2022

Transpo Group GIS Internship

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Western Washington University

COLLEGE OF THE ENVIRONMENT

Internship Title: GIS Intern, Transpo Group

Student Name: Casey Rothlisberger

Internship Dates: June 22, 2022 - December 22, 2022

STUDENT SIGNATURE Casey Rothlisberger

DATE: December 7th, 2022

11/26/2022

Casey Rothlisberger

GIS Intern: Transpo Group

Kirkland, WA (Hybrid/Remote)

June 22nd, 2022 – December 30th, 2022

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Introduction

From June 2022 to December 2022, I was a GIS Intern for Transpo Group, an Urban Planning Transportation Firm based in Kirkland, Washington. The GIS department of the organization is focused on accumulating, collecting, cleaning, and producing data that can be used for projects.

As GIS Intern, I offered support to the two GIS Analysts and the GIS Technical Supervisor, as well as project managers for specific tasks. Transpo's projects are wide-ranging which allowed me to gain exposure on various projects and project types. All work was done on ArcGIS Pro, ArcMap, or ArcGIS Online.

PROJECTS

Projects I was involved in included, along with the clients associated with each type of project are below. All clients are in Washington State unless stated otherwise.

- ADA Transition Plans
    - City of Snohomish
    - City of Ferndale
    - City of Lake Stevens
- Public Transit Study
    - Hunterdon County (New Jersey)
    - Orange County (New York)
    - Whatcom Transit Authority
    - San Juan County
    - Yakima County
- Asset Management
    - City of Duvall – Wastewater Treatment Plant
- Corridor Study
    - Meridian Ave, city of Edgewood
    - State Route 104, city of Edmonds
- Transportation Plan or Comprehensive Plan
    - Swinomish Tribe
    - City of Arlington
    - City of Maple Valley
    - City of Redmond
    - City of Milton
    - City of Ferndale
    - City of Stanwood
    - City of Monroe
- General On-Call GIS Services
    - Whatcom County
    - City of Marysville

    - City of Duvall
- Data Management/Archiving
    - Internal, Transpo Group

For all these projects, GIS data needed to be digitized, generated, catalogued, and/or analyzed. Static and/or Web Maps and Apps needed to be created for Project Managers to visualize data, show data to clients, or use in presentations.

GOALS

The goals throughout the internship were to provide clients and co-workers with usable data and/or analysis for various traffic or infrastructure projects. The goal was always to generate (or find) very accurate data with helpful and accurate fields and attributes.

RESEARCH QUESTIONS

Research questions differed from one project to another. For example, for ADA Transition Plans, we were asking questions regarding the condition of all curb ramps, crosswalks, signal push buttons, and sidewalks in a city or county. For a corridor study, we researched collision data to learn where and what types of collisions were happening on a certain corridor. For a transit study, our questions were focused on the current transit network, demographics of the service area, walkability to transit locations, and whether the transit network is leaving new developments isolated from transit services.

Methods / Tasks Completed

Many different steps are required in any project at Transpo Group. The majority of the GIS work revolves around data generation, creation, cleaning, and production. Below are the main methods/tasks I did when working for Transpo.

DIGITIZING

The first step to any GIS project is ensuring that you have accurate data. Often, the client can provide us with some data (take a sidewalks layer, for example). We then cross reference their data with the most recent aerials we can find to ensure it is accurate. If/when we find data that isn't sufficient (say, sidewalks are missing) it is up to us to digitize the sidewalks.

This is done by editing the feature class and creating new data. We drew features on top of an aerial and would often cross-reference the aerial with google image 'street view' when the aerial was shrouded, covered by a tree, blurry, or otherwise not detailed. In Figure 2, the intersections shown were digitized by me, with attributes created post digitization. (Figure 2)

DATA COLLECTING

Some of my time was spent in the field (Ferndale, WA) collecting data for Ferndale's ADA Transition Plan. The features I was collecting had previously been digitized via aerial imagery, but no attributes had been updated. I used an app called Field Maps, which connects directly to a Web Map created on ArcGIS Online for data collecting purposes. When in the field, I collected specific measurements and attributes for each feature. I was not asked to determine whether a feature was ADA compliant or not, I was only focused on measuring and recording data about certain features. In Ferndale, these features are curb ramps, crosswalks, signal push buttons, and bus stops.

