

SECTION 5

MITIGATION OF IMPACTS

The goal of mitigative measures is to preserve, to the greatest extent possible, existing neighborhoods, land use, and natural resources, while improving transportation. Although some adverse impacts are unavoidable, MDOT, through route location, design, environmental, and construction processes, takes precautions to protect as many social and environmental systems as possible. Construction activities that include the mitigation measures included below are those currently contained in the MDOT 1996 “Standard Specifications for Construction.”

Further agency coordination will continue through the design stage. Design plans will be reviewed by many MDOT personnel prior to contract letting in order to incorporate any additional social, economic, or environmental protection items. Construction sites will be reviewed to ensure that the mitigation measures proposed are carried out and to determine if additional protection is required. More mitigation measures may be developed if additional impacts are identified. Specific mitigation measures will be included in the design plans and permit applications.

5.1 Right-of-Way Acquisition

A Relocation Plan has been prepared (Appendix D). The following standard procedures will be followed.

Action to minimize relocation impacts will be in compliance with Act 31 of Michigan P.A. of 1970; Act 227 of Michigan P.A. of 1972; the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, and any other appropriate current laws.

The following terms are used in the discussion of mitigation of relocation impacts:

Fair Market Value - All land and improvements within the right-of-way will be acquired at fair market value. This will be established by qualified fee or staff appraisers.

Relocation Advisory Assistance - Persons and businesses being relocated will be offered relocation assistance services for the purpose of locating suitable replacement property.

Moving Allowances - The cost of moving personal property from the acquired site will be provided, consistent with regulations.

Supplemental Payments to Owners or Renters - All eligible occupants will be relocated to safe, decent, sanitary, and adequate housing within their means, consistent with regulations.

Incidental Transfer Expense - Payment for such items as increased interest, title searches, recording fees, and closing costs will be provided.

Fair and just compensation is provided for each property within the proposed right-of-way, as required by both the United States and Michigan Constitutions. The courts have defined “just compensation” as a monetary payment equivalent to the “fair market value” of the property. Fair

market value has been defined as the highest price estimate, in terms of money, which the property will bring if exposed to sale on the open market, with a reasonable time allowed to find a buyer, buying with the knowledge of all the uses to which it is adapted, and for which it is capable of being used.

To help offset the adverse impacts of relocation, additional benefits are available for owners and tenants. These payments take into account current mortgage and interest rates on loans from lending institutions, moving expenses, higher rental costs, and higher costs for replacement housing. If a piece of property is severed and/or landlocked, the state may offer to acquire the total property. When hardship circumstances can be documented, advanced acquisition will be pursued under appropriate guidelines. Parcels of land which have been purchased by the state and are not needed for the highway facility may be placed on the open market for public purchase as excess property.

MDOT is required by law to determine the availability of adequate, decent, safe, and sanitary housing in the area for relocatees before any project is approved. The MDOT Real Estate Division does this so that the negative impacts of relocation can be mitigated, to the greatest extent possible.

FHWA Technical Advisory Circular T6640.8A includes direction concerning relocation planning for displaced businesses. This advisory calls for close coordination among MDOT, local governments, and affected businesses. In compliance with this advisory, MDOT will explore sources of funding available through local agencies, and through agencies such as the Economic Development Administration, the Farmers Home Administration, and the Small Business Administration and make this information available to any business displaced.

The State Relocation Program will be coordinated through the Michigan Department of Transportation Region Offices in Southfield and Saginaw. These offices will notify individuals of the impact, if any, of the project on private property. A pamphlet detailing the Michigan Department of Transportation Relocation Assistance Program can be obtained for free from the MDOT Real Estate Division, P.O. Box 30050, Lansing, Michigan 48909.

5.2 Soil Erosion and Sedimentation Control

Accelerated sedimentation caused by highway construction will be controlled before it leaves the highway right-of-way by placing temporary and permanent erosion and sedimentation control measures. The Michigan Department of Transportation has on file with the Michigan Department of Environmental Quality (MDEQ) an acceptable operating erosion and sedimentation control program that ensures compliance with Michigan Act 451, Part 91: Soil Erosion and Sedimentation Control. MDOT is self-regulated in its efforts to comply with this act. However, MDEQ may inspect and enforce soil erosion and sedimentation control practices during construction to ensure that MDOT and the contractor are in compliance with Part 91 and the acceptable erosion and sedimentation control program.

The following is a list of the mitigation measures for this project to be carried out in accordance with permit requirements.

