

GAGE

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Mapping our Nation:

How volunteers are modernizing the U.S. Geological Survey's National Map

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History and Introduction

- Created in 1879 with the mission of **providing reliable topographic mapping**, the **U.S. Geological Survey (USGS)** is the primary civilian mapping agency for the **United States**.
- The **National Map (TNM)** is a collaboration between the USGS and its partners at the **Federal, state, and local level** to provide accurate and up-to-date **topographic data** of the United States. It's primary uses include: **recreation, scientific analysis, and emergency response**.
- The National Map Corps (TNMCorps) is a crowdsourced, mapping project implemented to collect structures data for TNM.
- As interns from UNAVCO we participated in a summer program to help **review and update** structures data on The National Map. This included both **editing points** and **peer reviewing** the edits of volunteers.

Editing Process



Figure 1. The National Map Corps Online Editor



Figure 2. Types of Structure Points

- 17 types of structures are collected, each with their own specific icon (Fig. 2)
- Volunteers edit by **adding missing, deleting obsolete, or updating** existing points
- Points are placed on their respective structure in the **center of the building**

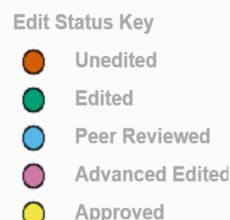


Figure 3. Editor Roles Key

- Attribute info gathered includes the **official name and address**
- All data collected must be **accurate** and as **complete** as possible
- Icon color changes depending on the **user's role** (Fig. 3)
- Final stage of the editing process is **Approved** (Fig. 3)
- Volunteers can **increase** their role by contributing high quality edits (Fig. 4)

Quality Assurance

- Volunteers must follow **specific guidance** for points using: **TNMCorps User Guides**, the structure features list, and **FAQ articles**
- Quality checks** are performed by **USGS staff** on random samples of a volunteer's points when they meet specific **editing milestones**
- As interns, we reached the level of **Peer Reviewers**
- We Peer Reviewed **50+** points as a team

RANKING LEGEND		Authoritative Sources
Primary Source: Excellent / Preferred	✓	These sources are created directly by the entity (i.e., service provider). Information from these sources can be used to update structures for entry into the database.
Secondary Source: Conditional / Acceptable	⚠	These sources are typically created by, at service recipients, or parties receiving services from the structure/entity, or by regulators governing the entity's operations. There is a slight risk to these because secondary sources are not updated as frequently/quickly as primary sources, and may not reflect recent name changes, relocations, etc.
Aggregate / Third Party Source: NOT AUTHENTICATIVE	✗	Information from these sources can be used to update structures if all others have been exhausted. **Before using these, make note of how often the information is updated.** Authors of these sources are neither service providers nor service recipients. They are third-party entities that consume and distribute information about service providers. Users are discouraged from using these since we cannot verify the source or accuracy of this information.

Figure 5. Authoritative Sources

- Standard Editor (Green)
- Peer Reviewer (Blue)
- Advanced Editor (Purple)
- USGS Editor (Yellow)

Figure 4. User Roles

STRUCTURE FEATURES			
ICON	NAME	DESCRIPTION	EXAMPLES
	General School	A building or building complex used as a learning center for children grades kindergarten through high school.	INCLUDES: Public, private, alternative, and juvenile hall schools that do not fall into the categories of Elementary, Middle, or High School (e.g., K-12 schools, or schools offering a single level of formal education). DOES NOT INCLUDE: Preschools, childcare facilities, or any schools where kindergarten is the highest, or only, level offered (e.g., PreK-K, or K-only).

Figure 6. Structures List Example

Our Results

- Our main assignment was to **assist** in seeking out, researching, and **digitizing points** on TNMCorps' digital map.
- We **updated/deleted** these man-made structures, paying special attention to **city halls, schools, and fire stations**.
- Using TNMCorps' online editor, we looked for **unedited points** on the map, then input the **correct/updated** addresses and **physical locations** for those points.