UPDATING ATTRIBUTES

It is also important to have attributes attached to each feature that accurately describe that feature and can be used to either call out the feature in the future, use the feature for analysis, or symbolize the feature. These fields and attributes could be a myriad of different things. For sidewalks in ADA Transition Plan data, we recorded sidewalk condition, sidewalk length, width, run slope (in % slope), and cross slope (in % slope). When possible, domains were created to limit text string errors in data entry.

IMPORTING DATA

For multiple projects, but always for corridor studies, we imported collision data from police stations. This data was sent to us in a huge excel doc that contained all collisions within a precinct in the past 5 or 10 years. Before importing to ArcGIS Pro, it is necessary to change all fields so that they begin with a letter, and only contain letters, numbers, or underscores. Once fields are ArcGIS friendly, the table can be imported and displayed on the map (the tables contain x and y coordinate data). From here, we can separate the data by crash type and location. We generally created static or webmaps with this data for project managers to use in their assessment of a corridor within a city (Figure 1). I also frequently worked with Census data to map different demographics within a city (generally for transit studies). This census data is also provided in a large excel table which must be configured to be friendly for ArcGIS Pro. This data can then be imported into a map and displayed (Figure 3).

Reflection

a) Challenges you met and how you overcame them

One of the largest challenges to this internship was working from home while learning a new job and working as a team. I was the GIS intern and worked within the small (3 staff) GIS team at Transpo Group. Working from home meant I had to resort to Teams chats or video calls in order to get my questions answered. I usually opt towards asking more questions rather than

assuming, but sometimes I felt as though I was a nuisance for my coworkers. However, I was assured by my coworkers that they were always available to ask questions and that I should be asking as many questions as I can because that's the only way to ensure I will do everything up to company standards.

Another challenge was the lack of projects to work on at times. Being an intern, I do not have the experience or track record within the company to jump in and help with any project. Generally, project tasks were handed down to me from other GIS analysts. However, if they were too busy, or not busy enough, to give me work, I was left with no projects to work on. My 'backup' job was archiving maps and apps from ESRI's ArcGIS Online server to our own server to save space (and storage costs), but this work was incredibly slow and monotonous. I really enjoy working on active projects that have a deadline, and it was difficult to motivate to work 8 hours on a day that all I was doing was archiving.

Finally, a challenge I ran into was perfect database set-up for projects. Generally, ArcGIS Pro Projects were already set up by the time I went in to work on them. The Geodatabase was in the correct location, all the datasets were set up correctly, and all the data was perfectly organized. There were several instances in which I was tasked with setting up an ArcGIS Pro Project for a certain project, but twice I set up the geodatabase and datasets incorrectly. I was given grace because I am just an intern, but I realized I needed to ask more questions when setting up geodatabases.

b) How your College of the Environment classes prepared you for this internship

I do not have enough good things to say about the GIS program at Western Washington University (WWU). Classes taught at WWU covered nearly everything I've encountered in my internship. Database management, dataset management, domains, digitizing, symbolizing, creating PDF's, dealing with pop-ups, creating apps and managing shared maps on ArcOnline, the list goes on. I have been able to confidently take on most tasks given to me and it's all thanks to the GIS program at WWU.

c) How this internship added (or did not) something to your education that you couldn't get from classes alone

The biggest thing this internship has added to my time in school is the experience working on the same projects with coworkers. I realize we have group projects in school, but the set up and environment of those projects are vastly different than my experience in my internship. At Transpo Group, my coworkers and I have shared files and ArcGIS Pro projects that we all worked within. It was vitally important that the projects were set up to the company standard, data was labeled and stored in the correct place, and that our workflows all matched.

Secondly, this internship has hammered home the importance and intricacies of proper database management. The courses at WWU attempted to create a solid workflow to create organized databases, but it never really stuck for me. Now, my database management skills have increased immensely, and I feel much more comfortable setting up a geodatabase to company standards.

Finally, this internship gave me some exposure to ArcMap. Even though the industry is moving away from ArcMap and towards ArcGIS Pro, ArcMap is still involved with many companies' workflow. I had no exposure to ArcMap at WWU, and I wish I had (even if it was just very brief). Whether I have worked with ArcMap is a question I have been asked in almost every GIS interview to this date. Thankfully, working with ArcMap in this internship has given me more confidence with the software.

d) How this internship fits in with your career goals

My early career goals are to be a GIS analyst, and this internship set me up perfectly for that. Working closely with two GIS analysts at the company allowed me to get a taste for the workflow, see what the job entailed, and learn if I am cut out for the position. Transpo Group has offered me a GIS Technician position because of my time at this internship. If I keep moving up in the company, I hope to become a GIS Analyst.

