‣ **BUILDING CAPACITY**

Building Capacity by Normalizing Addresses

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Editor's Note: A need exists within environmental health agencies to increase their capacity to perform in an environment of diminishing resources. With limited resources and increasing demands, we need to seek new approaches to the practice of environmental health. Acutely aware of these challenges, the *Journal* publishes the Building Capacity column to educate, reinforce, and build upon successes within the profession using technology to improve efficiency and extend the impact of environmental health agencies.

This column will be authored by technical advisors of the National Environmental Health Association (NEHA) data and technology section, as well as guest authors. The conclusions of this column are those of the author(s) and do not necessarily represent the views of NEHA.

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Managing addresses can be a hidden burden on your environmental health department and staff. The impact of bad addresses ranges from wasted inspector time, returned mail (including renewals and invoices), late payments, and administrative "special projects." Environmental health must track the addresses of licensed and permitted facilities (primarily businesses), land parcels (primarily development), and "everything else." The "everything else" category includes location information for locations with no address, such as festivals, cell phone towers, and some complaints.

Under the "special projects" category, we see frequent list matching and data cleanup projects. Unfortunately, manually comparing two lists can be labor intensive. Worse still, the same sort of matching projects seem to pop-up again and again. These projects should be automated through your software, internal tools, or third-party service.

Best Practices for Managing Addresses

Adopt Addressing Standards
The U.S. Postal Service, not surprisingly, maintains documented standards for addresses. As described on www.usps.com, "A standardized address is one that includes all required address elements and that uses the Postal Service standard abbreviations."

Most people know the proper two-digit state abbreviations. Far fewer people, however, know the standard abbreviations for a street type. Apply these standards to both your in-office and public-facing systems. And, if your data system can enforce these standards, that is the best situation.

Validate Addresses as Valid
Many internal and external resources can validate an address in your jurisdiction. These services can sometimes also augment the address by putting it in a standard format and adding elements such as parcel number, property ownership, ZIP+4 code, and latitude and longitude. The following are services that can be used for validating addresses:
- county assessor's office,
- GIS technology,
- U.S. Postal Service, and
- commercial services (some services may be fee-based).

The validation should happen in real time, if possible. That is, as the user keys and stores the address, it is validated (and sometimes corrected) as the record is stored.

County health departments have an easier path, with the assessor's office or GIS technology "in their own buildings" and primed to assist. Health districts—often spanning counties—and cities might need to negotiate to get these services. State regulators might need to use a commercial service.

Geocode Addresses
Geocoding is the task of connecting a valid address to a pin on a map and establishing its location on Earth. Mapping facility locations or suspected foodborne illness complaints

TABLE 1

Example of a Full Versus Parsed Address

Type of Address	Example
Full	Address: 10903 New Hampshire Avenue
Parsed	Number: 10903
	Number fractional:
	Pre-directional:
	Name: New Hampshire
	Suffix: Ave
	Post-directional:
	Suite type:
	Suite number:

or inspections or vector sites is an everyday function of your GIS team and might even be built into your software system. In either case, automatically capturing the location (frequently expressed as latitude and longitude) once the address is validated makes mapping these records later much easier.

Parsed Addresses

While tabbing into an empty address field and keying the whole address feels very natural (like addressing an envelope), the downstream data activities will eventually need a parsed address.

A parsed address is when there is a separate field for every address element, such as the street number, street direction, street name, street type, unit, and unit type (Table 1). To meet this practice, your system should maintain separate distinct fields for every element of the address, even if it is out of view from your users. Note that the list of address elements shown in Table 1 is not comprehensive.

Normalizing Addresses

Matching lists of facilities from other sources (e.g., a list from state regulators) is common. You already know that matching on facility name alone almost never works due to all the various spellings for a business. Matching on addresses is preferred, but the external list probably did not follow the best practices above. Maybe your list is also imperfect. The task becomes putting the two lists in a standard format necessary for matching addresses.

Normalizing a File of Addresses

You have been given a list of facilities, most of which you track already. But we expect to find some previously unknown businesses, too. That is a matching project that we want to automate.

Here is one easy way to normalize addresses using a service provided by Texas A&M University (TAMU) GeoServices.

- Prepare your data file in Excel with column headings for ID (a unique ID for the facility if one exists), SiteAddress, City, State, and ZIP.
- Save the file as a CSV (command separated value), which can be done in the Excel Save As dialog box.
- Navigate to the TAMU GeoServices webpage at https://geoservices.tamu.edu/ and create a free account (username and password required).
- Click on Services in the top toolbar and then on Address Processing in the left-hand toolbar.
- Follow the steps provided for the address processing service selected. When the processing is done, the download of your processed file will contain columns for StreetNumber, StreetName, StreetType, SuiteNumber, SuiteType, and more. These columns will be filled-in with perfectly formatted address elements ready for matching.

If you have other tips or insights on streamlining addressing operations for environmental health department staff, please add them to our LinkedIn Group at www.linkedin.com/groups/6945520. ◆◆

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