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Spectrum

Center for Remote Sensing and
Geographic Information Science
Michigan State University
www.crs.msu.edu

Historical Aerial Photos and Maps

For Documenting Changes Over A Site

Historical aerial photographs and maps may be used to characterize the physical attributes of a site and to document the history of natural and human induced changes.

The Center for Remote Sensing and Geographic Information Science has recently completed a pilot study of site characterization for the Michigan State Housing Development Authority. Three sites, one in the City of Lansing, one in Bay City, and the last in Mount Pleasant,

Digital Raster Graphic - 1975

(continued)

Inside This Issue

were chosen to develop digital photo and map data sets. A thorough search of the MSU Imagery Archive and surrounding agencies resulted in a data set of 42 unique aerial photo missions and eight historic maps for the site in Lansing. The oldest photo dates from 1938 while the newest photo was acquired in 1998. Scales range from large, 1:1,200, to very small, 1:130,000, with the median (half larger and half smaller) scale being 1:24,000. Twenty-five of the photos were black-and-white panchromatic, eight were color, and eight were color infrared.

The photography came from a variety of sources, with the Farm Service Agency (FSA), of the U.S. Department of Agriculture (USDA), providing the richest collection. Two USDA missions were available from the National Archives and Records Administration, five from the USDA Aerial Photography Field Office, and seven sets were available only through the Ingham County FSA office.

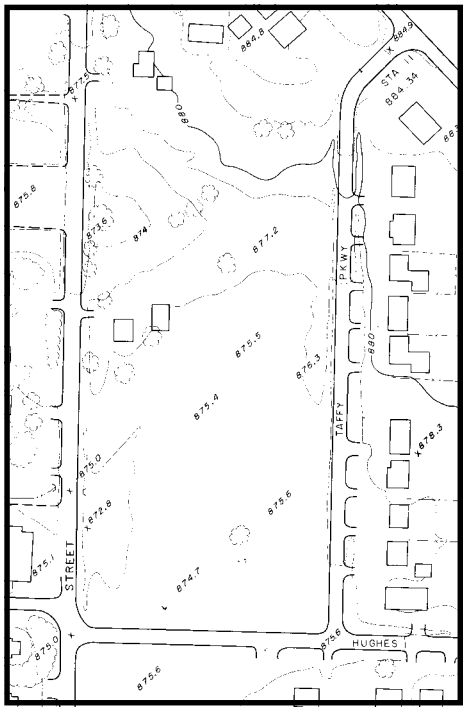
All aerial photographs and maps were scanned, rectified, and registered to a common base. The resulting digital data set provides a single source of historic photography and maps, covering the same geographic area, at a common scale, and co-registered to each other. The data set will provide the means to characterize the physical attributes of the site and to document the history of natural and human induced changes.

This project represents the continuation of procedures developed over the past 20 years by the Center. In the late 1970's, the Water Quality Division of the Michigan Department of Environmental Quality (MDEQ) worked with the Center to develop a procedure for interpreting aerial photos. The analysis of historical photography was used to locate potential dumping sites for hazardous waste associated with a chemical company that was undergoing litigation and cleanup. Air photo interpretation identified 28 potential sites for further investigation, while on-the-ground investigations only identified 11 sites. Using historical photos and Center interpretation methods, the MDEQ was able to identify more potentially contaminated sites and more effectively invest dollars for cleanup activities.

Staff from the Superfund Section of the Environmental Response Division of MDEQ use MSU's archive of aerial photography in a similar manner. By examining historical photos, site boundaries from past operations can be more readily defined. Waste disposal practices (e.g. lagoons, waste

Lansing Site - 1948

Lansing Site - 1976



Lansing Site - 1961

Lansing Aerial Photography Date of Acquisition		
1338	1974	1988
1948	1975	1989
1950	1976	1990
1955	1978	1991
1961	1979	1992
1963	1980	1993
1964	1981	1995
1969	1983	1996
1970	1985	1997
1972	1986	1998
1973	1987	

