer the question.

3. "Quality." *Quality*. <http://cdmsmith.com/en-US/Discover-Us/About-Us/Quality.aspx>. 09 Nov. 2016.

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Employees can form groups to allow more information to get to those in need. GIS was crucial in converting engineer drawings to real world applied settings, such as construction maps for a building, locating all utilities like electrical lines, pipes, and road information. This allowed the engineer's math, idea, and dream come to life allowing others to evaluate the idea in a real world setting.

Company's Performance

CDM Smith looks for employees who not only work hard, but people who want to work smartly and efficiently. The recruitment team works hard at receiving the best possible employee for each position. The office allows many perks, with an outside rooftop lounge, a kitchen on every floor with free coffee/tea, clean facilities, and a gym membership within the building. Each cubicle has a desk counter that could fully rise or lower to a user's preference. Printing has no restriction within reason and IT is always just a skype call away. Filing for software online in the company's shopping department always took less than one day. As an employee, you can go to the company's online shopping for anything you may need including desk supplies and software. After placing an order, a confirmation email would arrive shortly and notify me how my request was being handled. I could watch all stages of the process, the filing of a request, who received my request, and if they had approved it yet. Coworkers are eager to say hello to one another and act respectfully in this pristine office setting. CDM Smith actively worked on having more of a community feeling versus the business setting. By having company events and lunches, the employees looked at work more positively and with admiration plus excitement.

The company delivered on each project considering quality of its product, safety of workers and users, and the overall exceeded expectation from a client. Each project was backed by a team of experts across all specified fields. This type of collaborative work optimized results.

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The most impressive part of a project was the easiness of collaboration. Skype calls, video meetings, and sharing monitors allowed for the barrier of locations to be broken. It did not matter where an employee was in the world, they could be in the room talking and presenting their ideas with coworkers. Each project moved quickly with emails and updates from multiple team members. The act of group work and constant contact allowed projects to move smoothly. The company not only learned from its mistakes, but insisted on learning from what it did right and wanted to make both its method of success and failure better.

Chapter 3: Responsibilities

Main Project: Streetlight Audit in Nashua, NH and Quincy, MA

My main reason for hire was to work on an audit in Nashua, NH and Quincy, MA. This audit (done for all of New England) was done by taking notes about streetlights using ArcCollector on an iPad throughout the town. These lights would be changed from their current state over to more energy efficient LED lights. CDM Smith was hired to audit the entire area of Nashua, NH in June and Quincy, MA in August using a ledger from the city that had every street and the amount and corresponding identification numbers on it. Auditors would make sure they got every street light listed in the audit. Below is the Project Description from the Nashua, NH General Health and Safety Plan:

“CDM Smith field crews will be responsible for collecting information on approximately 6,000 utility poles in the City of Nashua. Field crews will be performing ground level, visual inspection of utility poles in order to collect information that will support a LED retro fitting project the City will be completing. CDM Smith field crews will be deployed throughout the City to collect information on the existing light pole infrastructure using an iPad device. All utility poles exist on the sides of the roads, are within the public right of way and a police detail will not be needed for traffic control. The CDM Smith employees will not travel beyond the public right of way or collect information on private or cross country utility poles. In cases where the road is impassible due to snow or other hazards they will not the area and rely the issues to the Municipality. Police and City workers will be notified of the field crews’ presence and all field crew will be wearing vests and appropriate working gear (pants, collared shirt, etc.).”

Fieldwork began with planning a route before heading out into the field using the ledger. It greatly helped in finding streets that geographically made sense and see how many poles were on each route. By counting the possible poles, I could plan an achievable goal of 100-120 streetlights audited. In order to account for the summer heat, I started earlier in morning so cooler air was still around with less sun exposure. I packed a lot of water, Gatorades, and filling

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snacks to keep my focus. I needed sunglasses, a hat, a safety vest, thin pants, comfortable walking shoes, sunscreen, and bug spray. I would charge the iPad the night before and bring the General Health and Safety Plan in my car in case of an emergency.

While using ArcCollector, I began to recognize tricks, shortcuts, and skills that let me audit faster and more efficiently. I would always have Wi-Fi and Bluetooth on to better locate poles/ pins locations. Anything that was not a Cobra (a type of street light) I was told to take a picture. I noted what the pole material and color were along with the sticker color and number. I used the “Copy like this one” button and then moved the pin which was very helpful to copy the similar attributes and make small changes. If I had a day in the office, it was much easier to batch QA QC on a desktop computer for any issues.

Some issues included my neglect to change the details from the last pole to the next pole. Sometimes I would forget to move the point to where I wanted. I tried to stay out of an area that would be heavily congested during rush hours. When the sun was right above the light at noon, it was hard to decipher between a white and a yellow sticker. To combat this, I wore sunglasses and would view the sticker at various angles.

The Nashua, NH audit was able to be completed from May 24th- July 8th. I was in Nashua three times a week and in Boston two times a week. I was able to choose my days of in the field or office. This was a privilege and truly made the experience my own personal adventure. Then from August 2nd- August 25th I audited in Quincy, MA. I was in the field every day while auditing this town because it was much closer to my residence.

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During my time at CDM Smith, I was able to see the full process of the audit, including a week of running around Nashua finding all the lights missed. See *Figure 1* to see the final product and area.

Other Projects Description

CDM Smith gave me many opportunities to work on various projects while in the office. I was able to digitize an airport in New Bedford, MA (*figure 2*), classify Bentley University's campus including giving each parking space a GPS point and ID code (*figure 3*), and design a map for an information packet for the construction of a pipe in New Haven, CT (*figure 4*). I was able to digitize FEMA residential maps into a database for further analysis for coworkers to perform. I ran a script created by my manager for water valves in a community in Jeddah, Israel. I went through zone by zone and running the tool, identifying any invalid/poor barrier locations then removing them and re-running the tool until optimal results were achieved. The challenge was that the zone barriers were not very detailed and water lines may run along the edge. The tool will see these as lines that should be shut off from the zone so you need to delete the barrier points or adjust the zone boundary. I was able to receive help and the data from a GIS Specialist, Yi Hou who worked at the Dallas, TX office. See figure 5 for a visualization of my workflow.

I was able to analyze Arlington, MA Surveyor Parcels collected by surveyors of the city, engineers of the company, and GIS maps from a previous project. I compared the dimensions of the parcels to one another to make the GIS maps as up to date and accurate as possible (*figure 6*). Sometimes, reading the hand drawn engineer maps proved to be difficult. I edited two previously made maps, a Brockton, MA Sewer Inspection map (*figure 7*) that needed colors and lengths changes and a Flood Polygon Cleanup in Montana (*figure 8*).

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All of the data I needed for these projects was emailed to me or I copied from the company's server to my personal computer at the office. I was able to access databases on other servers in other states, like Denver Colorado, and the protected FEMA database. Along with data, I was encouraged to ask my coworkers and manager for help. I greatly appreciated their willingness to talk to me and time taken to teach me anything I did not understand.

My Adapted Mission

My role at my internship was heavily correlated with the company's mission. I took the company's idea of "Listen. Think. Deliver." and applied it directly to my streetlight audits. I listened to my peers advice. I constantly thought of efficiency. I applied what I have learned from my athletics directly to my everyday goals. I was streetlight hungry and acted with a sense of urgency. Finally, I delivered accurate information on collected poles. Throughout my time at CDM Smith, I acted with passion, thoughtfulness, and professionalism. I want to be a part of the fast paced, high producing, and intelligent community. By modeling myself after my coworkers' best aspects and previous mistakes, I was able to maximize my productivity and enjoy my hard work. It was a privilege that my coworkers were so willing to open up to me and tell me about themselves and offer advice and their time.

Figures:

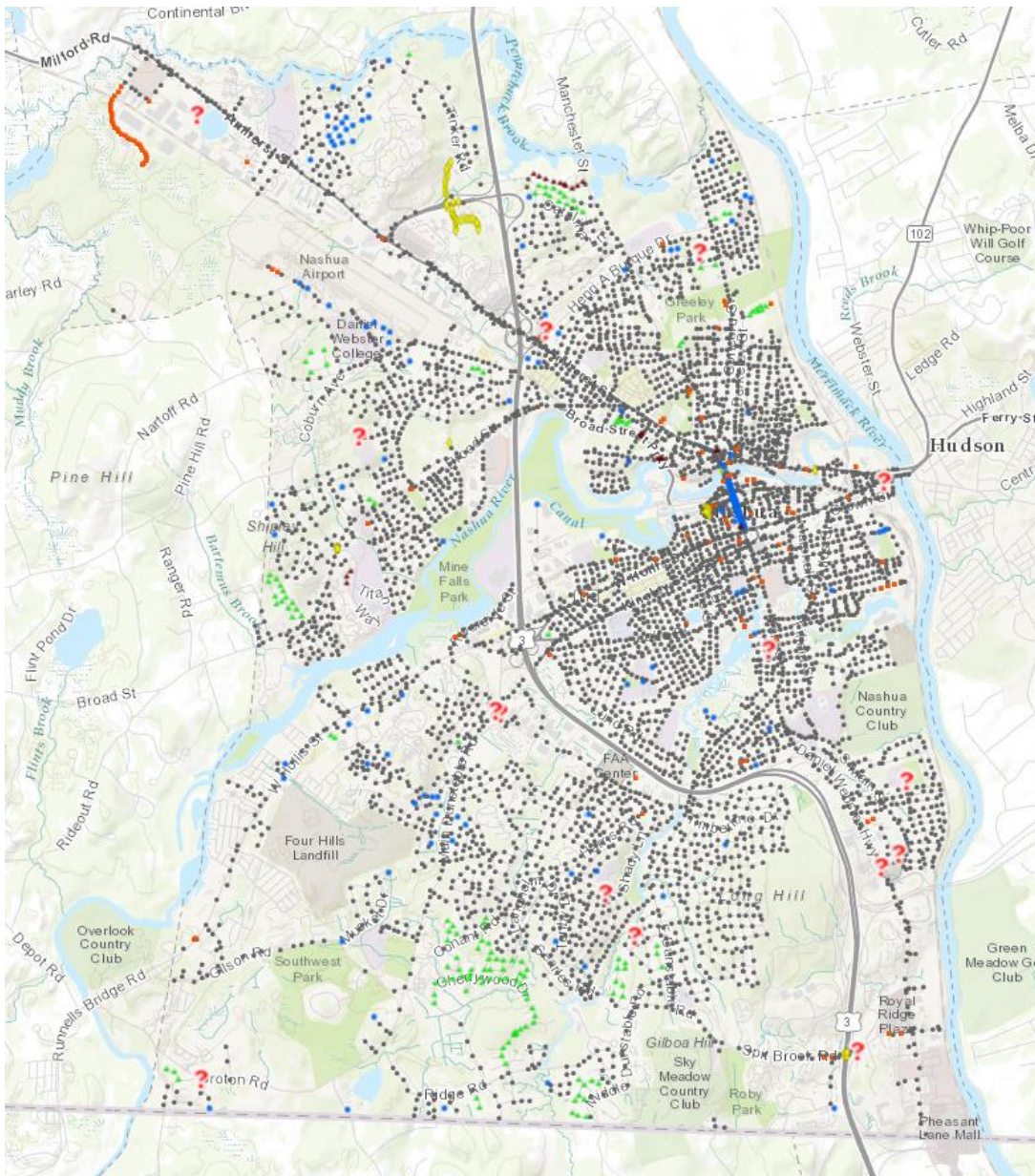


Figure 1. Completed Nashua, NH Audit, with different colored points representing various streetlight types

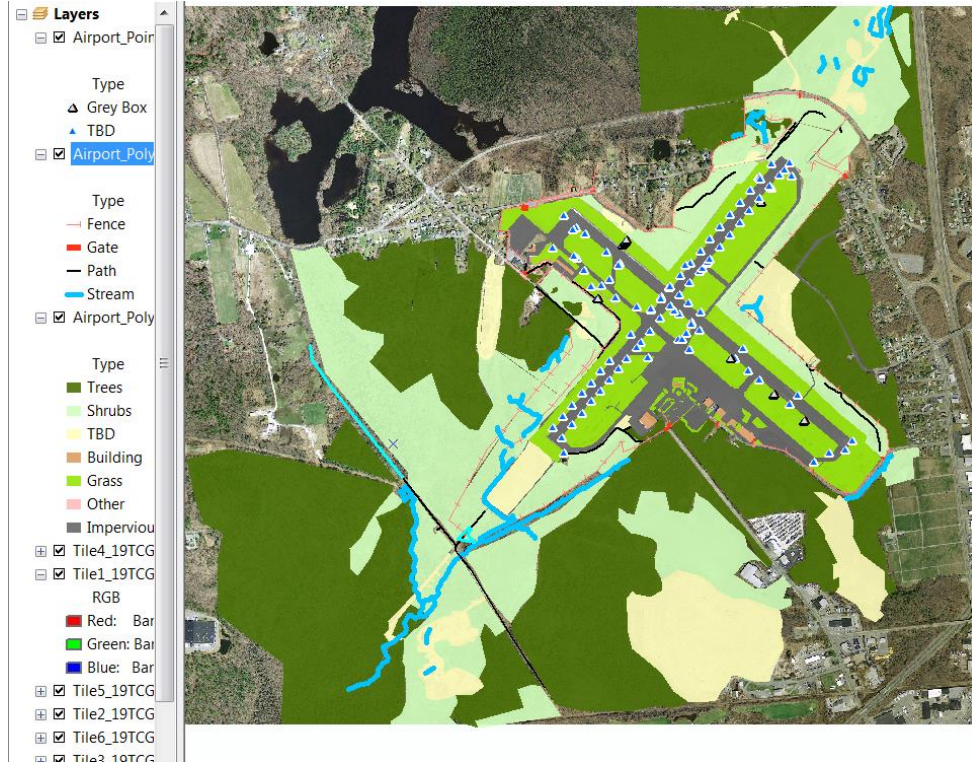


Figure 2. Digitized airport in New Bedford with various land covers, pavement marking, and water bodies.

