The natural environment is an important area of investigation for any master plan because human settlement and development of land directly impacts the condition of the natural environment and the natural environment itself often influences patterns of settlement and development. Although modern technologies have reduced some of the negative impacts of development and enabled human beings to construct buildings and infrastructure where we couldn't before, planning future development is essential if undesirable outcomes are to be avoided. Negative outcomes could include inefficient development patterns that

- consume valuable agricultural land and destroy wildlife habitat;
- increase the rate at which pollutants are released into the atmosphere, water, and soil; and
- discourage or even prevent the pursuit of active, healthy lifestyle choices.

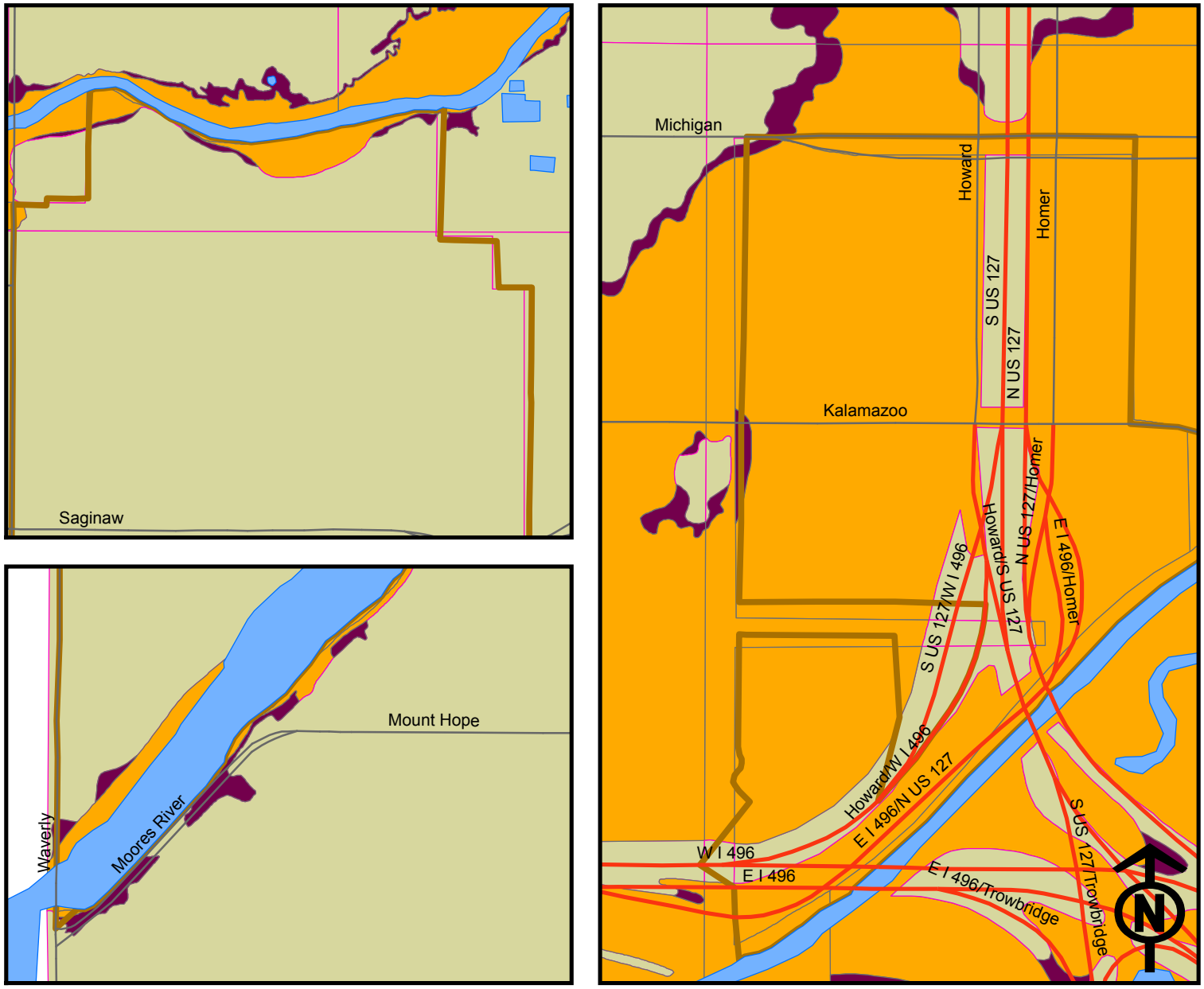
Lansing Township is largely built-out and is located within the urbanized center of the tri-county region. Its large tracts of industrial land (which include 2 large landfills, one of which is contaminated by hazardous fly-ash waste), might give the false impression that development in the Township has little to do with the natural environment. In fact, the Township has a significant role to play in promoting environmental stewardship and improving environmental quality within its borders and throughout the tri-county region. The following explores the unique set of environmental issues facing the Township.