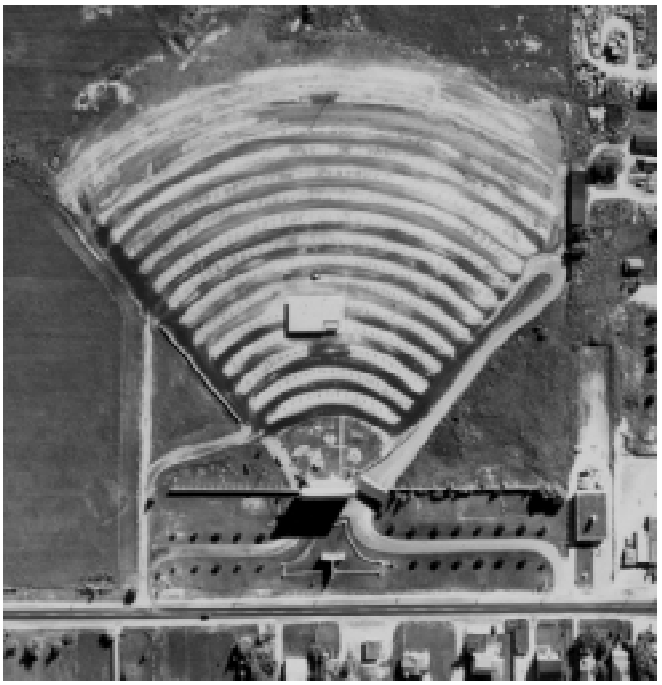
Number of Air Photo Missions Over Lansing	
National Archives	2
FSA Aerial Photography Field Office	5
FSA Ingham County Office	7
City of Lansing	6
National Aeronautics and Space Administration	5
Ingham County	3
National High Altitude Photography Program	3
Tri-County Regional Planning Commission	3
U.S. Geological Survey	2
Michigan Department of Transportation	2
Michigan Department of Natural Resources	2
Michigan State University	1

piles, and surface water discharges) may also be identified from old photos. Using the photos, a project manager can more effectively plan the investigation or cleanup activities required for a site.

In 1994 the Center collaborated with Booth Newspapers in their effort to document "urban sprawl." A series of articles were written examining this issue and were illustrated with local examples of historic and current air photos researched and compiled by the Center.

Staff administering the Shorelands Protection and Management Act seek the oldest aerial imagery available to determine the rate of erosion along the Great Lakes shoreline. Likewise, the Wildlife Division of the Michigan Department of Natural Resources use historical photos to conduct inventories for rare plant communities.

What's Going On Here ?



Can you identify the feature in this aerial photograph?

Hint: The photograph was acquired in 1958.

(answer on back page)

Center for Remote Sensing and GIS

1999 Workshop Schedule

Workshop *	Date - 1999	Max Enrollment**	Fee**
GPS Workshop	May 11	10	200
Data on the Internet	June 17	13	200
Using the Census of Population and Housing	June 18	13	200
Forestry Photo Interpretation (Grayling, MI)	June 22-24	20	600
GPS Workshop	July 7	10	200
Fundamentals of GIS	July 21-22	13	400
GPS Workshop	August 17	10	200
Introduction to ArcView GIS 3.1	August 18-19	13	400
Map Design with ArcView	August 20	13	200
Fundamentals of GIS	August 24-25	13	400
Data on the Internet	September 1	13	200
Using the Census of Population and Housing	September 2	13	200
Photo Interpretation of Land Cover and Land Use	September 15-17	20	600
Data on the Internet	November 4	13	200
Using the Census of Population and Housing	November 5	13	200
Introduction to ArcView GIS 3.1	November 17-18	13	400
Map Design with ArcView	November 19	13	200

* Minimum enrollment of 5.

** One person per machine unless otherwise noted.

** Michigan State University Faculty/Staff and currently enrolled MSU students receive a 50% discount.

Location: Center for Remote Sensing and GIS, 107 Manly Miles Building, Michigan State University. Except for the Forestry Photo Interpretation course which will be held at the Holiday Inn in Grayling, Michigan.

Schedule: Classes begin at 8:30 am and end at 4:30 pm (lunch on your own from 11:45 - 1:00 pm).

All workshops feature hands-on training.

Lodging and meals are **NOT Included** in the fee.

For further information, please call Towonna Williams (517-353-7195).

MIRIS Land Cover / Land Use County Maps

The Center for Remote Sensing and GIS, in coordination with the Michigan Department of Natural Resources (MDNR), is taking a new look at the 1978 MIRIS Land Cover / Land Use data. The goal of the project is to increase the utility of this data by updating the file format, joining township files into county-wide data sets, and developing a master list of land use / land cover classification codes.

Over the past several months, the Center completed the first stages of this project by converting the original Integraph files to Arc/Info vector coverages and by joining the township-level data into seamless county-wide coverages through a series of automated and manual edge-matching procedures. The MDNR has assisted with this project by correcting invalid MIRIS land use / land cover classification codes found in the original data and by updating and standardizing the master list of land use / land cover classification codes.

The Center for Remote Sensing and GIS and the MDNR have agreed to provide the county-wide land cover / land use data on the internet, free of charge. The data will be provided as zipped Arc/Info export files and as JPEG images mapped at a Level 2 classification. For updates and further information, visit the CRSGIS web site at: www.crs.msu.edu.

Land Cover / Land Use

Eaton County 1978

Level 1 Categories

- Urban
- Agriculture
- Open Field
- Forest
- Wetlands
- Water

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For further information,
please contact
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What's going on here?
The photo shows a drive-in movie theater.

Spectrum

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