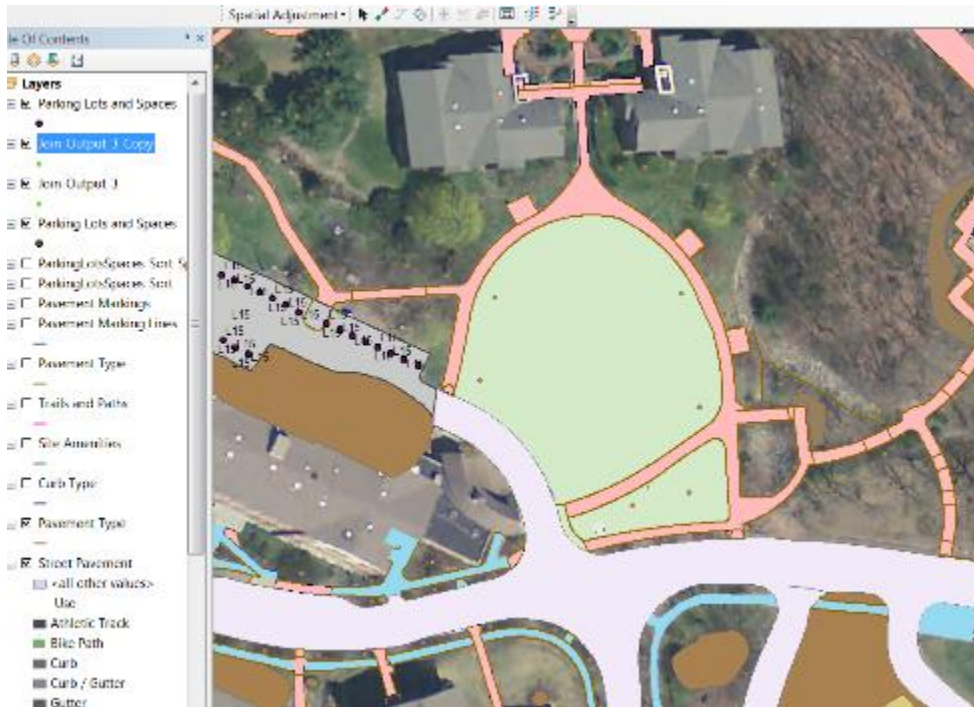


Figure 3. Bentley University's campus showing each parking space a GPS point and ID code. Different pavements, walkways, and buildings are also classified.

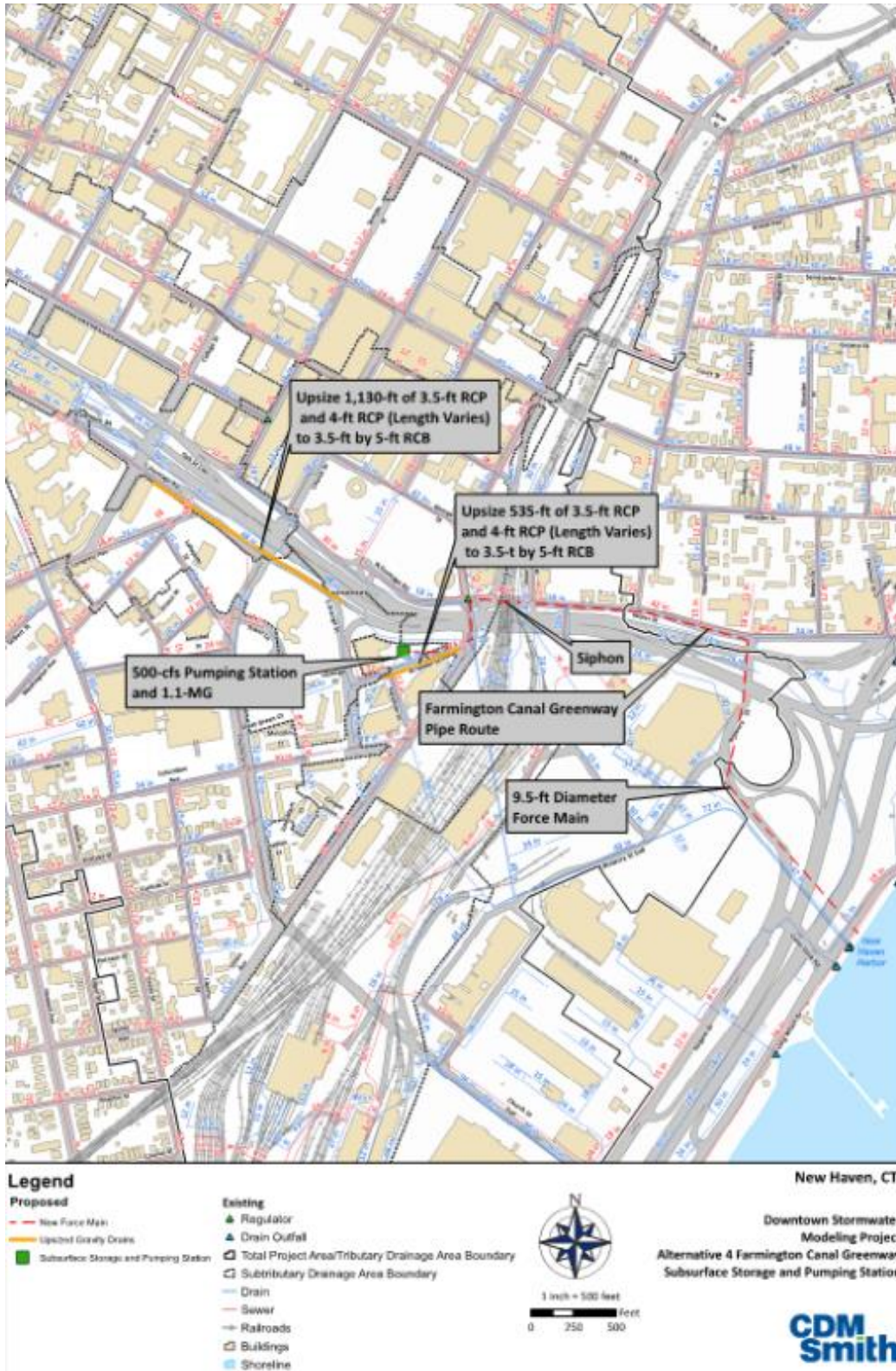


Figure 4. Map for the construction of a pipe in New Haven, CT to go in an information packet for the project's site.

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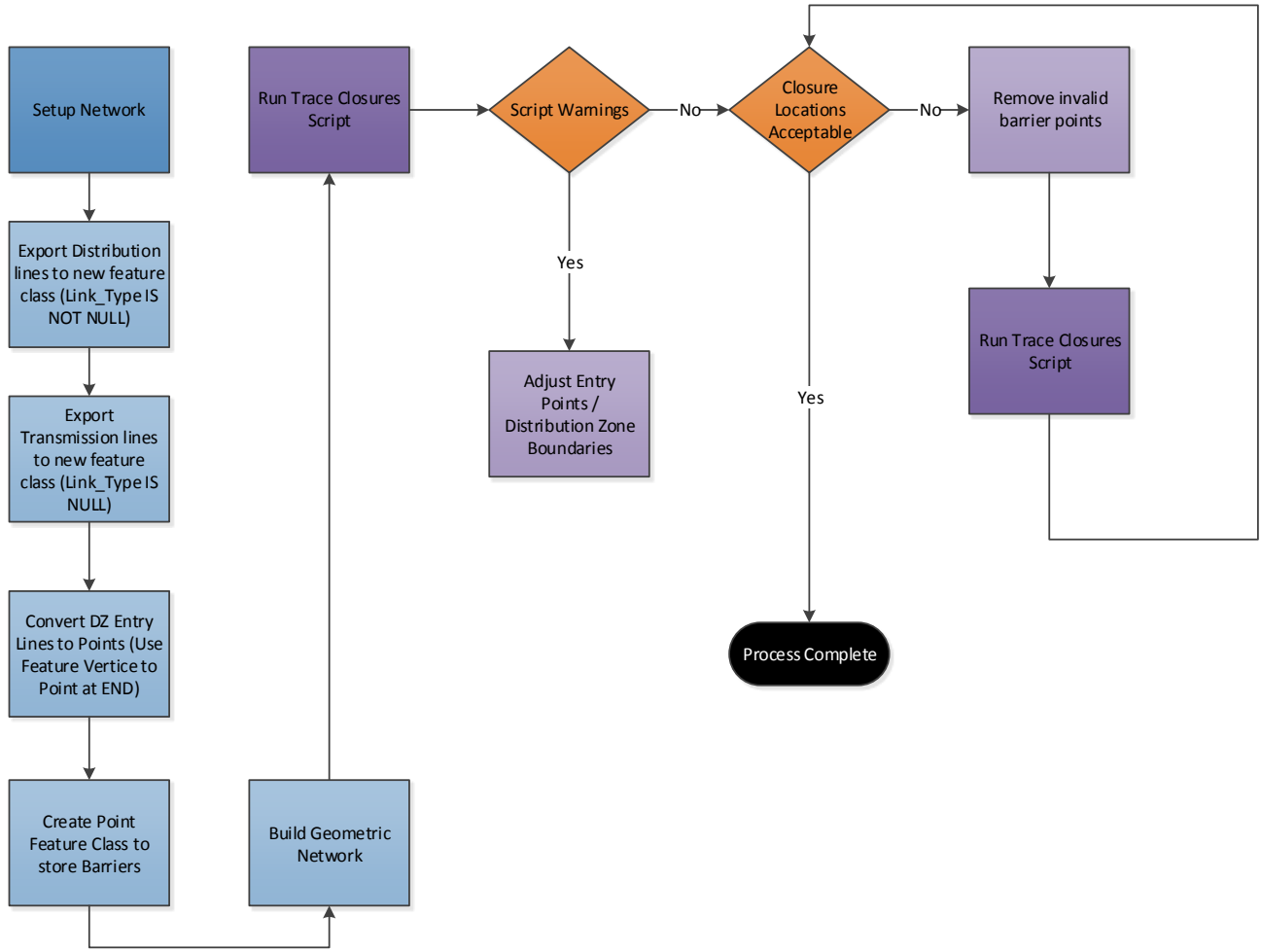


Figure 5. Identify any invalid/poor barrier locations then removing them and re-running the tool until optimal results were achieved. This graphic is from the Distribution Zone Isolation Workflow Document given to me by a coworker.



Figure 6. The engineer, assessor, and GIS map comparing the dimensions of the parcels to one another. The goal of this comparison was to make the GIS maps as up to date and accurate as possible.