Figures and Tables

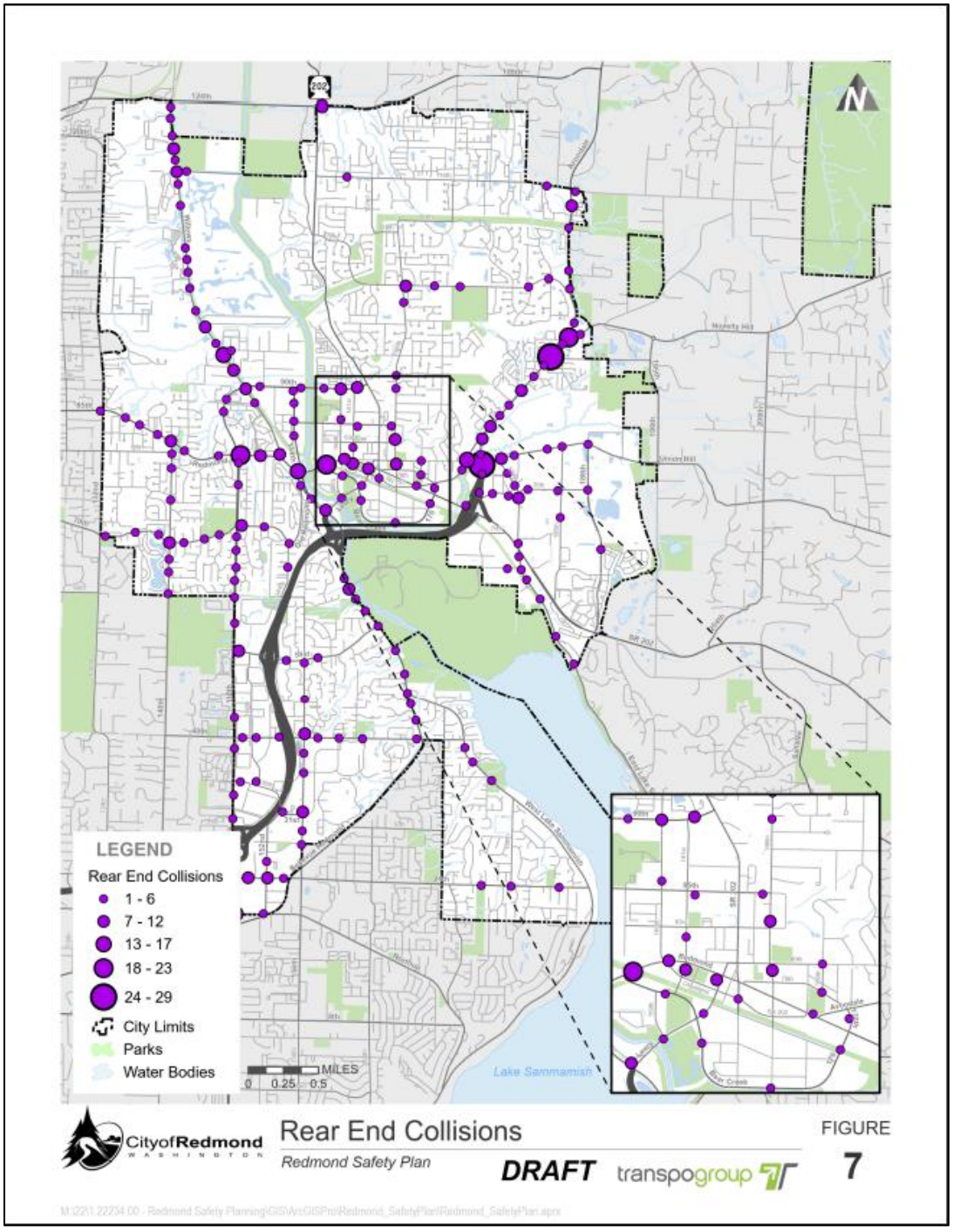
LEGEND
Rear End Collisions
1 - 6
7 - 12
13 - 17
18 - 23
24 - 29
City Limits
Parks
Water Bodies
MILES
0 0.25 0.5
Lake Sammamish
