AECOM

Imagine it. Delivered.

FEMA Open Space Monitoring

Reclamation of Repeated Flood Loss Properties

January 16, 2019

HMA Open Space Monitoring

Federal Emergency Management Agency (FEMA)

- Provides grants for the acquisition, relocation, and demolition of properties as part of the Hazard Mitigation Assistance (HMA) program
- FEMA provided funding for the acquisition of more than 50,000 properties by Grantees across 49 states and three US territories as part of the HMA program.
- FEMA is required by law to certify every 3 years that the State/Grantee and the subgrantees jointly monitor and inspect the acquired properties to ensure that the parcels continue to be used for open space purposes



Data Quality and Data Tracking





Data Distribution and Validation

Problem: Open space projects did not maintain the acquired property parcel boundaries

- Inherent complexities arise when trying to identify a property's associated parcel in a repeated flood loss area
 - Property inventory is data dependent
 - Extent (or limitation) of readily available parcel data
 - No standardized process for meeting requirements
 - Process is highly labor intensive

GIS: Square Peg, Round Hole

Tabular 🦳 Spatial

- Validate FEMA records; compare Region vs. State datasets; create GUID
- Clean and standardize data through Excel functions, ArcGIS tools and/or open source KNIME workflows
- Display X,Y of FEMA records
- Run addresses through series of Geocoders, e.g.: BING, Google, USPS, State GIS, TIGER
- Compare distances of Geocoded outputs to identify potential issues with spatial location of said records
- Define related parcel polygon



Easier said than done...

Limitations of Tabular Data

- Initial datasets are not GIS based—reviewed at the table level, not the spatial level. No standard data collection processes. Potential for half of all records to pre-date modern GIS best practices
- Unified schema followed at the Regional dataset, but not necessarily at the State dataset.
- Lack of coordination between those managing data at the administration level, to those monitoring at the onsite level leads to confusion

Lat/Long

- In some cases exact coordinates are unknown due to flood devastation and changes in the developed landscape. It is difficult to define project coordinates in an area of destruction.
- Geocoders are only as good as their composite input data. In many cases, a "typical" geocoder cannot input Pre-E911 Datasets, Rural Route Addresses, or Addresses which no longer physically exist

Tabular Data Issues

	A	В	C	D	E	F	G	Н	1	J	[
1	Disaster Number	Project Number	City	County	Damaged Address Line 1	Parcel Number	Owner Tax ID	Legal Description	Latitude	Longitude	ſ
2	1238	0003	WHEATLAND	Kenosha	31417 77TH STREET	95-4-119-121-0905		STRUCTURE AGE: 50 PARCEL NUMBER 95-4-119-121-0905/0910 BRUESEWITZ, DALE	42.565771000	-88.190502000	
3	1238	0003	WHEATLAND	Kenosha	31417 77TH STREET	95-4-119-121-0910		STRUCTURE AGE: 50 PARCEL NUMBER 95-4-119-121-0905/0910 BRUESEWITZ, DALE	42.565771000	-88.190502000	
								STRUCTURE TYPE SINGLE FAMILY PRIMARY RESIDENCE STRUCTURE AGE, 45 NO. STORES ABOVE GRADE: 1 HISTORIC STRUCTION HISTORIC REGISTER? NO			
5	1238	0003	WHEATLAND	Kenosha	31619 77TH ST. 31638 76TH ST.	95-4-119-121-0765 95-4119-121-0465		TROIES, AMES A STRUCTURE TYPE: SINGLE FAMILY PRIMARY RESIDENCE STRUCTURE AGE 60 NO STORES ABOVE GRADE 2 HISTORIC DISTRUCTION HISTORIC REGISTER? NO PARCEL NUMBER 96-4179-121-046504700475 JACR2TNUTTINEN, STEVE	42.565387000	-88.191946000	
6	1238	0003	WHEATLAND	Kenosha	31638 76TH ST.	954-119-121-0470		STRUCTURE TYPE SINGLE FAMILY PRIMARY RESIDENCE STRUCTURE AGE 50 IN STORE SAMOVE GRADE 2 INSTORC DISTRICT? NO INSTORC REGISTER? NO PARCEL NUMBER 95-419-121-046504700475 JURC2NUTTINIS STEVE	42.565697000	-88.193174000	
7	1238	0003	WHEATLAND	Kenosha	31638 76TH ST.	95-4-119-121-0475		STRUCTURE TYPE SINGLE FAMILY PRIMARY RESIDENCE STRUCTURE AGE 50 IN STORE SANDWE GRADE 2 INSTORC DISTRICT? NO INSTORC REQISTRE?/NO PARCEL IMIMBER 95-4-119-121-046504700475 JURC2YNUTIMINS ISTEVE	42.565697000	-88.193174000	
		,						LOT 14. BLOCK 4, OAKWOOD SHORES STRUCTURES AGE: 70			
8	1238	0003	WHEATLAND	Kenosha	31727 77TH STREET	95-4-119-121-0665		DEMSKI, KENNETH & MARITZA	42.565112000	-88.194934000	
0	())) Sheet1 (9007		Vanasha	94799 77TU OTOFFT	DE 4 440 404 0000		LOT 13, BLOCK 5, OAKWOOD SHORES SUBDIVISION ON FOX RIVER STRUCTURE AGE: 54	10 5050 10000	00 405402000	
Rec	de la	w/		_							4
IVEC	~									V	N