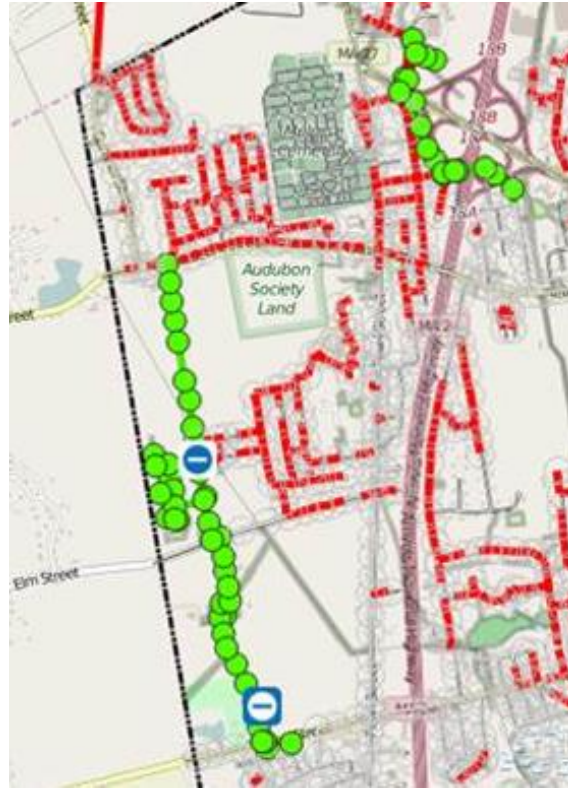


Figure 7. Cleaning up a Brockton, MA Sewer Inspection map. Updated green points' attributes and symbology.



Figure 8. Flood Polygon Cleanup in Montana. Decipher which roads will flood during a storm event and edit their polygons (red - orange polygon) by joining close together flood areas (join orange polygon on the right).

Chapter 4: Internship Assessment

Lessons Learned at CDM Smith

Through a GIS lens, as an intern I learned how to permanently sort layers by making a new layer with all the same fields. This helped when trying to find certain points quickly. During a meeting with Carto DB, I learned what a torque.js is, an efficient, fast, stylish rendering method to bring data to life. This allows the visualization from temporal datasets that are also fully customizable and can compress large datasets so they can be seen and filtered directly to the web. I learned how to convert drone imagery to 3D visualization in an ESRI tutorial. On the FEMA Digitizing project, I witnessed the chain of command between coworkers and how to construct a skype phone call amongst many participants across the US. These phone calls every Friday at 11am allowed me to listen in on how to speak to coworkers in a friendly intelligent manner. I could see the different roles within my team and how they helped other coworkers in different offices.

During my internship, I had to ask for help multiple times from different people. This was difficult for me because I did not want to bother other anyone. My coworkers were eager to help and even made me laugh and enjoy the work. Any chance I had to help them, I jumped at it. I wanted to let them know how appreciative I was and how valuable my knowledge was to the team too. I tried to be irreplaceable by getting out of my comfort zone and asking genuine questions and offering up any recommendations I knew. I believe my coworkers knew how happy I was to work there and what a privilege it truly was for me.

Clark University

Learning at Clark University greatly helped me at my internship. Different labs completed in Advanced Vector allowed me to use buffers, the identify tool, and queries to better my projects.

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Introduction to Python Programming and Python Programming for GIS allowed me to understand a script my boss had given me to use. The lingo used at Clark University bettered my understanding when taking notes and speaking with coworkers. I was able to speak in their language and know what context a certain tool or project would be used in. In GIS for International Development, I worked on my final project with a non GISDE student. This was difficult due to our different vocabulary. Slowly, I would teach her shortcuts and give her hints to help her learn simple GIS tasks in ArcMap. I used this same method when working with engineers at CDM Smith. The engineers had little to no knowledge of ArcMap so this allowed me to work logically and intuitively to help them follow my workflow. Lastly, by completing multiple labs each week throughout my semesters, using different software and grabbing information from several platforms, I have become a quick learner who works with a sense of urgency.

On the Job Learning at CDM Smith

While in Nashua, NH I had to learn how to figure out many smaller problems on the fly and adequately without interrupting my manager or coworker's workflow. Every day I had to make a to do list. This list kept me in line and on time with my goals. This list also turned into a sheet of my issues. I would then take my notes into the office and methodically figure them out using Google search engine or asking coworkers who have previously audited. During the New Bedford Digitization of an airport I learned how to make new layers and color code them on the fly. This type of investigation using google maps and Landsat imagery was new to me. I combined my previous knowledge of using these platforms individually to using them cohesively. I would check the Landsat against the Google Earth images and update the area if needed.

In the various seminar talks I was able to listen in on, I learned life lessons. The different seminars show cased high up executive members, technical workers, and engineers. The North

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American Unit President, Anthony Bouchard specifically sparked my interest. He asked us to ask ourselves what moves us, what gives us passion. He even suggested that it may change over time and that is alright. He noted that a continued education is vital. Bouchard stated that diversity is much needed and that the more brains on a single project will allow more ways of thinking which is much better when addressing a problem. He wants the interns to work exceptionally hard to achieve any goals. He believes hard work is free and that hard work this is the Great Equalizer. This meant that the next person may be more skilled than you, but if you out work them, the harder worker will complete the job. During the questions portion at the end of the talk, I asked him if he had any favorite quotes. He rummaged through his desk and found a clipping from a newspaper his dad had given him. Sharing such a personal quote with us reminded me of my love for quotes and my father. I emailed Bouchard to tell him how happy I was to listen to him. See the below email correspondence (*figure 9*) I had with him.

Remarks and Recommendations

This internship was very corporate America. I have never been in such situations before. My line of interest and experience has always been in the environmental sciences, mostly marine biology. I knew this opportunity was very different from anything I had witnessed before. The projects were mostly with utilities and very real world. I wanted to do what was unknown to me and take a chance on change to see if I liked this line and type of work. It sparked my interest of this type of job when I am older and hopefully have a family of my own and can provide with a stable income.

I highly recommend this internship to any IDCE student. I was able to come into contact with engineers who have worked globally and locally, executive members who sparked my passion to have career goals, and coworkers who showed me such kindness and patience of helping me. My coworkers, specifically, three graduated female Clarkies, showed me how to be a young strong woman in an office

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setting. Suddenly, I was watching girls who had done what I did, done it well, and became successful in the real world. There was no better example and motivation for me to keep going. I admired their strength, passion, and way of stepping up to the plate and hitting projects out of the park. They offered me advice and even valued my input. By completing this internship, I was able to pay for an apartment in Boston, dinners, drinks, and concerts whenever I wanted. My summer was filled with hard work, a lot of sweat in my safety vest, and life lessons taken from all of my peers around me.

Figure 9. I emailed Tony because I enjoyed him so much:

From: Meek, Suzanne L.
Sent: Thursday, July 7, 2016 12:41 PM
To: Bouchard, Anthony B. <bouchardab@cdmsmith.com>
Subject: Summer Intern Lunch and Learn-Thank You

Hi Tony,

I hope you are well today. My name is Suzanne Meek and I am an GIS specialist intern in the Boston office this summer.

I really appreciated your talk yesterday. I asked the question about any motivational books and I thank you for suggesting one. I did find the author but I am not sure this is the exact edition you explained (I see the year 1978). Here is the link to the one I was thinking of ordering: https://www.amazon.com/Success-Michael-Korda/dp/0345277414?ie=UTF8&ref_=asap_bc

I heard you say your father gave you the book. My dad and I talk about and exchange self-help and motivational books - for a couple years now (the game is who can find them at a better price) and it made my day that you shared that personal info with us.

I also enjoyed the part where you said hard work is the great equalizer. It made me think of how I played women's college ice hockey at UMass Boston. I was a walk-on to the team my freshman year and although I was not at the highest skill caliber, they kept me due to my work ethic and I became captain my senior year. I believe in hard work as well.

It is people like you who take the time to inspire and talk to us interns that really keep my mind on track. Thank you for your time and reading my email. I know you are a busy man, but I had to let you know I how much I appreciated the conference call.

All the best, Suzanne

His Reply:

Hi Suzanne,

Thank you for the kind email. It is always good to hear that something you have said resonates with people.

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The article I mentioned appears to only have been an excerpt from a book. The link does not appear to be the same thing. But hard to tell. We did not have the internet in 1988 or so, when my dad gave me the copy of the article to me. It sounds like you and your dad have a great relationship. Treasure it!

Wow, you are a hockey player! So you know what hard work is and have proven it at UMass Boston. Congratulations on being the captain! That is a tremendous accomplishment. So I know what this means. You should be very proud of yourself. Hockey players are great employees! I am an old hockey player myself. (I am actually an old goalie, who plays 3-5 times a week still. But a lot slower than when I played in college!)

I really enjoyed hearing back from you. I get a ton of joy of these sessions, so thank you for making it fun!

Tony

Chapter 5: Conclusion

I am honored to have had the opportunity and pleasure to work at CDM Smith. I was given many chances to help coworkers and learn new cutting edge technologies in the GIS field. This past summer greatly added to my preparedness for pursuing my career. I was forced to make my own decisions and learn when it is the correct time to ask for help. I was able to further understand how GIS can help solve real world issues in construction, water, energy, and transportation problems. The experience, skills, and connections I received throughout my internship will allow me to move forward in the GIS field. I have more confidence and experience in adapting to field conditions and random technology issues, collecting field data, and working in an office using multiple data types from different platforms.

Summer Internship at CDM Smith

Appendix: My Manifesto

This appendix consists of the journal I wrote during my internship to explain each project's goal, objective, steps, notes, and issues.

Suzanne Meek

2016 Summer Internship Journal

GIS Specialist Intern

CDM Smith

Candidate for Masters of Geospatial Information Science for the Development and Environment at Clark University

Project

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Intern Experience

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CartoDB Sit In – First Day, May 23, 2016

Meeting with Mark Zito, Dave Kealey, and Sebastian Burgess 12pm

Demo - Sebastien Burgess, Account Executive at CartoDB, visited Boston on Monday to give us an overview of CartoDB's products and services. Their web-based GIS technologies are focused on simplifying data management and expanding possibilities of data visualization and analysis. For a quick look at what CartoDB can do, check out their gallery of maps/apps. <https://cartodb.com/gallery>

Map Makers:

- Import and sync data from Google Drive, Dropbox, Box, Twitter, Salesforce
- ArcGIS Server connector, syncs data to CartoDB cloud at specified interval
- Geocode input files from lat/long or addresses when uploading
- All data stored in PostgreSQL/PostGIS
- Symbolize via UI or code with CartoCSS
- Filter via UI or code with SQL
- Share maps/data with others by URL, which can be password protected
- Updates in July 2016 to include, live analysis / interactive visualization dashboard, and more spatial analysis (PostGIS) functionality added as UI tools

Developers:

- Several highly capable JavaScript and SQL APIs, and an SDK for mobile
- Mobile use available on Android, iOS, and Windows; Enables online and offline maps, data editing, 3D features
- Export map settings to .json for quickly configuring a custom app

Enterprise account pricing is based on data storage size, but also limits number of users (map creators, developers and data managers).

And for fun... The link below is to a mapping project that shows the local density of Starbucks in different cities. Follow the link "View online" to test your spatial recognition of an area based off of its Starbucks's locations. <https://cartodb.com/gallery/city-starbucks/>

Nashua Streetlight Auditing

May 23 2016 – June 29, 2016

From the Project Description in the General Health and Safety Plan:

“CDM Smith field crews will be responsible for collecting information on approximately 9,000 utility poles in the City of Manchester. Field crews will be performing ground level, visual inspection of utility poles in order to collect information that will support a LED retro fitting project the City will be completing. CDM Smith field crews will be deployed throughout the City to collect information on the existing light

pole infrastructure using an iPad device. All utility poles exist on the sides of the roads, are within the public right of way and a police detail will not be needed for traffic control. The CDM Smith employees will not travel beyond the public right of way or collect information on private or cross country utility poles. In cases where the road is impassible due to snow or other hazards they will not enter the area and rely the issues to the Municipality. Police and City workers will be notified of the field crews' presence and all field crew will be wearing vests and appropriate working gear (pants, collared shirt, etc.)."

Fieldwork

- Plan route before heading out. Find streets that geographically make sense and see how many poles are on each route this way the achievable goal of 100-120 is met.
- Account for heat - start earlier in morning so cooler air is still around.
- Pack water, Gatorades, and fulfilling snacks.
- Need sunglasses, hat, vest, pants, comfortable walking shoes, sunscreen, and bug spray.
- Charge iPad and bring General Health and Safety Plan.
- Does the car need gas?

Notes for ArcCollector

- Have wifi and Bluetooth on to better locate poles/ pins locations.
- Anything that is not a Cobra, take a picture.
- St, Ln, Dr, Av, Blvd
- Use the house number who's property the pole appears to be on,
- What is the pole material and color?
- What is the sticker color and number?
- Copy like this one then move the pin – Very helpful.
- Stick to the ledger aka the Bible
- Much easier to batch QA QC on desktop computer any issues.