CityofRedmond
WASHINGTON
Rear End Collisions
Redmond Safety Plan
DRAFT
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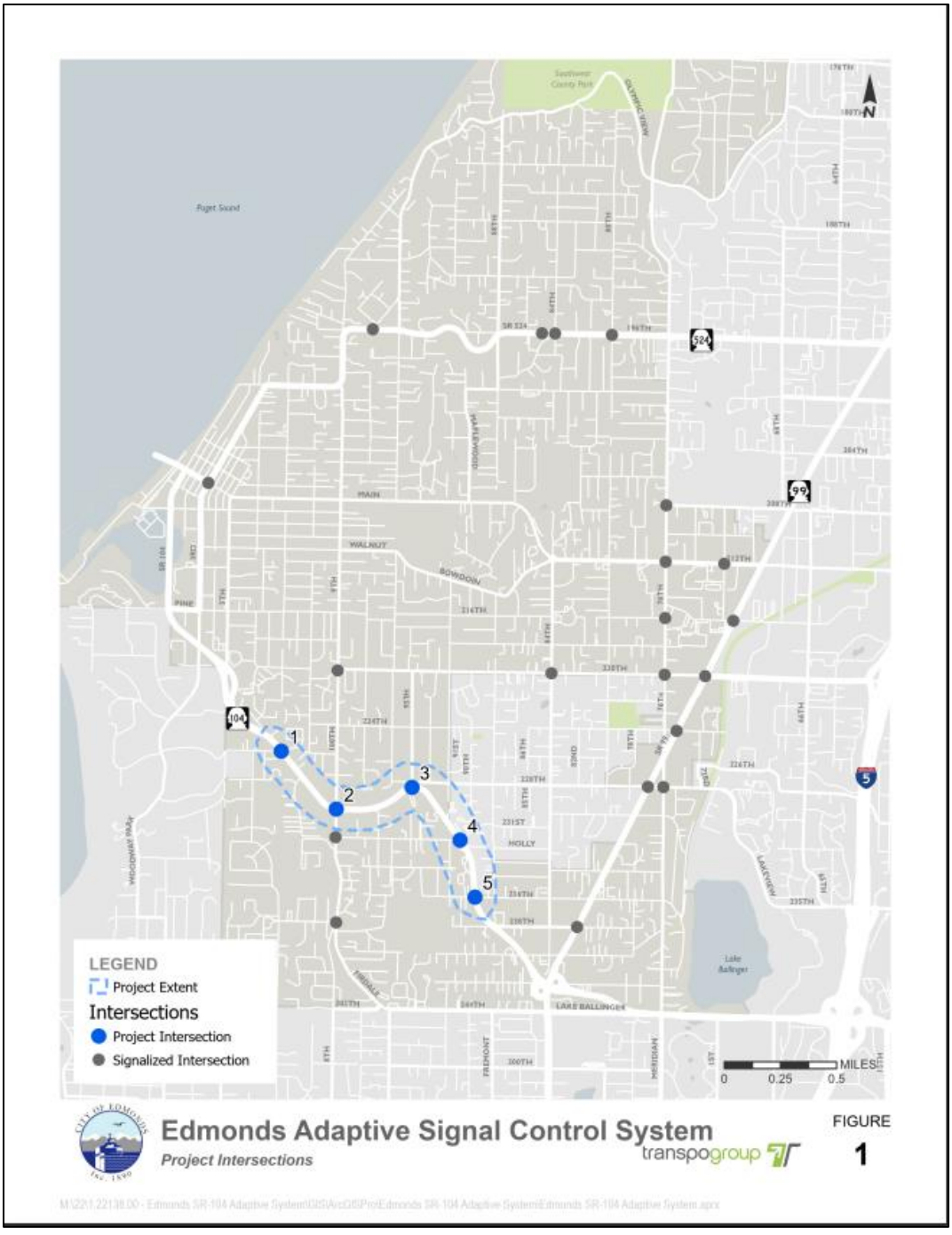
FIGURE
7