	А	В	С	D	E	F	G			
1	Disaster #	County	City	Parcel #	Address	Appraisal	Acquisition Cost			
2	1681									
3		Winnebago	Rockford	Parcel #	Address					
4				11-25-184-001	1501 6th Ave					
5				11-25-184-002	1507 6th Ave					
6				11-25-184-004	1515 6th Ave					
7				11-25-184-005	1519 6th Ave					
8				11-25-184-006	1525 6th Ave					
9				11-25-185-001	1601 6th Ave					
10				11-25-185-002	1609 6th Ave					
11				11-25-185-004	1615 6th Ave					
12				11-25-185-005	1621 6th Ave					
13				11-25-185-007	1629 6th Ave					
14				11-25-185-008	1633 6th Ave					
15				11-25-185-009	1637 6th Ave					
16				11-25-185-011	1645 6th Ave					
17				11-25-185-012	1649 6th Ave					
18				11-25-185-014	1657 6th Ave					
19				11-25-187-005	1516 7th Ave					
20				11-25-188-004	1614 7th Ave					
21				11-25-188-005	1616 7th Ave					
22				11-25-188-006	1620 7th Ave					
23										
24				8337 Shore Dr	07-25-376-006					
25				8520 Shore Dr	07-25-326-012					
26				8513 Shore Dr	07-25-329-004					
27				8507 + 8509 Shore Dr	07-25-329-005, 006					
28				10 Marquette Rd	07-25-327-006					
29				8329 Shore Dr	07-25-376-008					
30	-			8 Gilbert	07-25-330-023					
31	-			112 Wilson Ave	07-25-451-018					
32				8107 Shore Dr	07-25-454-005					
33				10 Liberty Dive	07-25-479-002					
25				9407 Chore Dr	07-23-323-012					
35				9407 Shore Dr	07-25-330-005	-				
37	-			7 Wilshire Blyd	07-25-530-008	1				
20				C Wilshire Divd	07 25-330-007	1				
Μ	Image: Market Bigs 997-1513 1681-1826 Sheet3 Classifier									
-										

.