Issues

- Did you change the details from the last pole to this pole?
- Did you move the point to where you want?
- Did you choose "Needs Tree Trimming" and Pole Condition = "Fair"?
- Did you decipher between a white and a yellow sticker when the sun is right above the light at 12 pm?

Bentley University Projects

May 25, 2016

Goal: To convert CAD drawing of Bentley University into GIS. They creating a CAD document consisting of a basemap, all sidewalks, buildings, vegetation, etc. Already have layers of each item. Will be updating these layers in a geodatabase and putting

them in the target GIS database. Follow excel spreadsheet as to know what needs updating and what layers are under points, lines, or polygons.

From Martha Ziemer:

Steps

1. Go through each of the layers in the CAD lines, points, and polygons feature classes and see if they should be mapped to the GIS based on this reference excel. Use the "Guide" tab as reference. If that layer didn't exist before and you have questions about where it should be mapped to, let me and/or Mark know.
2. Delete out all of the old data from the .gdb for that feature class
3. Paste the data from the CAD into the appropriate feature class (and subtype if necessary) in the database.
4. Change the source field to "survey" for all the data that you are pasting in from the survey.
5. Put the GIS layer name and subtype info in the "Target Feature Class" column in the excel so we know it was transferred from the CAD to the GIS.

Using ArcMap and Excel

- Use Queries to find the layer you will be updating
- Edit session – delete all old records, select all desired new points from CAD layer and past to the GIS appropriate layer (like fire hydrants).
- Batch edit the Survey field to list as "Survey" so Bentley know how they received that info
- Update excel sheet as to which layers are already done.

Issues

- Computer was too slow and did not allow multiple clicking too quickly.
- Had trouble selecting all and copy pasting, must use all during an edit session. Right click on the map and say paste, chose appropriate layer.

June 14, 2016

Goal: To create an excel sheet for each layer for surveyors filling out details of

From Mark Zito:

"What I am looking for is an export of the tables listed below in excel with each of the fields that has a domain as a drop down. A contractor will be filling out the information then passing it back to us (Martha) to incorporate back into the GIS so if we can restrict them to the domain values we will be in good shape."

The layers I was creating an excel sheet for:

- ElectricDataset
 - Light
 - Pole_1
 - ElectricStructures

- Telecommunications
 - CATVManhole
 - teleManhole
 - TelephoneLine
 - CATVLine

Steps

1. Export attribute table to excel. (Conversion, Table to Excel)
2. Use ModelBuilder, apply domain to table, enter database, appropriate domain, and name the table file "field name.dbf". (.DBF is greatly needed so it is opened in Excel)
3. Use ArcCatalog to figure out which layers have field names with selectable domains. This can be done by right clicking the layer name, going to subtypes, and then scrolling through each field to see
4. Apply domain to table multiple times to all fields, save and run at once so .dbf files are created in one shot.
5. Open Layer's excel sheet. Open corresponding field name .dbf files in excel. Use the data validation option in Excel to create drop downs of possible values in the domain. Make sure each is the correct column.
6. Save sheet, proofread, and on to the next.

Issues:

- Boolean values show nothing up, disregard error
- Make sure it is the correct domain code – some look/sound the same (manhole model type, manhole material type)
- Figure out how many clicks it takes to open the .dbf faster in excel

July 6, 2016

Goal: Check and mark all handicap parking spaces. Give each parking space in each lot an ID.

From Martha Ziemer:

" ParkingSpace – Assign a facility ID for each parking spot. Use the lot number as the prefix prefix of facility ID, example L12-PK001, LOT_28-PK002, etc. Do not worry about spaces in garage as we do not have the parking lines for these. All Facility IDs should be 3 characters long.

- Change the "Access Type" to handicap for any handicap parking spots. Use the Pavement Marking Line layer to see where the handicap symbol is drawn on the pavement.
- Delete and Parking Space points that look like they were accidentally placed in a no parking zone (for example if there are cross hatches in a space, it is likely not a parking space and the point should be removed).
- Edit the StreetPavement layer to create additional sidewalks or paths. Use the SiteAmenityLine, StreetCurbType, PavementType, and Trail layers (shown as lines below) for reference. You can also use the imager for reference"

From Mark Zito:

“As for the parking spaces, to assign the ID’s the following steps will be the most efficient.

- Review for handicap and parking points in invalid locations as Martha points out
- Spatial Join parking lots to parking points to get the Facility_ID of the parking lot
- Run the Sort features tool on the new feature class with the Shape file as the sort and select lower left
- Select each parking lot facility id and run this calculation
!Facility_ID_1!+_PK-‘+str(!OBJECTID!-n).zfill(3)
Where n is a number to get OBJECTID to start at zero.
This will give use parking lot ID_PK-000 through PK-999 for each lot”

Steps

1. Find and edit parking points that are not actually parking spaces. Some points were put in loading zones, double put, or just in the middle of a road.
2. Find spots that should be labeled handicap. This can be seen using the painting markings data points. Where there are painting markings, they most likely show the area as handicap.
3. Once all points are assessed, Join the parking spaces points to the Street Pavement polygons, this will give each point its Lot Number ID (L22).
4. Sort the points to the LL (lowerleft) fashion so the points are in the attribute table logically listed.
5. This allows each point to correspond with its Lot number. Then add a field to be the Lot Space Name.
6. For the new field, go lot by lot to create Lot Space Name. Select whatever lot to begin. Sort the points is ascending order. Use Field calculator to write the names - This formula is !Facility_ID_1!+_PK-‘+str(!OBJECTID!-n).zfill(3). (n is the smallest number, pick one less so the lot naming scheme begins at 1 not 0.
7. Save new layer made. Create a new feature class in the Bentley University .gdb. Load the fields from the previous Parking Spaces feature class. Change the correct new fields to match the fields of the layer sorted and made(space identifier- lot space name, access type to access type). Save this as a new relevant name. Delete old feature class. Rename new feature class old feature class’s name. Same new, new edited data with markings of handicap and lot space names.
8. Edit paths and sidewalk polygons, make them snap to edge that makes sense. Add sidewalk polygon near roads. Follow already made decisions of where to end and to start

Notes:

- Understand which tables you are joining and on what basis? Which field is being joined to the other, may have different names, but they are the same numbers and represent the same thing

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- Double check each point is in its correct lot
- Turn labels on to show Lot ID – that correct?
- Turn on and off polygons- Street Pavement to see underlying ortho. Or change transparency. 20-50% works usually

Issues:

- Not too sure if I should add parking space points and lines where needed
- The ortho used is not as new or accurate as Good maps
- Not too savy with joins
- At the end, could not get data to already made feature class (layer) so that is when we made a new one and deleted the old

July 12, 2016

Goal: Check lateral and gravity mains to make sure they are in the correct feature class. Edit facility identifier to correct MH and SC (manholes and service connections).

From Martha Ziemer:

“I’d like to confirm if some of the gravity pipes are laterals or mains. If the pipe is not coming from a house or building, it is not always clear if it is a lateral or not. I copied the features in question to the spreadsheet here: [Sewer Pipe Check.xlsx](#). I also created an mxd for reference [Sewer Check Working.mxd](#). If the FROMMH or TOMH field is blank for gravity mains or laterals or the field is a number, then it is one to confirm.

1. Confirm if laterals and gravity mains are laterals or mains
2. If the pipe is in gravity main layer and should be in the lateral layer, copy it to the lateral layer and delete it from the gravity main layer. Reverse the process if a lateral line should be a gravity line.
3. If necessary add a service connection point to the end of the lateral. Follow the ID format of SC-XXX
4. Attribute the TOMH and FROMMH fields correctly and recalculate the FACILITY ID.
5. We are focusing on the Bentley Owned utilities (OWNEDBY = ‘Bentley University’) that are Active (LifeCycleStatus <> ‘Abandoned’)

Steps:

1. Visually inspect if SC are connected to laterals. Make abandoned laterals and Gravity mains show but make different layer with color scheme appropriate to recognize change.
2. Delete any SC that is floating with nothing around it.
3. Check gravity main excel spread sheet info. Any to and from manhole columns that do not have an actual ID (just a random number) find that line or gravity main and edit the table correctly.

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4. Are the laterals connected to a pipe, connected to a MH?
5. Change needed gravity mains to laterals.
6. Keep track by using the Excel spreadsheet.

Notes:

- Object ID gets reassigned when new layer, new attributes are made, just gets reassigned from 1.

Issues:

- Not too knowledgeable on what makes what what – so David Kealey and Jonathan Kunay explained the great ideas
- Be careful as to what to delete, what to add.
- Pay attention to Facility Identifiers – is that a new ID no other point holds?

Jeddah, Jordan Water Utilities

June 7, 9, 2016

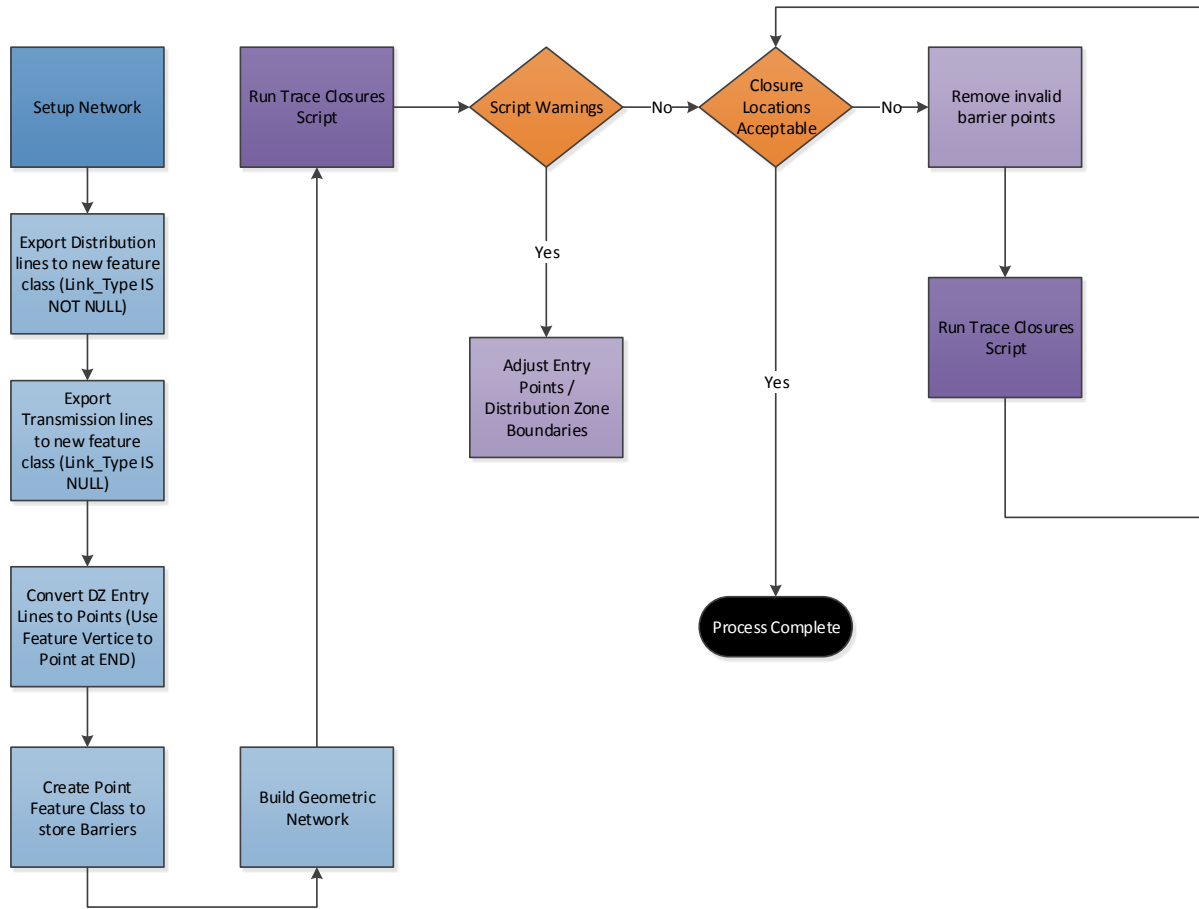
From Mark Zito:

“Yi in our Dallas office needs some help with a project which is to identify the ideal locations for installing closure valves to isolate portions of city. Jeddah has issues supplying water to the entire city at a time, therefore they need to shut down certain zones at certain times and we are tasked with identifying where to place valves to make this work.