Floodplains

Map 10 shows the 3 areas of the Township that are directly affected by floodplains. On its west side, the Grand River acts as the northern and southern borders of the Township. Because of the steeper elevations of its banks and relatively wide cross section of its bed, the flood plain is fairly limited. Typically, parcels that are located directly on the river (in the floodway itself) fall within the 100 year floodplain. Even in these instances, significant portions of many of these parcels are located outside of the floodplain. Riverbanks in these if left in their natural state provide riparian habitat.

The Red Cedar 100 year floodplain, on the other hand, is much more extensive and covers Urbandale in its entirety. The floodplain is deepest to the extreme south in the vicinity of Harton Street where existing grades can be 15 feet or more below the floodplain elevation of 837 feet. Building in floodplains, when it is allowed, requires special measures. For properties at the lowest elevations (those in the deepest parts of the floodplain) these measures may be very extensive and economically unfeasible.

The floodplain becomes progressively more shallow as it crosses Kalamazoo Street and reaches Michigan Av-



Map 10
Lansing Township Floodplains

Legend

- Major roads
- Highways
- Township boundary

Floodzones

ZONE

- A
- AE
- ANI
- X
- X500

Map source: U.S. Dept. of Homeland Security-FEMA; produced by the Charter Township of Lansing Department of Planning + Development, 2009.

enue. Because of its higher elevations, development of land in this part of the floodplain is much less problematic.

Watersheds

Lansing Township is one of a handful of communities in the tri-county region to be a part of the Grand River, Red Cedar River, and Looking Glass River watersheds. It currently works with a group of communities and public entities to implement a watershed based stormwater management permit that is administered by the Michigan Department of Environmental Quality as a part of Phase II of the Clean Water Act. Broadly speaking, the goal of Phase II is to improve water quality. This goal is to be achieved through a combination of public outreach and education, public policy, and regulatory programs. Reducing the release of non-source point pollutants into surface bodies of water, expanding recreational opportunities on rivers and lakes, and habitat protection and restoration are a few examples of implementation.

Environmentally Sensitive Areas

Map 12 is the product of a study recently conducted by the Tri-County Regional Planning Commission that attempts to identify potential sites for conservation. Sites were selected based on a number of characteristics including their current condition as natural areas—their biodiversity, their capacity to support wildlife and sustain ecosystems, etc.

