Illinois Statewide Property Buyout Database Update

PROCESS REPORT

IDNR-OWR 396

UNIVERSITY OF ILLINOIS D5311

Prairie Research Institute, Illinois State Water Survey

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Lisa Graff (Illinois State Water Survey) wrote the grant awarded to the Illinois State Water Survey for this project and provided project oversight. Brad McVay (Illinois State Water Survey) worked through the documents provided and populated the database. Zoe Zaloudek (Illinois State Water Survey) geocoded the location sites and developed a protected web application to store and view the geospatial data. The authors would like to acknowledge the contributions made by Marilyn Sucoe and Ron Davis (Illinois Department of Natural Resources/Office of Water Resource), Renysha Brown and Steve Baggerly (Illinois Emergency Management Agency), Julie Hamlin (DuPage County Community Development Commission), and Sharon Osterby (Lake County Stormwater Management Commission).

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INTRODUCTION

The Illinois Emergency Management Agency (IEMA), Illinois Department of Natural Resources/Office of Water Resources (IDNR/OWR), Illinois Department of Commerce and Economic Opportunity (DCEO), many Illinois municipalities, and the Metropolitan Water Reclamation District of Greater Chicago (MWRDGC) have all taken a proactive approach to reduce exposure to flood hazards by working with communities in Illinois to perform several different mitigation activities. Examples of these activities include the acquisition of flood-prone properties through buyout programs, elevating structures above the 1 percent annual chance base flood elevation, and encouraging communities to adopt higher floodplain management standards.

A report released by the National Institute of Building Sciences (NIBS) in 2019 indicated that mitigation funding could save the nation $6 in future disaster costs for every $1 spent on hazard mitigation (https://www.nibs.org/projects/natural-hazard-mitigation-saves-2019-report). Having a record of properties mitigated through buyout or acquisition in the State of Illinois will allow the State to demonstrate the cost-effectiveness of these projects and the savings achieved by investment in mitigation. A loss avoidance study provides a detailed estimate of the economic savings Illinois has realized by its proactive mitigation and use of higher standards. Loss avoidance study results provide a monetary measure of Illinois actions and promote continued dedication of state and local resources to reduce flood damages.

In a project funded by IEMA in 2017, the first Buyout Database was created as part of the update to the 2018 Illinois Natural Hazard Mitigation plan and included over 3,600 properties acquired in the State of Illinois. This project was funded to update the database to include property acquisitions from May 2018 to December 2020 and brought the total number of acquired properties to 4,084. The database was developed to support loss avoidance studies in Illinois. The Illinois State Water Survey (ISWS) has collected available information on structure buyouts in Illinois and prepared a geospatial database with available information on each buyout structure. The geospatial database is in ESRI file geodatabase format and is structured for use with Hazus in order to perform loss avoidance studies in the future. A a password-protected web mapping application was created to facilitate visualization and download of the geodatabase by stakeholders. Structure buyout records typically have, at a minimum, the following information: address, county, assessed value, acquisition cost, and disaster number. Addresses and/or latitude and longitude information provided in the records were used to determine spatial locations upon which a geospatial database (*BuyoutPoints_Statewide*) was developed using ArcGIS.

DATA SOURCES

ISWS updated the Buyout Database with 384 properties from structure buyout data provided by IEMA, IDNR/OWR, DuPage County, and Lake County. The information from IEMA covered projects funded through Federal Emergency Management Agency (FEMA) Hazard Mitigation Assistance (HMA) and Hazard Mitigation Grant Program (HMGP) funds. IDNR/OWR works with IEMA and provides state funds for mitigation buyouts that are used

as the local match for FEMA grants. In many cases the IDNR/OWR match is counted as a statewide contribution through independently conducted buyouts. DuPage County buyouts were funded by CDBG-DR, and Lake County buyouts were funded by IDNR/OWR.

IDNR Files

The IDNR records were received as a spreadsheet listing community, address, and PIN. That file was followed up with a variety of files that included an additional address list and project details for acquisition projects in Freeport, Watseka, and Mt. Vernon.

MWRDGC

Data from MWRDGC was not able to be obtained for this update.

DuPage County

DuPage County data was provided by Julie Hamlin at the request of Marilyn Sucoe of IDNR. The data from DuPage was funded by CDBG-DR funds from an April 2013 disaster. Despite this being outside of the timeframe we were looking for, these properties were overlooked in the initial database creation. The initial database had records from IDCEO but not from CDBG-DR funds.

Lake County

Lake County data was provided by Sharon Østerby at the Lake County Stormwater Management Commission. The properties were acquired in 2020 and scheduled for demolition in 2021 through IDNR/OWR grant funds and matched by the County.

DATA MANAGEMENT

As files (excel, word, email, pdf) were delivered, they were filed in a folder named after the originating agency. Once the data was entered, a quality review was performed to ensure that the correct types of data were being extracted from the files, the correct format of that data was being entered into the *Statewide Buyout Inventory* spreadsheet, as well as to address any errors and missing information.

Once all available data had been entered, the *Statewide Buyout Inventory* spreadsheet was reviewed for duplicate property entries; missing data that could easily be filled, such as ZIP code and state, were completed. There was insufficient time to research and address all missing data issues. Once the spreadsheet was reviewed, the buyout entries were geocoded for spatial reference.

Location of Points

The *Statewide Buyout Inventory* spreadsheet contains the addresses for most properties that have participated in buyout programs, as well as other owner and claim information. The exact location of each property was desired in order to represent the data visually and to facilitate future geographic analysis of the data.