Goal: You will be going zone by zone and running the tool, identifying any invalid/poor barrier locations removing them and re-running the tool until optimal results are achieved. The challenge is that the zone barriers are not very detailed and water lines may run along the edge. The tool will see these as lines that should be shut off from the zone so you need to delete the barrier points or adjust the zone boundary.” Worked with Yi Hou from Dallas TX

From the Distribution Zone Isolation Workflow Document:

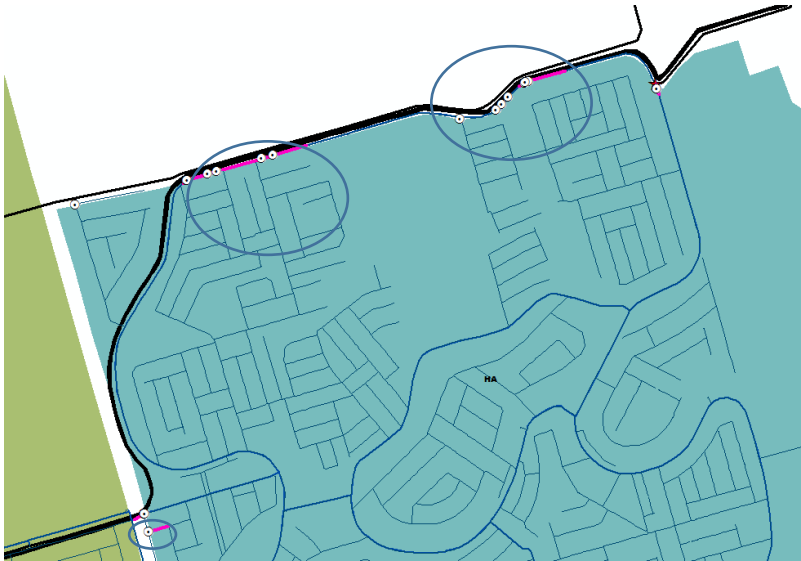
“



Distribution Zone Trace

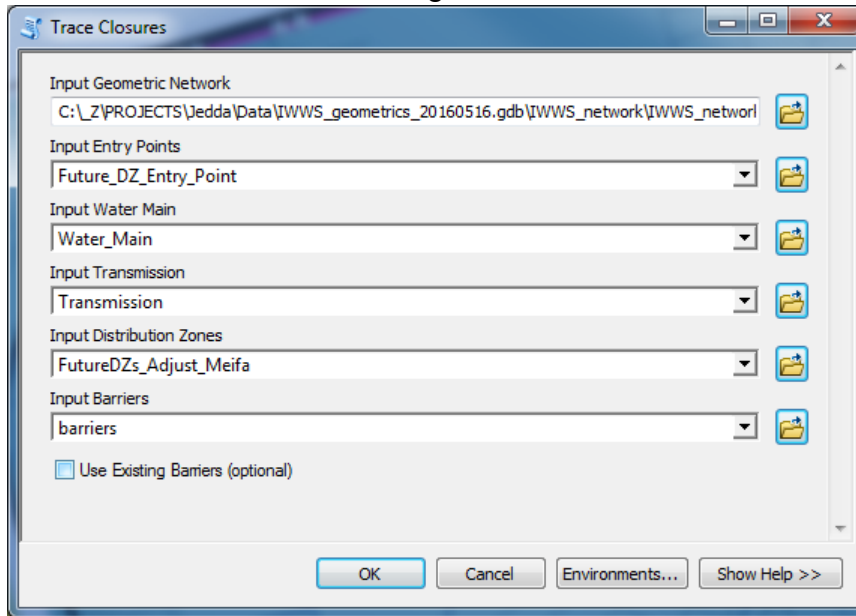
The process for isolating the water network within the distribution zone polygons is straightforward. A script was developed to handle the bulk of the processing. The algorithm in the script iterates through each distribution zone entry point, intersects the distribution zone polygon and creates virtual barriers at the intersection of the water mains and zone boundary. A trace starting from the entry point is then performed to find all the features that stop the trace based on the virtual barriers. Due to the precision of the distribution zone boundaries, barriers may be created at incorrect locations, see Figure 1 for an example. Therefore a manual process is required to remove these barriers and reprocess the data.

Figure 1 – Incorrect Barriers



1. Create the Geometric Network
 - Separate the Transmission lines from the Main Line and Distribution Line
 - Add a new field “DZ_Close” of type text and length of 10 to the water main feature class
2. Convert the Future DZ Enter lines to Points using Feature Vertices to Points (END)
3. Create an MXD with the following layers/data
 - Geometric Network (Water_Main, Transmission, etc)
 - Barriers (Virtual barriers)
 - Future_DZ_Entry_Point (Distribution Zone entry points)
 - FutureDZs_Adjust Meifa (Distribution Zone polygons)
 - Copy the Water Main layer and set the following definition query
“DZ_Close IS NOT NULL”
4. Run the Trace Closures Script (approximately 5 minutes)
 - Select the DZ entry points for a zone using the selection tool or select by attributes

- Do not check the “Use Existing Barriers” the first time the script is run



5. Check the script results for warnings “Entry Point must be within distribution zone...”
 - Adjust Entry Point location of Distribution Zone boundary to cover entry point
6. Visually inspect the barrier locations. Select only the barrier location points that do make sense, ignoring those such as lines running along the edge of the zone passing in and out.
7. Copy and paste the barriers into the barriers_final feature class
8. Re-run the Trace Closures Script with the entry points selected (approximately 5 minutes)
 - Set the input barriers to “Barriers_Final”
 - Check the “Use Existing Barriers” box
9. Repeat steps 7 and 8 until satisfied with results.
10. Load the completed barrier points into the Barriers Final feature class”

Steps 1 through 4 were already completed for me.

Basically – Creating valves for an area so the town can ration and shut off water to specific areas without affected surrounding parcels. Shut off one main valve, shut off entire town. Shut off many valves in one area hopefully will only affect one area.

Notes

- Check “Using Existing Barriers” box only when running script on Barriers_Final

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- Deleted barriers created after completing the areas' barriers_Final, this sped up all script using
- In an edit session – copy paste desirable factors

See figure to see what an initial and final results parcel looks like.

Created an Excel that keeps track of parcels completed, by who, and if and who QC is done by.

	A	B	C	D	E	F
1	OBJECTID	DistributionZone	Finish?	Comments	QC	QC Notes
53	14	NN	SM		dk	
54	15	NO	YH		dk	
55	16	NP	YH		dk	still doesn't look great
56	17	NQ	SM		dk	optimization questionable
57	18	NR	SM		dk	optimization questionable
58	19	NS	YH		dk	
59	20	NT	YH			
60	21	NU	YH		dk	
61	22	NV	YH		dk	
62	61	SA	SK	No water entry points	dk	
63	62	SB	SK	No water entry points	dk	No distribution mains
64	63	SC	SK	No water entry points	dk	

Later quality control done by Dave Kealey. Noted that for my work – if anything I under put valves. He did not really have to delete any but actually add some.

Issues

- As I went through more areas and had more potential valves in the barriers layer, the script took longer and longer, 18-22 minutes
- How do we speed up the searching/ loading locating process

Arlington, MA Annotations Review

June 20, 2016

From Cindi Tucker:

“You were available to do some QC for me. Attached is the parcel data for Arlington, MA. We need to compare the annotation in the attached to the text on the source data.”

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Goal: "It is in my hope that this project will include the conversion of (A) dimensions, (B) lot size, and (C) parcel ID. We have maps that were maintained by the Assessor, maps that were maintained by the Engineering Department, GIS data maintained by the GIS Office, and a database maintained by the Assessor. There is a chance that a parcel could have different details in each source. When sources have different details, I recommend CDM will then review and provide create the best data."



To validate which source is correct, I recommend a decision tree.

- 1) Start with the Engineering map; it is the easiest to read
- 2) Check the Assessor map; if same info then assume info is valid; if different see #3
- 3) Check the GIS data which is linked to the Assessor database; if Assessor data matches, then that info is valid; if different see #4
- 5) If discrepancy still exists, add it to the list of questions for Arlington to answer

EXAMPLE: Map on left is from Engineering and shows erased property lines and a new parcel area. Map on right is from Assessor and shows the same area as 3 lots. The GIS/Assessor's database has one lot with 12,212 sq ft, so the Engineering map should be considered correct. 71,73,74 represent to former parcel ids and should be converted as well.

making a list, that Arlington feedback. I think this will

Notes:

- Checking Assessor against Engineering against the database GIS represented
- Using Adobe Reader for PDFs and ArcMap
- Understand colors, purple Lot Size, blue Frontage, green Dimension
- Add a field, edit field with comments on what is not matching what
- After a few, I grew faster to spot the difference

Issues:

- Not very fast at first, too many digits
- Constantly wondering what is the best method

New Bedford, MA Airport Digitize

June 27, 2016

Work with Eric Pescatore: Digitize the New Bedford Airport. All the ground work down, grass, impervious surfaces, streets near airport, buildings, streams, bodies of water, runway barriers, structures, and paintings/lines. Add from the New Bedford .gdb the manholes, road edge, trees, crosswalks, utilities, flag pole. Differentiate between grass (mow-able), shrubs, trees, and other.

Steps

1. Grab mass GIS ortho images of New Bedford. What tiles do we need- I used Oliver. Also used 2015 ortho imagery from ArcGIS online (this showed many new formations in airport's area)
2. Do the easy stuff first – grass, runway, buildings, streets (polyline, polygon, points, make them have different types- change in symbology, change attributes as you go)
3. Use Edit session, snap to vertices, edit attributes as you go
4. Start to get more specific, shrubs, trees, other. Use natural bends in the land to determine beginnings and endings

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5. Investigate using Google maps as well. What is where? Get ground level views when I can.
6. Find Culverts, fences, gates, and bridges.
7. Choose correct color scheme. Think natural tones and brighter tones for more important data points. Add in the New Bedford data from a previous built .gdb. Ask for help with what normally is done for these type of data points.
8. Finally use a template (previously configured) to show company's logo, North Arrow, title, and legend. Does it fit? Are your eyes happy when you look at it? Does it look natural or processed? Nature is not straight lined.

Issues:

- Airport imagery different in orthos from year to year
- Getting the paint of the runway lines to be accurate
- Missing gates, showings of fence (fence sometimes looks like a stream vice versa)

Deliverable: SEE FIGURES

Built new .gdb with already configured data and new digitized data

PDF of created areas

Map document of layers, types, and attribute tables showing various counts and make ups

Brockton GIS Updates

June 27, 2016

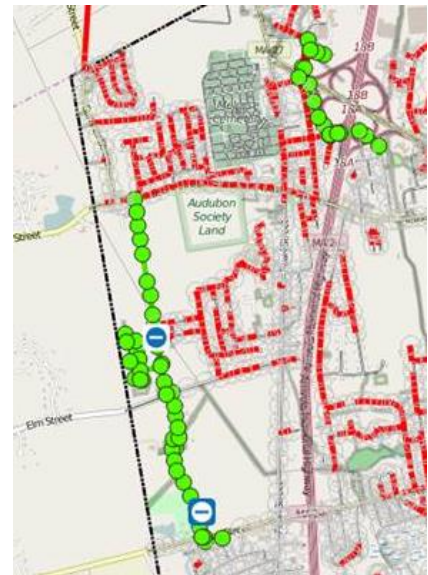
Goal: Create PDFs of Brockton, MA with appropriate symbology of Sewer Inspections.

From Eric Pescatore:

“Hello Suzanne,
Borges in the Providence offices needs help tomorrow to create maps of Sewer Inspections. We did this project using ArcGIS online and as such I've created an MXD for you which LINKS to the online assets. You will need to login to your ArcGIS Online Account in arcmap for the links to work.

YOU CAN also if you find issues connecting, USE The geodatabase and repath to the records there. Our goal is to create individual maps highlighting areas we inspected. There should be around 8 to 10 maps (you could group some areas together).

Connect with Dan tomorrow as he is CCed on this email. For example here is a clip from the web map. These areas could be merge together (also you may want to OPT not to show NON inspected MHs. I did symbolize them.”



Help from Daniel Borges :

I read over Eric's email and created a PDF of one area I believe is inspected. **It seems like the inspected manhole symbols didn't show up in that figure**

I am wondering what extent/how much of the basemap detail is needed to show. **The point is to mainly show the inspected and located manholes, so map detail is not that important**

My questions are:

I see Eric does not want non-inspected MH showing but what about non inspected sewer gravity mains? **Maybe you could provide a single map with the base map showing to see what it looks like**

Are these bigger bright green points the desired symbol? **Yes, we will need to make sure all the symbol types are shown**

The street names are not showing up as well as I would like – any suggestions? I can play around with the transparency and symbols do find the appropriate look. **Street names are good enough for what we need, we more so just want to make sure the symbols show up so that DEP can see the progress we have made**

Do we want Eastments symbolized ? **I think removing the easement symbol is better as the easements sometimes make the maps look messy**

Is our end goal 8-10 maps in PDF format? Or different .mxds? **PDFs would be great. The least amount of maps the better.**

Steps:

1. Fixed symbology to make more sense on a PDF view format.
2. Separated sections of the map geographically
3. Edited the Title, Figure number, and details of source.
4. Fixed the town in a larger Font.