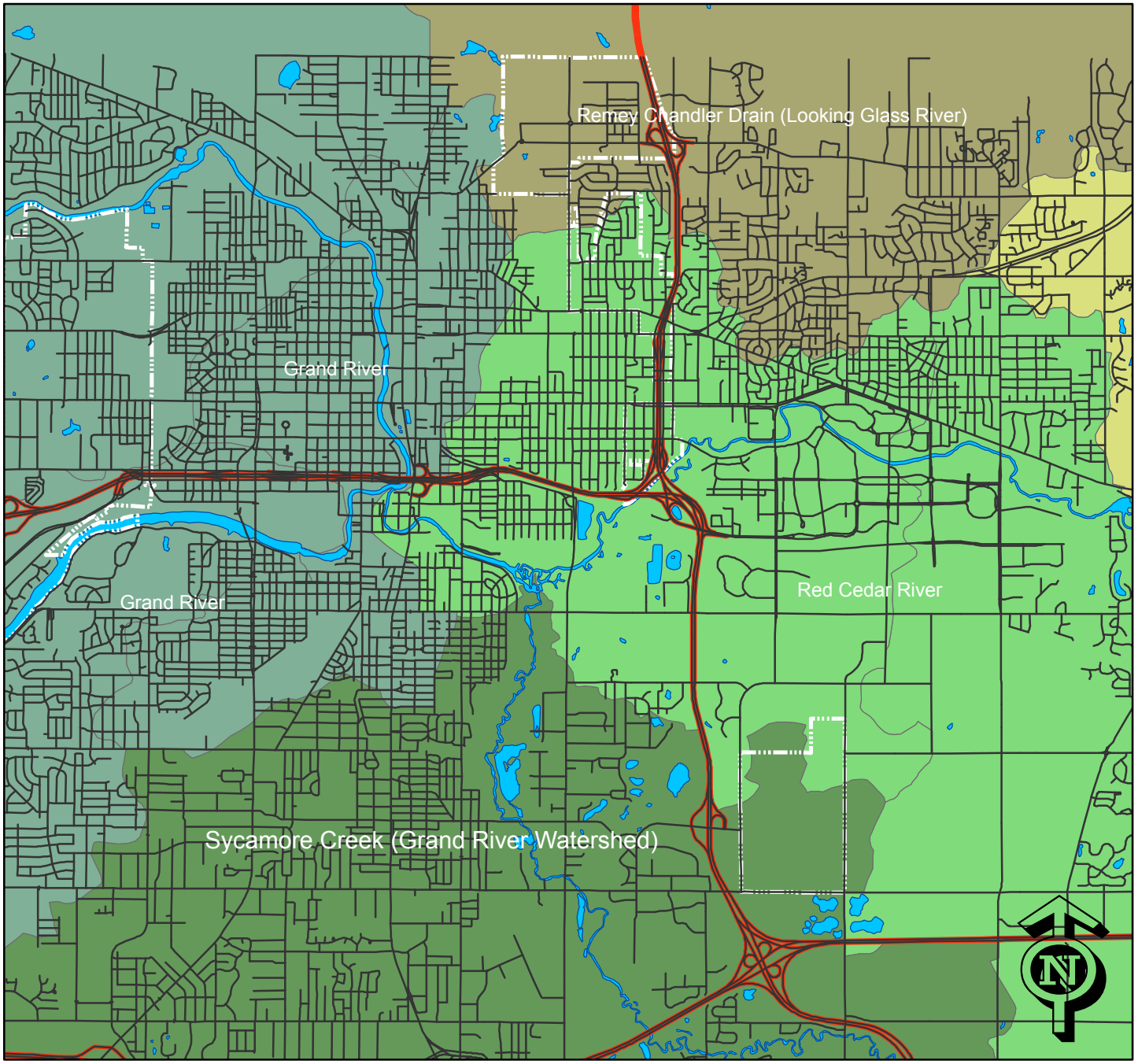
As the map shows, none of these areas are located within the Township's jurisdictional boundaries, but several are adjacent to the Township. In addition to these, Keegan Park features a small but undisturbed wood located on the Grand River. Slayton's Pond, located directly to the southeast of the Township's municipal offices, is a small, spring-fed pond surrounded by undeveloped land that likely features some permanent and seasonal wetlands.

Other areas should be further investigated for designation as environmentally sensitive and important lands including wetland areas in the southwest corner of Waverly Golf Course, vacant lands surrounding Slayton's Pond, and parts of the Red Cedar Floodplain.