Figure 1


Puget Sound
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MAIN
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BOWDOIN
PINE
OAK
104
524
99
5
1
2
3
4
5
LEGEND
Project Extent
Intersections
Project Intersection
Signalized Intersection
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0.5
MILES
Edmonds Adaptive Signal Control System
Project Intersections
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FIGURE
1

Figure 2

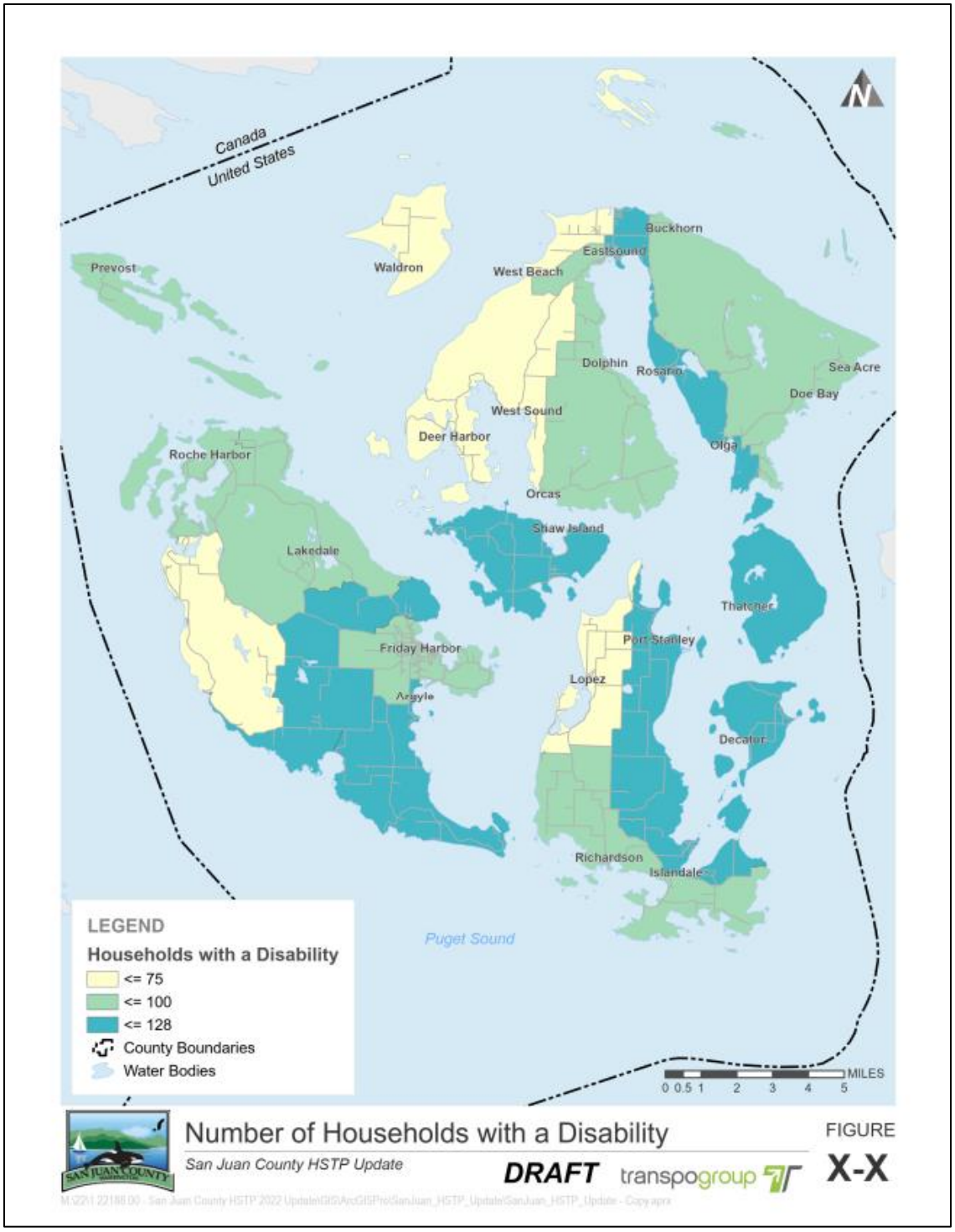
Canada
United States
Prevost
Waldron
West Beach
Buckhorn
Eastsound
Dolphin
Rosario
Sea Acre
Doe Bay
West Sound
Deer Harbor
Olga
Roche Harbor
Orcas
Shaw Island
Lakedale
Thatcher
Port Stanley
Friday Harbor
Lopez
Argyle
Decatur
Richardson
Islandale
Puget Sound
LEGEND
Households with a Disability
<= 75
<= 100
<= 128
County Boundaries
Water Bodies
MILES
0 0.5 1 2 3 4 5
Number of Households with a Disability
San Juan County HSTP Update
DRAFT
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FIGURE
X-X

Figure 3