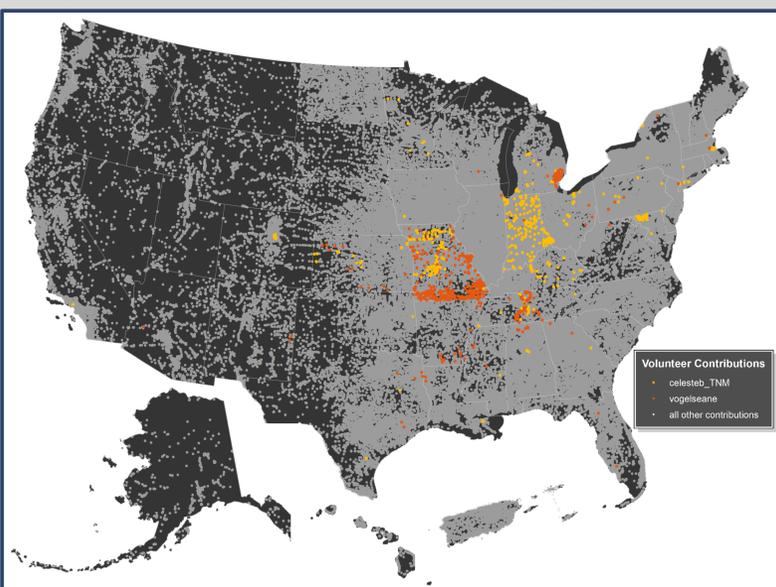


Figure 7. Our Contributions

Our Edits

- Updated: **826**
- Created: **386**
- Deleted: **266**

Our Assignments

- 5 of each structure type
- MO and IN city halls**
- Detroit, MI area schools**
- Cincinnati, OH area schools**
- Northern and Southern MO Fire Stations**
- Three TNMCorps Newsletter articles**

Volunteers and Impact

- Volunteers contribute significantly by updating and **verifying** data on **man-made structures**
- Users get **constructive feedback** on their edits to help them **improve**
- Crowdsourcing** adds a level of **authenticity** to the program
- Approved points** are input onto **US Topo maps** with specific icons (Fig 8)
- Mapping challenges** focus volunteers' efforts on **specific structure types in specific areas**, ex: mapping all fire stations in a state (Fig 9)
- Volunteers get **virtual badges** based on **unique points edited**, and some are **featured** on TNMCorps website (Fig 10)



Figure 8. Topographic Map with Points

- Volunteer Contributions: **571,166***
*counts each point edited by user role
- Total Edits: **650,079***
*counts every time a point is saved
- Unique Points: **483,551***
*counts each unique point once

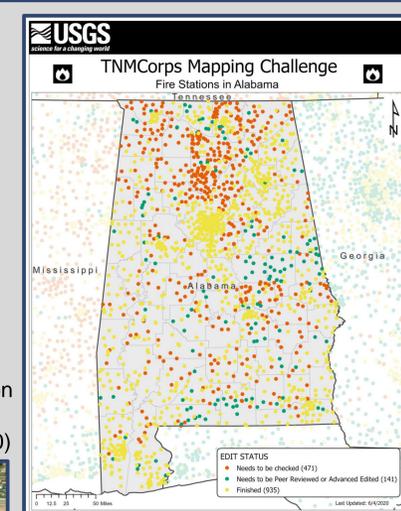


Figure 9. Mapping Challenge Example



Figure 10. Virtual Volunteer Badges

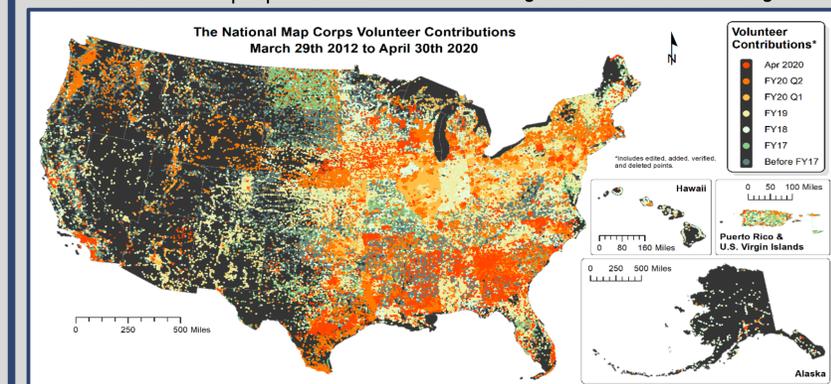


Figure 11. Volunteer Contributions

Acknowledgments

We would like to thank our USGS project mentors **Erin Korris, Emily Anderson, and Chuck Matthys** for their guidance and assistance on this project. In addition, we would like to extend our thanks to **Dr. Andria Ellis and Kelsey Russo-Nixon** for their professional development expertise, **UNAVCO** for this opportunity, as well as our faculty mentors **Rosann Poltrone and Angela Green-Garcia** for their continued support.



This material is based upon work supported by the National Science Foundation under Grant No. 1540524 and Grant No. 1724794. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.