Agricultural Land

Land used for active agricultural production has disappeared in many parts of the Township. Agricultural land in the Township's northeast was annexed by the City of East Lansing in the early 1980s. The only large tract of active agricultural land remaining in the Township is located in the southeast corner of the Township. Aside from a 20 acre homestead on Jolly Road, Michigan State University owns all of the land in this area. According MSU, this area will continue to be used for agricultural purposes into the indefinite future. Urbanization of this area is highly unlikely within the duration of this master plan (2030), and due to its location on the periphery of the urbanized area it is probably undesirable. Residential and commercial development of this land would com-

Map 11
Lansing Township Watersheds



Legend

- Roads
- Highways
- Township Boundary
- Surface Bodies of Water

Sub-Watersheds

- Grand River
- Pine Lake Outlet
- Red Cedar River
- Remey Chandler Drain
- Sycamore Creek

Map source: State of Michigan GIS Framework; produced by the Charter Township of Lansing Department of Planning + Development, 2009.

pete directly against infill development and redevelopment projects in other communities and other parts of the Township itself.

Environmental Pollution and Contamination

GM

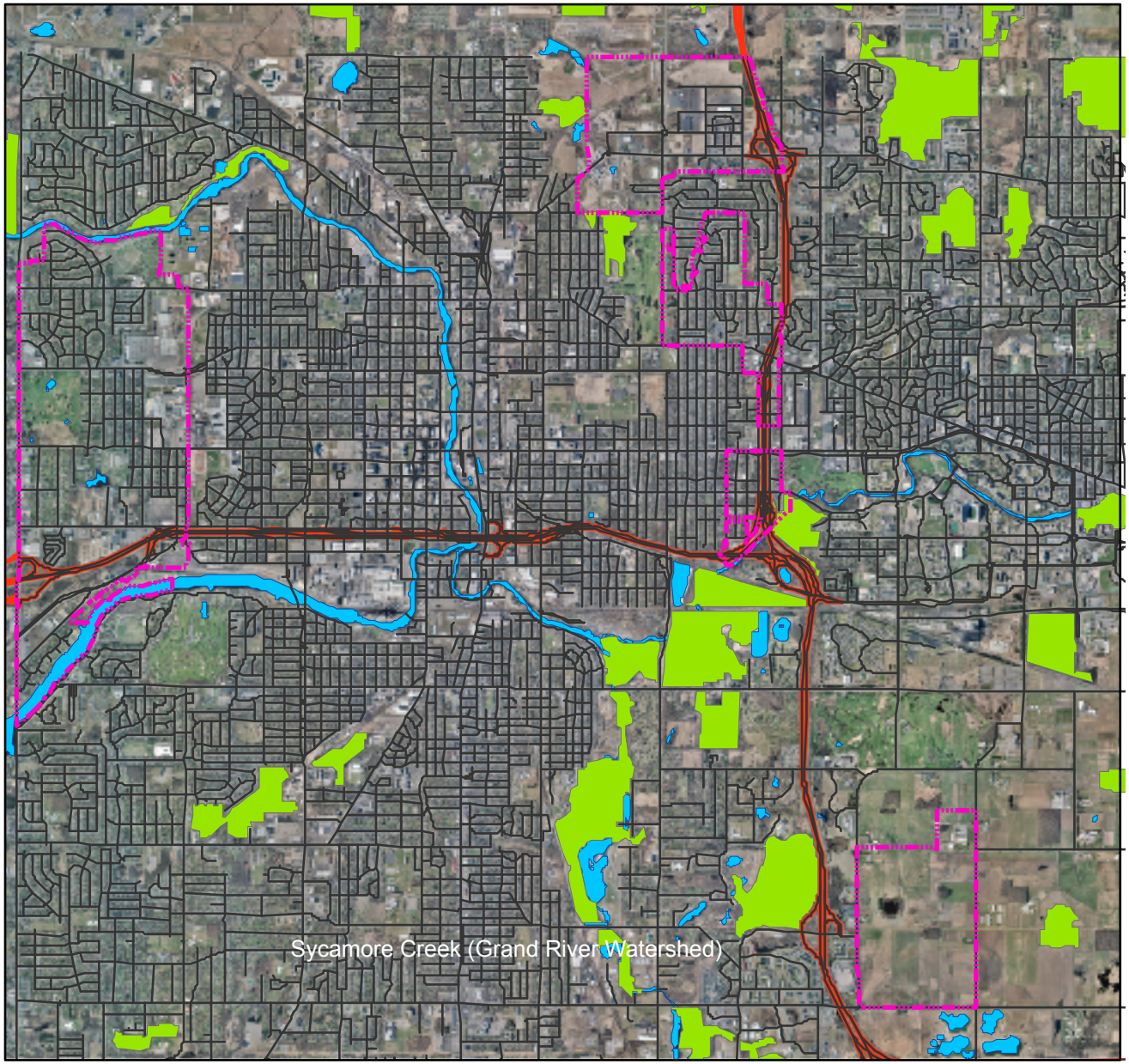
General Motors owned and operated 2 large industrial manufacturing facilities in the Township for more than 50 years. This ended in 2007 when operations at the Metal Fabrication Center and Craft Center were finally halted and the decommissioning and demolition process began. Industrial processes conducted at these facilities included painting, chrome plating, and vehicle assembly. These facilities were not used for the disposal or long term storage of hazardous waste; however, remediation of the site for asbestos containing materials (ACM), polychlorinated biphenyls (PCBs), volatile organic compounds (VOCs), and other hazardous substances has been conducted throughout the demolition process and will continue until local, state, and federal EPA standards have been met. Those standards demand that the sites are 1) made safe for human contact and 2) do not pose a risk for offsite migration of contaminants. Remediation of the contaminants will be administered through Part 201 of the State of Michigan Natural Resources and Environmental Protection Act.