1. No work will be done in the channels of Duck Creek or Kearsley Creek during periods of seasonally high water, except as necessary to prevent erosion.

2. All construction operations will be confined to the highway right-of-way limits or acquired easements.
3. Areas disturbed by construction activities will be stabilized and vegetated as soon as possible during the construction period in order to control erosion.
4. Special attention will be given to protecting natural vegetative growth outside the project's construction limits from unnecessary removal or siltation. Natural vegetation, in conjunction with other sedimentation controls, provides filtration of runoff prior to entering storm sewers.
5. Protection of storm sewer inlets will be done to prevent sediment from entering the storm sewer system.

5.3 Environmental Permits

Proposed construction activities will involve the need for permits in several areas. Impacts on bodies of water such as lakes, streams, drains and wetlands will require permits under federal and state law:

Federal

- Executive Order 11990
- Clean Water Act of 1977, as amended: Section 401, state Water Quality Certification; Section 402(p), National Pollutant Discharge Elimination System, stormwater permit; and, Section 404, related to dredge and fill.

Federal Executive Order 11990 states that when federal funds are used on a project, impacts to any wetland (regardless of size) will require that there be no practicable alternative to impacts on that wetland.

Section 401 of the Clean Water Act of 1977, as amended, requires certification from the state's water quality agency (MDEQ) to ensure that the discharge of dredged or fill material complies with the provisions of the Federal Water Pollution Control Act.

Section 402(p) of the Clean Water Act and subsequent regulation under 40 CFR 122.26 requires a National Pollutant Discharge Elimination System Storm Water discharge permit for construction projects that involve land clearing of five acres or greater. Permit application requirements include: 1) a location map and description of the nature of the construction activity; 2) location of the proposed discharge; 3) total area of the site and area to be disturbed; 4) an estimate of runoff coefficient of the site and the increase in impervious area after construction is complete; and 5) the nature of the fill. The intent of these requirements is to reduce impacts on water quality during and after construction.

Section 404 of the Clean Water Act requires a permit from the U.S. Army Corps of Engineers for the excavation and discharge of dredged and/or fill material in "waters of the United States," including wetlands. Section 401 water quality certification from MDEQ is required prior to the Corps' issuance of the Section 404 permit.

State – Michigan Natural Resources and Environmental Protection Act, 1994 PA 451, as amended:

- Part 31, Water Resource Protection
- Part 301, Inland Lakes and Streams
- Part 303, 1979 Goemaere-Anderson Wetland Protection Act
- Part 365, 1974 Endangered Species Protection.

Parts 31 and 301 of Michigan Act 451 are administered by the MDEQ. A Part 31 permit (which is reviewed and issued with the Part 301 application) is needed to place fill material within any part of a floodplain with a drainage area of two square miles or more. A Part 301 permit is required for any work below the ordinary high water mark of any inland lake, stream or drain including the placement of any permanent or temporary river or stream structure.

A Part 303 wetland permit is required for any wetland disturbance, permanent, as well as temporary. The Part 303 permit is reviewed and issued with the Part 301 permit. A Part 303 permit is required before placement of a bituminous or concrete proportioning plant in any wetland area. The project engineer should have on file any agreements between the contractor and property owner, and a copy of the wetland permit, prior to the installation of any proportioning plants or placement of any fill in a private or public wetland.

A Part 365 Endangered Species Permit is required from the MDNR Wildlife Division for any activity that may impact a state-listed threatened or endangered fish, plant, or animal species.

Final mitigation measures proposed in areas requiring the above permits will be developed in consultation with the appropriate agencies, and will be included in the permit application(s).

5.4 Existing Vegetation

The existing natural and ornamental vegetative cover will be retained wherever and whenever possible within the right-of-way limits. Where the existing ground cover must be removed, replacement vegetation will be established in a timely manner, using seed and mulch or sod.

Trees in front of residences within MDOT right-of-way will be saved as long as safety requirements are met. All property owners will be notified before any trees in front of their residences are removed and will be offered replacement trees to help offset the aesthetic and/or functional loss of trees.

Replacement tree species, numbers, and planting recommendations will be made jointly by MDOT's Roadside Development Section or the Region Resource Specialist as part of the project design process following contact and coordination with adjacent property owners. For those owners who request replacement trees, the trees are to be replaced (with the property owners' approval) on their property as close to the right-of-way line as possible. The property owners will then assume the responsibility for maintaining these trees.