Notes:

- If you think they need something, just add it – use your MAP senses
- Make fonts bigger than small
- Pay attention to the already chosen symbology – may have used for a reason

New Haven Pipe Proposal

June 27, 2016

Goal: Help an engineer correctly depict a new pipe to go along roads and under highways in New

From Eric Pescatore:

“I will be out of the office tomorrow and have Suzanne Meek our summer intern available for revisions related to the Report Figures we’ve compiled drafts. Note that meek should be able to make Revisions to the documents listed below. The New Haven **Green Infrastructure Property figures would be a bit more complicated due to the nature of where we stored the database. (On my computer)... The Map document below will likely need to be REMAPPED before they work.**

Suzanne - Please feel free to ask questions your fellow GIS users in case you encounter something you’re not familiar with. For example we use Definition Queries on many of the feature datasets. These queries turn on and off the “Pump Station and Storage facilities” along with various “Pipe Design Routes”. We use the SQL server statement **IN()**, which lets us list which features we want to show.”

Steps

- 1 Set up a table to take notes on what map is getting what done to it. Note names changes.
2. Sit down with the engineer – Jessica Fosbrook – to discuss what is being changed on each map. Digitize a different pipeline. Change width of pipeline. Show two lines, one dashed.
3. Keep digitizing pipeline until it is correct. Note changes on paper maps to make change.
4. Write down various symbology sizes, colors, and note so all symbols across each map are the same.
5. Communicate with the engineer, what is priority, and what exactly is needed.

Notes

- Use a highlighter, once you have fully edited and fixed a noted feature, highlight the note to symbol it has been completed.
- [Keep yo cool.](#)
- Ask as many questions as needed – make a few versions and ask which is more accurate.
- Write down important numbers for extents.

Issues:

- Don’t know much about pipes, confused as to what is called what.
- Difficult to edit such a slow acting map.
- Have my own inklings, but can’t convey them.
- Acting professional when aggravated and confused.

Flood Polygon Cleanup - South Dakota Large Scale Engineering, GIS Processing

End of July

Dan (hilarious man) – Denver, CO

Intro: Somewhere along the line they decided to make flood maps for large areas of the State of South Dakota. Many of these areas have never had digital flood data till now. That is the purpose this project. The engineers plugged DEMs, Precipitation data and other things onto a model and create raster datasets. From these datasets we run several filters on our way to creating the flood boundary polygons. We automated the filtering process but the computer can only do so much, that is where the manual GIS processing comes in.

Data Cleanup: The filters we ran through the Rasters produced polygons that are one foot or greater in flood depth, based on their model. South Dakota is very flat and many of these areas ended up being disconnected. While we do not have to re-connect all flooding, we do need to check everything to make sure it processed the way we wanted.

Layers in your dataset:

AreaFloodPolygons – This is the layer that needs editing. It is the output from the Rasters

CNMS_lines – Areas identified prior to this project that drain more than one square mile of flooding.

Zero to One Ft Layer – This is basically the raw output from the Rasters. It represents all flooding from .001 inch to one foot deep. Use this layer a reference point when editing the Flood Polygons

Effective_Clipped – (not in every dataset) The current effective data for your area. Edit the Flood Polygon Layer up to this layer but leave it be. A tie it will be performed later by someone else.

Grid Panels – A 5x5 mile grid of the work area. Use this as a marker as you work through the area. Update the attributes to mark your place.

Common Errors in the data:

Several reoccurring themes came out and these types of things need to be fixed. Everything comes back to a judgement call, so just do your best to follow the examples. For the examples below the AreaFloodPolygon layer is represented in Orange, and the Zero to one Foot layer is represented in light grey.

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1. Areas of obvious water bodies returned less than one foot of flooding, sometimes resulting in strange looking areas. These areas of obvious water bodies will need to be filled in.

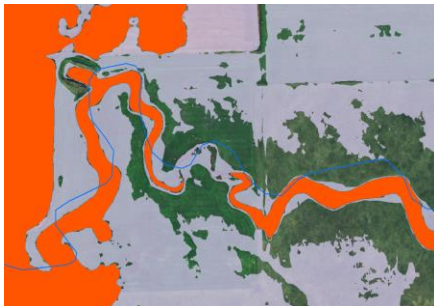


You can see where the Zero To One Foot Flooding layer can be used as a reference for filling in areas.

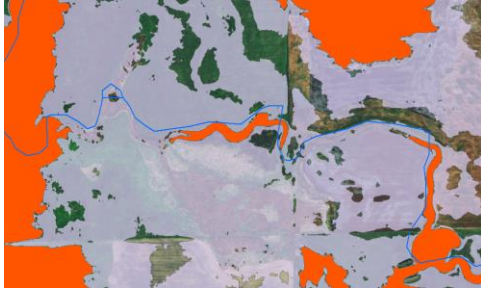


Ponding like above; Yes there is clearly ponds there, however the Flood Model had gaps in the coverage and nothing is deeper than 1 foot. Just leave it as is, we are not allowed to invent flood boundaries the model did not identify.

CNMS lines Connection: CNMS lines are somewhat important, so try to connect flooding along these lines, but not every CNMS needs completely connected flooding.



Areas of short disconnection can be re-connected. If you can see a channel on the imagery and it makes sense, try to follow the flooding and connect those areas, however...



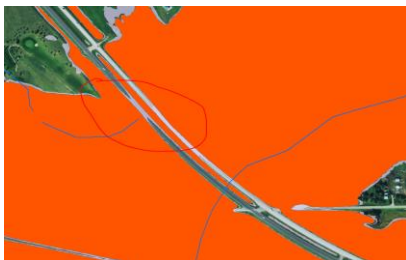
Above is an example of an areas long CNMS lines that does not need to be connected. There is too much of a distance between areas, and you would be inventing the stream channel. We do not need to make things up so this area can be left as is.

Roads: Roads bisect many areas of flooding. Most of these areas can be left as is. Because the flooding is shown not to overtop the road. That can be important in Hazard Planning.



Above is an example of a road that is flooded and an area that escapes flooding on the same road. The areas of disconnected flooding can be left as is. We need to show the road is not covered by flood waters.

Larger Important Roads: Larger highways and more important roads need additional attention to detail. They are major transportation areas and it is good to show more accurate data.



The areas circled shows the road is flooded by less than one foot of flooding. In this case I would connect the flooding because if any flood overtops an important road it needs to be shown.

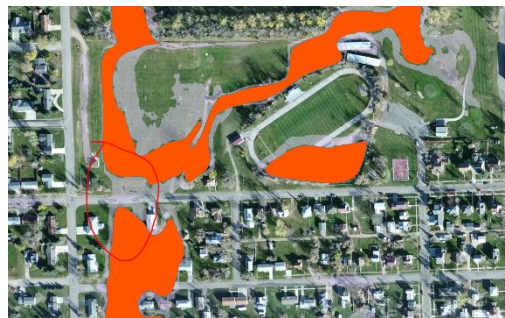
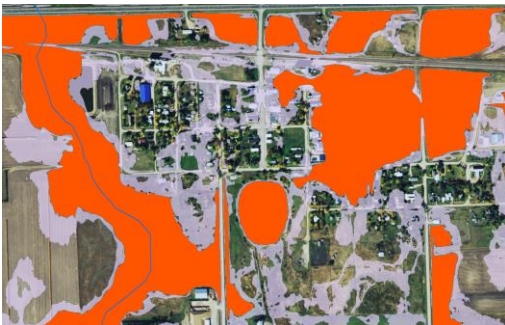
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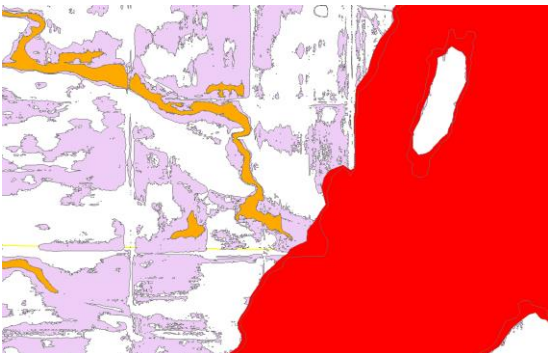
Another road example. This is a dirt road that shows much of the Less Than One Foot Flooding is covering the gap. In this case I would connect the 2 areas.

Cities and Small Towns:

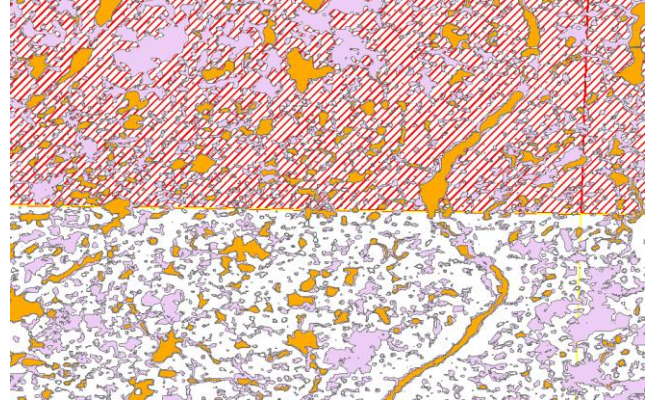
As you come across towns, pay a little more attention. The residents of each town will review the data, and if their house is shown to be flooded, they might be required to purchase flood insurance. Just follow the rules of above. Follow the CNMS lines and connect minor break in the flooding. Leave roads that have no flooding as is. If the road is flooded by less than a foot, make a judgment call to connect or not.



Effective Data: Some of the work areas have existing “Effective” Flood data, represented below in Red. This “Effective” data is to be left alone. If the Flood Polygons Layer you are editing intersects the Effective data, just leave it as is. Please only clean up the Flood Polygons in areas away from the Effective data.



Panels Outside the Scope: If your work area has panels that are crossed out in red, just ignore these areas. These areas are outside the scope and will be deleted later.



Final Guidelines:

- **We need clean polygons.** Please prevent overlapping of multipart polygons. This data will all need to be checked later for errors, so you will save us a bunch of time by keeping the data clean.
- **Don't go outside of the shallow flooding polygons.** We are not allowed to "invent" flooding, we are just connecting parts that were disconnected.
- Be on the lookout for the cities and major roads. Pay more attention to the flooding in these areas because during a disaster this information will be important to know what will happen.
- For the most part if there is disconnected flooding away from a CNMS line, that can be left as it is. Since there is no river to cause the flooding, most of these areas represent flooding from rainfall that will collect in ponds in farm fields.
- For the most part we are letting the Flood Model prepared by the engineer to speak for itself. We are just connecting areas that are; less than a foot in flooding and got cutoff by the computer filter.

3D Surface Mesh Notes

Mid July - Dave Kealey

<http://www.laszip.org/>

LASzip is completely lossless. It compresses bulky LAS files into compact LAZ files that are only 7-20 percent of the original size, accurately preserving every single bit. For example, compressing and decompressing the LAS file lidar.las with [laszip.exe](#) (command-line only [laszip-cli.exe](#)) as shown below results in lidar_copy.las that is bit-identical to lidar.las. However, the small size of lidar.laz makes it much easier to store, copy, transmit, or archive large amounts of LIDAR.

- `laszip -i lidar.las -o lidar.laz`
- `laszip -i lidar.laz -o lidar_copy.las`

LASzip compression can be many times smaller and many times faster than generic compressors like [bz2](#), [gzip](#), and [rar](#) because it knows what the different bytes in a LAS file represent. Another advantage of LASzip is that it allows you to treat compressed LAZ files just like standard LAS files. You can load them directly from compressed form into your application without needing to decompress them onto disk first.