To create a GIS point feature for every address, latitude and longitude values were gathered from the original data sources. If lat/lon values were not provided, they were

determined individually using Google Maps. For the few records without specific addresses or errors in the original addresses, local assessor's websites and legal descriptions were utilized. Once lat/lon values were derived for each record in the spreadsheet, it was converted to CSV format. Next, the CSV was used as an input for the ESRI ArcToolbox tools "Make XY Event Layer" and "Feature Class to Feature Class", creating a point feature class containing all of the data from the spreadsheet. Also, for the Village of Shorewood, points were updated or created as needed using detailed data developed for a loss avoidance study.

Web Mapping Application

In addition to the geodatabase, a password-protected web mapping application (WMA) was developed for ease in viewing and downloading the data. There is a point feature for each record in the buyout database, symbolized on the map in red. The WMA is available at: https://illinoisfloodmaps.org/structureriskassessment/FloodRiskDB/Buyouts

Login information required to view the WMA is:

Username: `floodinventory`

Password: `illinoisfloods!123`

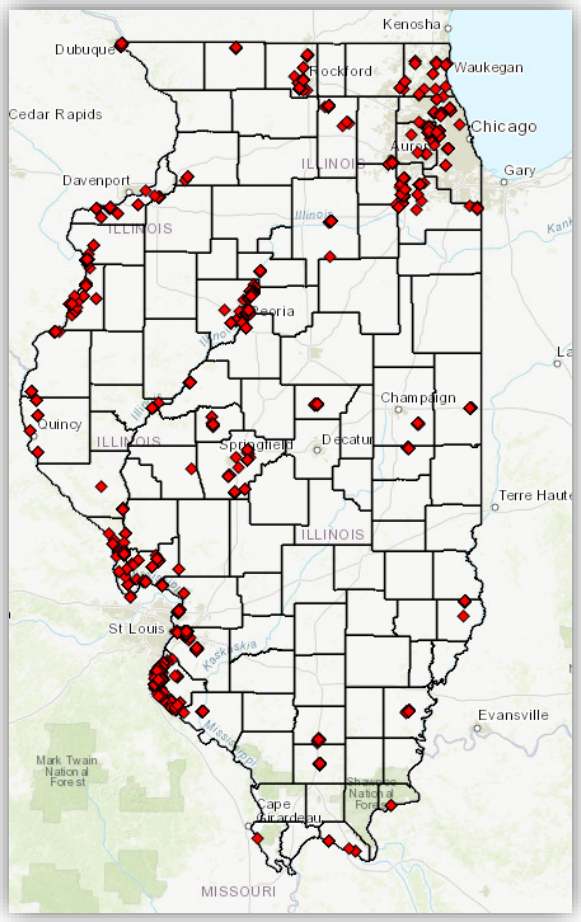

Figure 1. Web Maping Application showing 4,048 buyouts

DATA LIMITATIONS

A number of properties only had minimal information available. An address or latitude and longitude coordinates are necessary in order to have a geographic location of the acquired property.

Missing/incomplete data, etc.

Many of the files received had insufficient basic data for this project. Some of the records were complete, and some only had addresses with no other identifying information. This variation between the quantity and quality of the data provided also made it difficult to effectively document all buyout projects in Illinois.

Although some files were more complete than others, there were still important data that were not included, such as first floor elevation, occupancy class, building replacement value square footage (BRV SF), content costs, and important dates (appraisal, acquisition, demolition date, etc.).

The *BuyoutPoints_Statewide* geodatabase has entries for all identified and validated structure buyouts; however, because basic data was missing from the source data, many of the fields for these entries are empty. The fields for these entries still need to be completed before a loss avoidance study can be performed for all properties.

Data Discrepancies

The data coming from different sources required resolution of conflicting or unclear information. While filling in the data, a running document of general comments and questions about the data was kept on file. These questions include, but are not limited to, mismatch addresses, different values (demolition, acquisition, total project cost, etc.), and unclear column headers and abbreviations. In some cases, the data were represented differently for individual communities. If the data were not clearly stated on the basic document, they were entered into the spreadsheet based on best judgment. Notes are in the comments column of the geodatabase and on the documents themselves to make it easy to locate any questionable data.

Data Location Limitations

Slight difficulties were encountered while geocoding the data. For a few addresses, Google Maps was unable to find the location of the address provided. This could have been due to a typo in the original data, or the lack of a specific address (i.e. NE corner of lot, etc.). Local assessor's webpages and legal descriptions were used to determine the true location of these addresses. Also, a couple of typos were found in the original lat/lon values that were corrected.

RECOMMENDATIONS

Although there are over 4,000 buyout properties in the database, the database is by no means complete. Several steps need to be taken before the data are viable for loss avoidance studies for specific locations.

Next steps:

- A protocol should be established to update the database each year with buyout records from all agencies.
- The scope of this project simply did not allow time for examination of every point. Use of historical aerial photos and parcel data will likely be helpful with locating properties.
- Further QA/QC of the spatial location for each property is highly recommended.
- Structure-buyout information should be collected from other state, county, and municipal agencies.
- Consistent recording of basic data should be established with a predetermined set of required fields (e.g. cost, address, and parcel location) and format to be determined in coordination with IEMA, IDNR, DCEO, and ISWS.
- The stewardship of this database should be established in consultation with IEMA, IDNR, DCEO, and ISWS.