Lansing Board of Water and Light "Fly-ash" Site

This site has been used for disposal of debris and fly-ash produced through the burning of coal to generate electricity the Lansing Board of Water and Light. According to the EPA, fly-ash and other coal combustion residues which have been found to contain arsenic, selenium, cadmium, lead, and mercury, may pose a risk to human health and the environment if not property contained. This site was recently closed and known fly-ash deposits contained by a slurry wall designed to prevent migration of onsite hazardous substances into the water table. The future the property has not been disclosed by the Lansing Board of Water of Light. Because of its large area and proximity to the Groesbeck Golf Course, Bancroft Park, Northtown neighborhood and Township DDA district, re-purposing this property should be a priority for all communities involved.

Other smaller, contaminated site are located throughout the Township. Although they are much smaller than the 2 site previously mentioned, they are pose unique challenges. Map 13 depicts the known locations of leaking underground storage tanks (some of which are known to have been cleaned up). Of particular concern are contaminated sites located within wellhead protections areas (in the map these areas are identified by blue hatching). Wellhead protection areas have been established to protect groundwater resources from pollution. As a commu-

Map 12
Lansing Region Potential Conservation Areas



Legend

- Township Boundary
- Roads
- Highways
- Surface Bodies of Water
- TCRPC Potential Conservation Areas

Map source: TCRPC Greening Mid-Michigan project; map produced by the Charter Township of Lansing Department of Planning + Development, 2009.

nity which depends on groundwater for almost all of its drinking water, protecting this vital resource is very important. Additionally, many of these smaller sites are blighted or underutilized (as is the case with vacant gas stations and fuel storage sites on the Township's Westside.

Conclusions

Its proximity to the Grand and Red Cedar rivers and floodplains; its potential as an alternative to exurban development in rural communities; and presence of large contiguous tracts of agricultural and industrial land make Lansing Township a unique place environmentally. Each of these characteristics poses its own set of challenges, but they also present Lansing Township with the opportunity to become a leader in environmental stewardship.