AECOM

7

Tabular Data Issues CONT'D

1	Damaged Address Line 1	Damaged_Address_Line_2	Street_Number	City	State	State_Code	County	Region	ZIP	Latitude	Longitude	Pro
242	"LOT LOT 4	5 HEALEY CLUB HOUSE"		LOT	FIELDON	Illinois	IL	5	5	62031		
243	"LOT LOT 6 & 7	BLK 20"		LOT	GRAFTON	Illinois	IL	5	5	60237	38.999298	-90.437
244	"LOT LOT 6 COTTINGHAM	NUTWOOD"		LOT	FIELDON	Illinois	IL	5	5	62031		=
245	"LOT LOT 7	BLOCK 1"		LOT	HAMBURG	Illinois	IL	5	5	62045	39.217602	-90.696
246	"LOT LOT 7	8 HARBOR DELL"		LOT	GODFREY	Illinois	IL	5	5	62035	38.948101	-90.201
247	"LOT LOT 7	8 GLENHILL CLUB SITES"		LOT	FIELDON	Illinois	IL	5	5	62031		
248	"LOT LOT 8	BLOCK 17"		LOT	GRAFTON	Illinois	IL .	5	5	62037	38.999298	-90.437
249	"LOT LOT 9	10 NUTWOOD"		LOT	FIELDON	Illinois	IL .	5	5	62031		
250	"LOT LOTS 1	2 HARBOR DELL"		LOT	GODFREY	Illinois	L	5	5	62035	38.948101	-90.210
251	"LOT LOTS 10	11 HARBOR DELL"		LOT	GODFREY	Illinois	IL .	5	5	62035	38.948101	-90.210
252	"LOT LOTS 10 & 12	BLOCK 1"		LOT	GRAFTON	Illinois	L	5	5	62037	39.999298	-90.437
253	"LOT LOTS 18	19 COTTINGHAMS"		LOT	FIELDON	Illinois	IL .	5	5	62031		
254	"LOT LOTS 22	23 HARBOR DELL"		LOT	GODFREY	Illinois	IL .	5	5	62035	38.9594	-90.262
255	"LOT LOTS 24	25 WALTON ADDITION"		LOT	FIELDON	Illinois	IL	5	5	62031		
256	"LOT LOTS 32-24 WALTON ADDITION	NUTWOO"		LOT	FIELDON	Illinois	IL .	5	5	62031	39.119	-90.537
257	"LOT LOTS 4 & 5	BLK 20 DARNELL ADD'N"		LOT	GRAFTON	Illinois	L	5	5	62037	38.999298	-90.437
258	"LOT LOTS 41	42 HARBOR DELL"		LOT	GODFREY	Illinois	L	5	5	62035	38.948101	-90.210
259	"LOT LOTS 54	55 HARBOR DELL"		LOT	GODFREY	Illinois	IL	5	5	62035	38.948101	-90.210
260	"LOT LOTS 9 & 10	BLOCK 24"		LOT	GRAFTON	Illinois	IL	5	5	62037	38,999298	-90.437
261	#5 COUNTY ROAD		#5	ROCKWOOD	Illinois	IL	Randolph	5	62280	37.8348	-89,669098	Acquis
262	(B) 45 TIERNEY PLACE		(B) 45	EAST ST. LOUIS	Illinois	IL	St. Clair	5	62201	38,6088	-90.088587	Acquis
263	(B) 6776 AUDUBON AVENUE		(B) 6776	EAST ST. LOUIS	Illinois	IL	St. Clair	5	62204	38.63241	-90.077734	Acquis
264	(B) 6900 FOREST		(B) 6900	WASHINGTON PARK	Illinois	IL	St. Clair	5	62204	38.63675	-90.074803	Acquis
265	* DICKMAN PLACE		*	EAST ST. LOUIS	Illinois	IL	St. Clair	5	62201	38.6112	-90.090786	Acquis
266	* RURAL ROUTE		*	FIELDON	Illinois	IL	Greene	5	62031	39.1159	-90.539703	Acquis
267	* RURAL ROUTE		*	KAMPSVILLE	Illinois	IL	Calhoun	5	62053	39.3104	-90.631401	Acquis
268	* RURAL ROUTE 1		*	HARDIN	Illinois	IL	Calhoun	5	62047	39.1472	-90.624496	Acquis
269	* RURAL ROUTE 3		*	ROCKWOOD	Illinois	IL	Randolph	5	62280	37.8348	-89.669098	Acquis
270	** DICKMAN PLACE		**	EAST ST. LOUIS	Illinois	IL	St. Clair	5	62201	38.6112	-90.090786	Acquis
271	** RURAL ROUTE 1		**	HARDIN	Illinois	IL	Calhoun	5	62047	37,1472	-90.624496	Acquis
272	** RURAL ROUTE 3		**	ROCKWOOD	Illinois	IL	Randolph	5	62280	37.8348	-89.669098	Acquis
273	*** DICKMAN PLACE		***	EAST ST. LOUIS	Illinois	IL.	St. Clair	5	62201	38.6112	-90.090786	Acquis
274	*** RURAL ROUTE 3		***	ROCKWOOD	Illinois	IL	Randolph	5	62280	37.8348	-89.669098	Acquis
275	**** DICKMAN PLACE		****	FAST ST LOUIS	Illinois	1	St Clair	5	62201	38 6112	-90 090786	Acquis
276	**** RURAL ROUTE		****	EAST HARDIN	Illinois	1	Greene	5	62047	39 1472	-90 624496	Acquis
277	**** RURAL ROUTE 3		****	ROCKWOOD	Illinois		Randolph	5	62280	37 8348	-89 669098	Acquis
278	***** DICKMAN PLACE		****	FAST ST LOUIS	Illinois		St Clair	5	62201	38 6112	-90 090786	Acquis
279	****** DICKMAN PLACE		*****	EAST ST LOUIS	Illinois		St Clair	5	62201	38 6112	-90 090786	Acquis
280	****** BUBAL BOUTE 3		*****	BOCKWOOD	Illinois	1	Bandolph	5	62280	37 8348	-89 692452	Acquis
281	******* DICKMAN PLACE		******	EAST ST LOUIS	Illinois		St Clair	5	62201	38 6112	-90.090786	Acquis _
201				DOOLANOOD			D III	5	- 00000	07.0040		A COULD W
	ILLINOIS / INDIANA / MICHI	GAN / MINNESUTA / OHIO / WISCONS	IN / 🐷 /									
Re	ady									80% —		+

Property Counts by Region

Region	Total Properties	Percentage of Total
I	513	1.0
II	4,049	7.6%
III	4,041	7.6%
IV	11,772	22.2%
V	10,844	20.5%
VI	7,095	13.4%
VII	11,175	21.1%
VIII	1,836	3.5%
IX	569	1.1%
Х	1,064	2.0%
Un-located to Region	15	0.0%

ΑΞϹΟΜ

9

Finding Perspective in the Great Flood of 1993





Source: <u>NASA, Landsat 5—TM</u>

St. Charles, Missouri



Source: USGS April1990; USGS March 1996. Devastation: 25 Years Ago

Present Day





Source: USGS Google/BING 2017, 2018 1993 Flood: 25 Years Later