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Help Discussion Board- <https://geonet.esri.com/thread/85089>

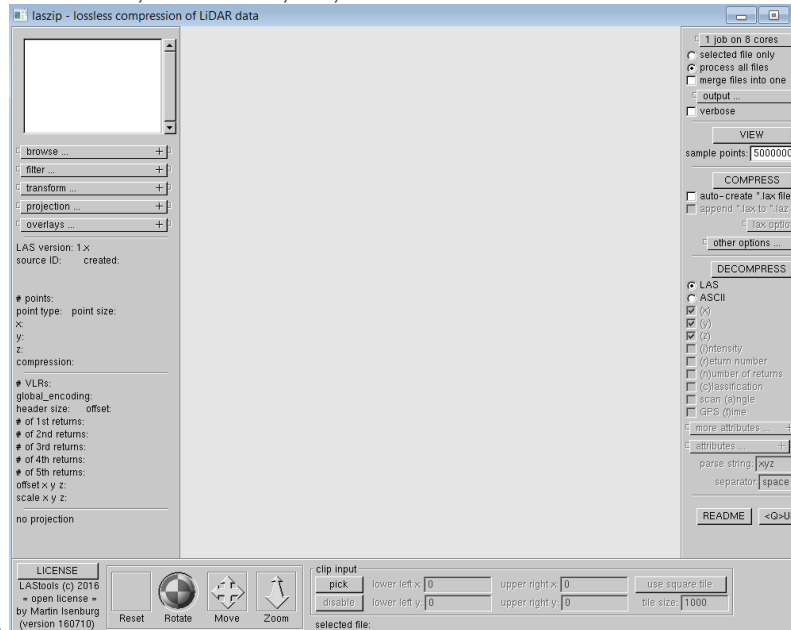
“Oh yeah, what's the point? The LAZ zipped format is far more sophisticated than just a regular old ZIP file, and the compression size is something around 10%. Saves heaps of space on your disk drives.”

Simplest thing would be to go to the www.laszip.org site, and download the zip files for the executables there. This is a very fine toolset; you can find versions for "drag and drop" on the desktop (i.e., drag a LAZ file onto the laszip icon, and it will make a LAS version, and vice versa), or, command line forms executable from batch files or unix shells. To get started, I would go to this page: <http://www.laszip.org/> and look about halfway down, where you will find a paragraph heading called "Background". In the middle of the second paragraph, you will find a link to the executable **laszip.exe**. To check this software out, just click on this file, to download it into a working directory of your choice. Then, put one of your LAZ files into this directory, and get into a DOS window, and type

```
laszip yourfile.laz
```

and it should create a version called yourfile.las

There are many command switches in the laszip.exe executable. Takes a while to get used to them and to figure them out, but you can filter by elevation, return number, return type, and other parameters. Also, you can export to a variety of formats, including ascii, shapefiles, and more. The way to get the switches in the command line version, is standard, i.e.,



The application -

Drone Deploy – turning images into a 3D model, then printing that model.

<https://blog.droneDeploy.com/how-to-use-a-drone-to-make-3d-printed-models-68fc22ae72fa#.acmijjwr6>

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Create 3D data from 2D imagery - <https://learn.arcgis.com/en/projects/get-started-with-drone2map-for-arcgis/lessons/create-3d-data-from-2d-imagery.htm>

1. Create a new project
 - The Rapid and 2D Mapping templates create **orthomosaics** and digital surface models (raster datasets that show the elevation of an area). The 3D Mapping template creates point clouds and textured meshes. The Inspection template orients the images in an inspection viewer, which allows you to cycle through and annotate overlapping images of the same area.
 - We want 3D mapping
2. Add the source Imagery – images need lat long in degrees, altitudes
3. Process the imagery. Point Cloud and Mesh is already checked. Orthomosaic and DSM will already be unchecked.
4. Toggle with settings – depends on point density optimal to low, point cloud densification
5. Choose the output file types for the 3D textured Mesh - “Lastly, you can choose to create a 3D PDF. A 3D PDF is similar to a normal PDF but is capable of displaying 3D images. Because PDFs do not require a GIS application to run, they can be easily shared with your stakeholders.”

Formats - “The first format, Scene Layer Package, is a file type that can be opened in ArcGIS and shared to ArcGIS Online, making it the appropriate choice for your goals. The next format, OBJ, is a widely-accepted file format for 3D graphics and can be opened in a variety of applications. It's also a key component of the Scene Layer Package, so it must remain checked for you to create the Scene Layer Package. FBX, AutoCAD DXF, and PLY are other file types that you can create but are not necessary for the Scene Layer Package. Lastly, you can choose to create a 3D PDF. A 3D PDF is similar to a normal PDF but is capable of displaying 3D images. Because PDFs do not require a GIS application to run, they can be easily shared with your stakeholders.”

17 Navigate the 3D PDF. Click to tilt and rotate; right-click to zoom.



6. Publish the data to ArcGIS Online. Share the data.

Conclusion - “You now have a variety of data products you can share with your stakeholders. You have the 3D PDF, which you can open and access without an ArcGIS application. You have the Scene Layer, which you can add to a scene in ArcGIS Online. You also have raw data, such as the point cloud dataset and the OBJ file, which can be opened in other ArcGIS applications. With these datasets, you can present the results of your drone mission to interested parties so they can inspect the results in a 3D environment. Drone2Map for ArcGIS can transform your raw drone data into a variety of shareable datasets, allowing you to get the most use out of your drone.”

Message Board – <https://geonet.esri.com/thread/119633>

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Could you please use following steps to create or display the xyz data in a 3D way?

1. Add the XYZ in ArcMap.
2. Right click on the file > Display XY. It will create a point event layer
3. Export the event layer to create a feature class or shape file.
4. Go to Spatial analyst tool bar > Interpolation > Topo to Raster. It will create a surface.
5. Add this raster in ArcScene or use it in raster calculator for any 3D calculations.

LAS Optimizer- compresses and optimizes LAS format lidar -

<http://www.arcgis.com/home/item.html?id=787794cdbc384261bc9bf99a860a374f>

LAS dataset stats - When statistics are calculated, a LAS auxiliary file (.lasx) is created for each LAS file. The auxiliary file (.lasx) is given the same name as the source LAS file and stored in the same location on disk.

Use Lidar in ArcGIS Pro - <http://pro.arcgis.com/en/pro-app/help/data/las-dataset/use-lidar-in-arcgis-pro.htm>

FEMA Digitize

End of July

Alex Sirotek, Yi Hou, Parker Edmonds, Dave Shortman, Molly Cox

Goal: Digitize previous FEMA maps with information about river crossings, bridges, and points of intersections over any water bodies in the New England area. This is a smaller side step that will make other teammates jobs faster and less stressful. The previous maps being used were actually created by teammate Parker Edmonds at a different firm. This small part is a piece of a larger ongoing project with FEMA.

Steps

1. Log into appropriate desktop application – AECOM
2. Find interested area – with rivers and streams. Use identify tool to see needed number code for importing image. Open image files of corresponding area. Does is have hatching and letters showing where crossings occur?
3. Drag in image file in ArcMap.
4. Digitize photo to area, repeat and fix drag points.
5. Note done area, move to next. Work area by area. Finish county and start a new one.

Notes

- Pay attention to area's attributes – is there necessary hatching?
- Is area just lakes – may not have crossing points

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- Helps to change digitize image to yellow outline (later will benefit when put over imargey)

Issues

- Being exact image to GIS
- Retrying, starting over if one control point is wrong and skews entire image

Quincy, MA Streetlight Audit

Month of August

Eric Pescatore, Intern Tom (Jimmy Neutron), Bryson Koziell

See Nashua, NH Street light Audit.

Fieldwork

- Much easier to walk around Quincy; poles are closer together and gathering less data
- More familiar with area = more comfortable = more work accomplished
- Take screenshots of street maps to navigate
- Shorts and a t shirt – hat
- Bring good snacks, grab a coffee, each day gets a new playlist

Notes for ArcCollector

- Note fire boxes, terminal boxes, street light control boxes – take image
- Note what light is illuminating – park? Parking lot?

Issues

- Download imagery basemap using wifi before leaving home
- Use on the fly if needed in new unplanned area
- Match the collected point as close to the imagery pole, its base
- Hard to distinguish between a dead tree in the winter and a utility pole

Internship Presentation

Make a presentation at the end of the summer.

As part of your summer internship, you will be required to deliver a final presentation highlighting the work that you accomplished, as well as, your experiences during the summer. You will present in groups to managers and group leaders. The groups will be assigned based on location and you will need to coordinate with each other on the delivery of your individual presentations. The college recruitment team will be responsible for assigning the groups, scheduling the presentation days and sending out invitations to the business. We encourage you to extend the invitation to any colleagues who you have worked with or done work for over the summer.

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Project Guidelines

- The presentations will be done via skype so we suggest using PowerPoint or a presentation medium that will work well in a virtual setting
- Each presentation should be no more than 15 minutes in length, including time for questions.
- The presentation should focus on your project work as well as any interesting/meaningful experiences you had as a result of working at CDM Smith.
- The presentations may be done individually or in groups. If you choose to work in a group, the project work must be similar and the presentation should be 25 min in length.

Questions to keep in mind when putting together your presentation:

- What projects did you work on?
- What did you learn about the business environment?
- What impact do you feel you had on the organization?
- What are you going to take away from this experience?
- What did you find different in the business environment vs. classroom theory?

Be creative!

Idea – Present about the streetlight auditing project. An online map showing the projects data.

Will be debuted in a presentation (presented by Suzanne and Tom), a .ppt and a story map showing Nashua data, field process, benefits of using ArcGIS Collector, office QA QC, why project is successful?

The idea to create a cascading story map with other maps nested inside, include images, videos, funny photos, keep the audience alive! State why use ArcCollector, attributes interested in, what did not work, how you problem solved.

Created a cascade story map. Sort of like a website highlighting the:

How we set it up, how it is in the field, what is the process like, office work like? Mention dispatch's help in last couple of days, explain how accessible and vital ArcCollector is.

Internship Presentation Experience and Results

August 2, 2016

With fellow interns. 5 different interns presented, each their own topic of their summer. My team listened in on the Skype call which I greatly appreciated.

Powerpoint presentation including a cascading story map with 4 maps nested in it. Pictures and the company's website included. I did not follow my notes, but went through the project intuitively. I enjoyed speaking to my friends and colleagues. I was quite nervous although I realized I am fun and contagious to listen to.

Notes: Hello, I am Suzanne Meek. A GIS Specialist Intern here for the summer of 2016. For my first slide we have two images of places I spent most of my time, Nashua NH and the Boston office.

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For my experience here, I worked on something different every week if not every day. I was welcomed on to many mapping projects to help review data, digitize points for utility purposes. The image on the bottom left is an example showing the New Bedford Airport. I used satellite imagery and Google earth to map the New Bedford airport. I also symbolized roads and the utilities for the area using layers and data previously retrieved from another project. The picture top right is an example of a project for Bentley University in mapping their campus. The university wanted very lot to have an id and type of parking spot in their database. You can see those IDs on the purple points above cars. With these various projects it was fun to jump in and think before asking questions so I did not waste anyone's time.

Like my classes at Clark University, this internship allowed me to retrieve and learn about projects on different platforms. I used Esri applications for each project like ArcMap and Arc Collector. On the left, I am using a script to locate appropriate water valves in Isreal. To the right, I used a specific query to show only specific data versus showing all the data collected. The Excel table is how we can keep track of edits between team members.

The auditing project took up most of my time in June. This meant auditing every light pole in the area including its color, pole type (metal or wood), its model type, its identification sticker color and number. These details would later be used to change these fixtures to LED lights. These new LED lights will modernize the city's infrastructure and is more energy efficient that will provide cost savings. Communities will go from a yellow light to a bright white light. You may have already seen these in or around the city of Boston.

The goal of auditing every street light in the area was achieved through teamwork and by setting everyday goals to reach. If we click on lets learn more, we can go to the website I designed to show the projects ins and outs along with the collected data.

If we scroll down we come upon the project's goal. Below that, we have the team's leader Bryson Koziell who got creative to collect field data. This light image, is the proposed model to change the present lights to from Leotek Electronics. These Green Cobra Series lights are more energy efficient and illuminate more surface area. When I first tried to figure out my strategy to complete the field work, I applied CDM Smith's strategy, Listen. Think. Deliver. Then I thought what I would need to complete a day in Nashua, definitely sunscreen and bug spray.

This first map shows a day's collection, done by me on June 24th. We can see where I first started in the early morning, on a rather busy road but not many cars were present. Then by lunch, I captured most of Main St and finished with Amherst Rd. Each point has its information of model type, color, and identification sticker that is vital to changing the fixtures. The second map shows areas that need a second look. Poles that have stickers that are not present or hard to ID. The green circles show areas where more equipment for trimming present trees are needed. The red question marks show issue points that field members came across and need assistance.

Spending three days a week outside, you come across nature in its natural form. But Bryson, was very helpful and motivated to keep the rest of us on task. That text is from him in the office letting me know where I should go next. The app, Arc Collector used on an iPad allows real-time updates, this way Bryson could locate field members. This map is an example of 3 different field teams, Tom- green, Ryan- orange and Scott- blue.