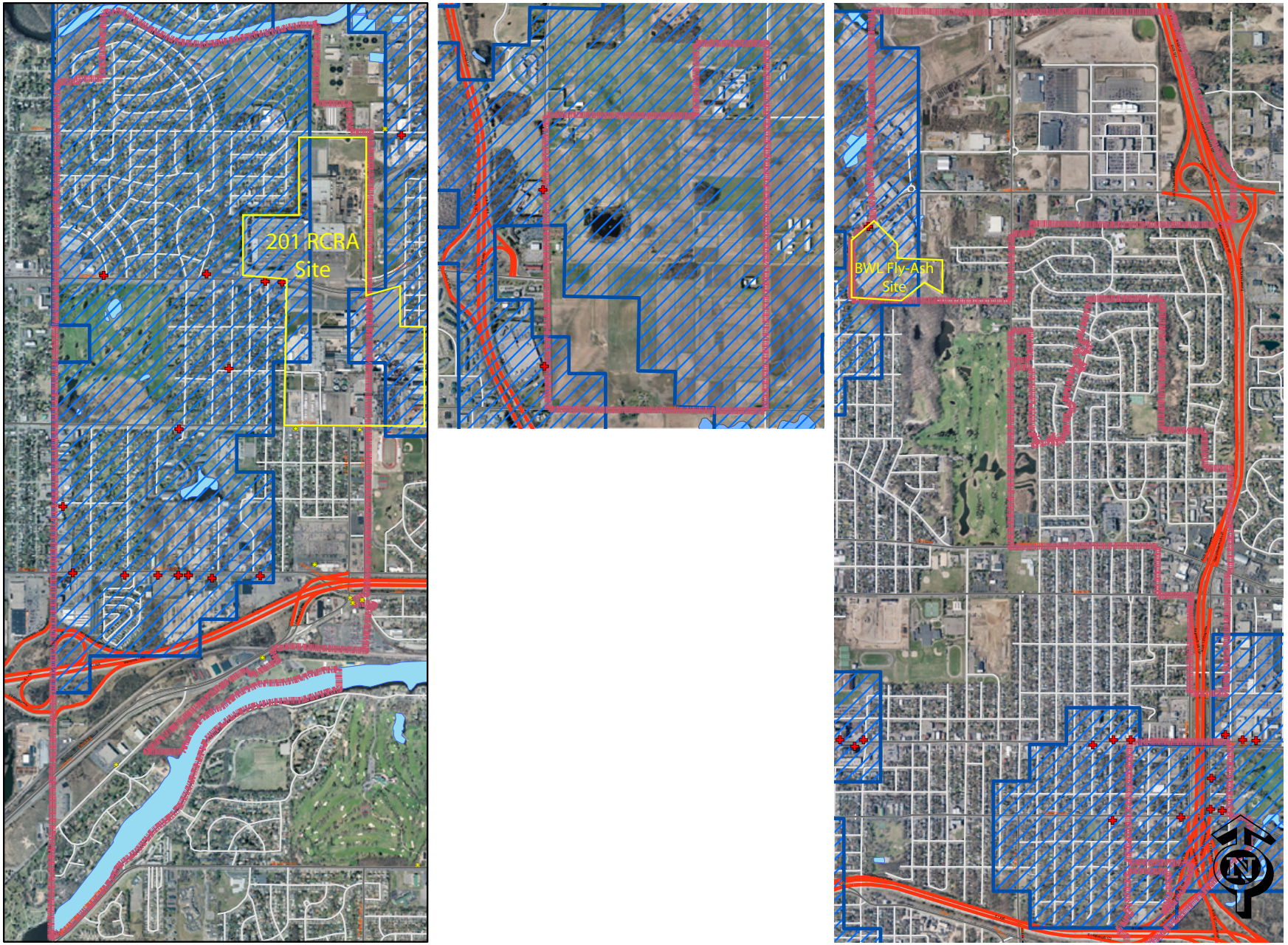
Water Resource Management

Lansing Township has been very active in regional water quality protection efforts. Long range plans should be developed that reflect this commitment and directly address stormwater management and wellhead protection through the formulation of policy and continued collaboration with other communities and regional partners.

Floodplain management and hazard mitigation should be included in these considerations. This is particularly important in the Urbandale neighborhood where potential redevelopment represents an opportunity and a challenge. A comprehensive strategy should be developed to enable responsible redevelopment of floodplain properties.

Brownfields and Contaminated Sites

Several large contaminated sites present challenges for the Township and it will have to work diligently to ensure that environmental contamination is managed in a way that best protects public health and safety. Despite these challenges, redevelopment of these sites represents a unique opportunity for innovative land use and economic development strategies that emphasize the beneficial relationships and proper balance of different land uses.



Map source: State of Michigan LUST database and TCRPC; map produced by the Charter Township of Lansing Department of Planning + Development, 2009.