Some of the issues I had trouble combatting were high traffic areas, the heat and humidity, and not efficiently planning my route ahead of time. I quickly realized going earlier in the morning when not many people are around allowed less traffic and cooler air. Planning my route the night before with a goal of more lights than I wanted allowed for the unaccountable events to happen.

Quick QA QC done after each field day helped the data stay accurate and worthy. A team member, Eric, told field members to capture any image of the unknown, and anything worth a laugh. Who knew I would get to see a moose and a well-balanced squirrel napping!

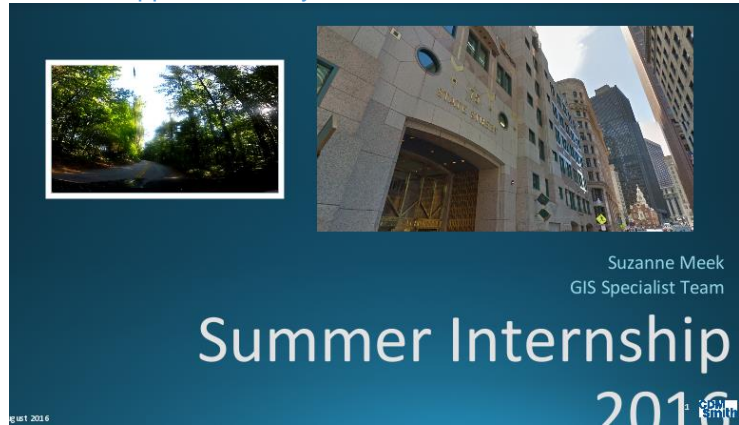
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The team's performance came directly from the use of a mobile device and Arc Collector. The printed ledger that listed street names and pole's ID numbers allowed field members to plan their route. Each employee excersing teamwork and being accountable for the section allowed the project to meet its goal of auditing each light. This last map is the entire data set collected.

I would like to switch back to my presentation to tie up my experience thus far.

Overall, I have had a positive experience. I have learned about my field and myself by having a willingness to learn. I enjoyed asking for help because it pushed me to get out of my comfort zone and help when I saw someone in need. I enjoyed the freedom to make a list of things I was unsure of and later re-visiting the problems and figuring it out myself. I created a running list of new words I have heard so that is just a couple I noted. I am excited most are applicable in my field of GIS.

For future projects, I think having more knowledge of the area surveying would help everyone. I look forward to applying what I have learned at the next site, Quincy MA. Thank you for listening. I enjoyed presenting to you and I hope you enjoyed my part.



Intern Enthused Festivities

Lunch and Learn with:

June 14, 2016 1 pm

Carlos Echalar, Chief Human Resources Officer

Timothy Wall, Chief Operating Officer



ABOUT TIMOTHY

Boston, Massachusetts

INFO [Download](#)

Location: BOS

Email: wallt@cdmsmith.com

Work: +16174526257

ABOUT CARLOS

Boston, Massachusetts

INFO [Download View](#)

Department: Human Resources

Location: BOS

Email: echalarcs@cdmsmith.com

Work: +16174526099

Notes:

51 % of workers at company are Millennials

What's a HallowLense? *Tried one on, a virtual reality, a computer in a headset.*

What's your major in you professional life?

Think local environment, hazardous waste, even treatment facilities

Suggested and received the book – “The 20-Minutes Networking Meeting” Nathan A Perez and Marcia Ballinger

July 6, 2016 11 am

Anthony Bouchard – North American Unit President

Notes:

CCI is 20 while TSU is 80

All of North America, 75% of the business happens in NA Unit

1 of the 5 units: FSU – federal services, US govt and worldwide; TSU – practioners, engineers, scientists, architects; International Unit

CDM Smith can plan, design, and then construction unit can out it together, and then even operate product ; integrated delivery, a lifecycle of the project

Plan, design, build, operate

We have a pipeline of people we know to build the oncoming workforce – The educational institutions and trends in the industry we will see and receive from this opportunity

Ask yourself what moves you, what gives you passions, it may change over time and that is alright

A continued education is vital. We need diversity, the broader though then the solution is better; more brains and more ways of thinking is much better

His Common Sense Spiel:

- Next generation will solve problems. Give you 3 yard sticks to measure progress in life
- Honesty, integrity, how you treat others
- Dream Big Dreams – work exceptionally hard to achieve goals, hard work is free, work harder this is the Great Equalizer. He may be smarter but I work harder (think hockey you Captain you)
- Dreams are so very meaningful, not self-satisfying, satisfy your community and country
- Take Risks – don't be afraid of failure, We are in a climate of fear, of doing so many things because we fear failure
- Teddy Roosevelt Quote:
“It is not the critic who counts; not the man who points out how the strong man stumbles, or where the doer of deeds could have done them better. The credit belongs to the man who is actually in the arena, whose face is marred by dust and sweat and blood; who strives valiantly; who errs, who comes short again and



ABOUT ANTHONY

Chicago, Illinois

INFO

[Download VCard](#)

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again, because there is no effort without error and shortcoming; but who does actually strive to do the deeds; who knows great enthusiasms, the great devotions; who spends himself in a worthy cause; who at the best knows in the end the triumph of high achievement, and who at the worst, if he fails, at least fails while daring greatly, so that his place shall never be with those cold and timid souls who neither know victory nor defeat.”

- Fellow Human Beings – be humane, solve people problems, the thinking and collaboration, learning to deal with people with great dignity and respect
- Education- I have a passion for it in all forms, institutional, internships, everyday life, reading

CDM Smith has the potential to compete and win at any project regardless of who any other player may be (has a great image in the workplace)

Suggested “Success” by Michael Korda – 10 Steps to Success before 40, Master them in time and reach lifelong rewards. His Dad gave this to him

What He Wish He knew- you’re learning, what else can I learn? It never ends, hard work and dedication, foundation of success. Focus on what you want and be it and do it (the job you are doing, are you doing it?) Find and strike the right balance of work and play. There is work then there is everything else. I am going to work an hour before work and during lunch and that’s 10 hours of homework a week while I attended my master’s. The weekends are for me. Recharge for work – you got to find it.

Never let “I do not know where to find what is needed” be a barrier. Ask your manager what to do, how to build your network

I emailed Tony because I enjoyed him so much:

From: Meek, Suzanne L.

Sent: Thursday, July 7, 2016 12:41 PM

To: Bouchard, Anthony B. <bouchardab@cdmsmith.com>

Subject: Summer Intern Lunch and Learn-Thank You

Hi Tony,

I hope you are well today. My name is Suzanne Meek and I am an GIS specialist intern in the Boston office this summer.

I really appreciated your talk yesterday. I asked the question about any motivational books and I thank you for suggesting one. I did find the author but I am not sure this is the exact edition you explained (I see the year 1978). Here is the link to the one I was thinking of ordering: https://www.amazon.com/Success-Michael-Korda/dp/0345277414?ie=UTF8&ref_=asap_bc

I heard you say your father gave you the book. My dad and I talk about and exchange self-help and motivational books - for a couple years now (the game is who can find them at a better price) and it made my day that you shared that personal info with us.

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I also enjoyed the part where you said hard work is the great equalizer. It made me think of how I played women's college ice hockey at UMass Boston. I was a walk-on to the team my freshman year and although I was not at the highest skill caliber, they kept me due to my work ethic and I became captain my senior year. I believe in hard work as well.

It is people like you who take the time to inspire and talk to us interns that really keep my mind on track. Thank you for your time and reading my email. I know you are a busy man, but I had to let you know I how much I appreciated the conference call.

All the best, Suzanne

Hi Suzanne,

Thank you for the kind email. It is always good to hear that something you have said resonates with people.

The article I mentioned appears to only have been an excerpt from a book. The link does not appear to be the same thing. But hard to tell. We did not have the internet in 1988 or so, when my dad gave me the copy of the article to me..... ☐. It sounds like you and your dad have a great relationship. Treasure it!

Wow, you are a hockey player! So you know what hard work is and have proven it at UMass Boston. Congratulations on being the captain! That is a tremendous accomplishment. So I know what this means. You should be very proud of yourself. Hockey players are great employees! I am an old hockey player myself. (I am actually an old goalie, who plays 3-5 times a week still. But a lot slower than when I played in college!)

I really enjoyed hearing back from you. I get a ton of joy of these sessions, so thank you for making it fun!

Tony

July 13, 2016 1 pm

Dave Neitz, Chief Information Officer

Scott Alderidge, Research and
Development Manager, Raleigh, NC



ABOUT DAVID

Cambridge, Massachusetts

INFO

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Engineers create 3D models but we show them in 2D and the brain has to fill in those gaps

Think Smart Cities – solar paneled roads, make a road system an electric grid

Think the internet of things, how do we evolve to keep up, up our digital capital

Skyler Tibits – TED talk, GE Innovations, time on wind think pre maintenance

Equinix – streams info just like Netflix does

A contact lens that Goggle bought will allow augmented reality, another prototype is projected right into the retina

The physics of the future – BOOK , Magic Leap

Skills come and go but the curiosity and desire to learn has to be present

Work where you are comfortable- go outside

Mixed world – virtual and augmented

Tried out the HoloLens <https://www.microsoft.com/microsoft-hololens/en-us>

New Knowledge

Copy Paste in ArcMap: All while in an Edit Session

- Select what you want in the attribute table
- Right click on the map, Copy
- Right click on the map, paste
- Chose the layer to paste to

Sort Tool

- Can sort things based on a field using the sort tool
- Can permanently sort it by making a new layer – with all the same fields

Can Load Data into a new or already composed Feature Class

Conversion toolbox- Conversion – Table to excel, Domain to table (save .dbf so Excel can open it)

API – Application Programming Interface

- Set of routines, protocols, tools for building web enabled mobile based application
- Can specify how you can authenticate, request, receive data from the API server

Torque.js

- An efficient, fast, stylish rendering method to bring data to life
- Can represent multidimensional data with geospatial coordinates
- Dynamic visualizations from temporal datasets that are fully customizable
- Compresses large datasets so they can be visualized and filtered directly on the web

Real time GIS = analytics, web 3D GIS, live data deployment, the IOI, wearables, drones

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Surveyor 123 – simplified surveyor app, create share analyze, asks questions to get answers, make the best decisions – easy to fill answers, audio, images

From the Intern Packet:

Drive for results; be accountable, bottom line oriented

Problem Solving; honest analysis, look beyond the obvious

Career Ambition; career knowledgeable, makes things happen

Learning on the Fly; relentless and versatile learner, open to change, quickly grabs essence, experiments to find new solutions

Compassion; demonstrated empathy; realness

Time Management; gets more done in less time than others; can attend to a broader range of activities

Above Expectations; consistently exceeds many position standards; exceeds majority of performance objectives

Make goals SMART – Specific, Measurable, Attainable, Realistic, Timely

Think- Who is involved? What do I want to accomplish? Which- requirements, when-time frame, where- location, why- purpose of accomplishing the goals

From the 20 Minute Networking Meeting by Nathan A Perez and Marcia Ballinger:

Grocery List of demands and requirements – keep this kind of personal thinking to self

Wasted time- do not let it just be wasted

SAY THANK YOU

Awkward situations call for less awkward sentences like: “But even though we’re networking,” “Here is my situation” “No problem with time, I promise, only 20 minutes” “I have been asking several people these same questions. Different perspectives are important, and I would really value your thoughts” “You have actually answered my other questions. Also if you don’t mind sharing- who else would you suggest I connect with as part of my networking?” “I want to be sensitive to your schedule” “But one last question: How can I be helpful to you?” Thank you again for your time” “I will be sure to tell blank hello for you when I speak to him. Have a great rest of the week”

Demeanor must be steady, do not come off as nervous or unsure spite of the circumstances

Where do you see growth areas with current clients?

ITS OK to take notes along the way

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Do not be afraid to go in and say 'I have no idea the questions to ask, and I have no idea how to figure out what I want to do- can you help?'

Everybody loves an informed professional. Networking is never a waste of time.

Keep things brief.

You are there to learn as much as you are there to network, and the time used to do it should be reserved to absorb info

An agenda or a quick overview of what you would like to discuss, for instance, would be fabulous. Its simply nice (not to mention professional) to know what we will be talking about.

Patience is the name of the game.

Words to Get to Know

Business intelligence 2016 buzzwords – data science, data driven business, smart data, predictive analytics, real time analytics, IDA, intelligent decision automation, personal analytics, visual business analytics, big data

Bottom-line oriented Career Knowledgeable Millennials Toggle Frontage