5.5 Disposal of Surplus or Unsuitable Material

Surplus or unsuitable material generated by the removal of structures, trees, etc., will be disposed in accordance with the following provisions designed to control the possible detrimental impacts

of such actions. When surplus or unsuitable material is to be disposed outside of the right-of-way, the contractor will obtain and file with MDOT written permission from the owner of the property on which the material is to be placed. In addition, no surplus or unsuitable material will be disposed in any public or private wetland area. Inert material may be used as a basement fill to a depth not less than two feet below the ground level, if the basement is not within the roadway cross section. Such material must be covered with at least two feet of clean soil to fill voids. Basement walls are to be removed to ground level. All regulations of the MDEQ governing disposal of solid wastes will be complied with.

5.6 Groundwater Quality

The sealing of water wells, septic systems, and sewer lines for the protection of groundwater quality will be ensured by the enforcement of MDOT specifications imposed on the contractor during construction. For houses or other structures with sewer service that are relocated or must be razed, sewer lines will be filled with concrete grout at the basement level, and water will be turned off at the street. In rural areas the sewer line to the septic tank must be filled at the basement level. Abandoned water wells will be filled with grout applied from the bottom upwards through a conduit extended to the bottom of the well in one continuous operation until the well is filled. The contractor must also meet all local and Michigan Department of Community Health (MDCH) requirements.

Contractors will generally be allowed 60 to 90 days following issuance of the demolition contract for the site to be completely cleared. However, no more than 48 hours will be permitted following removal of any structure to fill the foundation to ground level. If the foundation is not filled within this time, MDOT will take independent action to fill the foundation, charging costs incurred to the contractor. The MDEQ notification procedures for demolitions will be followed.

The above specifications have been approved by the Michigan Department of Public Health. The contractor will also be referred to the local health department for assistance when special conditions such as flowing wells or wells with a high artesian head are encountered. If high water tables are encountered in cut sections, special methods will be used to reduce any negative effects on the area groundwater.

Improvements will be built as necessary along the pavement to drain the roadway subbase. Edge drains will be used to intercept horizontal seepage. Stone baskets will be used to maintain and reroute the flow of springs when found below the roadway. Intercepted water will be discharged into an available roadside ditch, watercourse, or storm sewer. Although siltation of such watercourses from this intercepted water is rare, it will be controlled, when necessary, by the placement of material around the edge drain pipe to filter out fine material.

5.7 Surface Water Quality

Adequate soil erosion and sedimentation control measures will be implemented on all projects. Vegetation buffer strips approximately ten feet in width will be left in place along both sides of all stream crossings, if possible. This will promote infiltration, thereby reducing the potential impacts on the streams from added runoff and associated pollutants, including deicing salts, heavy metals, and pesticides.

5.8 Maintaining Traffic During Construction

The disruption of traffic in the construction area will be minimized to the extent possible. All construction areas and altered traffic patterns will be clearly marked during the construction phase. A preliminary construction staging program has been developed and is the subject of ongoing review to ensure the constructability of the project and minimize impacts to the local neighborhoods and the motoring public. As currently proposed, four construction seasons will be needed to complete the project.

5.9 Continuance of Public Utility Service

Utilities will require relocation or adjustment. In doing so, coordination between MDOT and the affected utility company will take place during design, prior to actual construction. Proposed staging plans will also be presented to utilities to make them aware of the project. Service to the project area will be maintained with temporary connections during construction so service will not be interrupted.

5.10 Construction Noise Levels and Vibration Impacts

Construction noise will be minimized by measures such as requiring that construction equipment have mufflers; that portable compressors meet federal noise-level standards for that equipment; and, that all portable equipment be placed away from or shielded from sensitive noise receptors, if at all possible. All local ordinances will be adhered to.

Where pavement must be fractured, structures must be removed, or piling or steel sheeting must be driven, care will be taken to prevent vibration damage to adjacent structures. In areas where construction-related vibration is anticipated, basement surveys will be offered to adjacent property owners within 600 feet of an active construction area before construction begins to document any damage caused by highway construction.

5.11 Control of Air Pollution During Construction

The contractor will be required to comply with all federal, state and local laws and regulations governing the control of air pollution.

Dust Control: During construction of any project, adequate dust-control measures will be maintained so as not to cause detriment to the safety, health, welfare, or comfort of any person, or cause damage to any property or business.

Bituminous and Concrete Plants: All bituminous and Portland Cement concrete proportioning plants and crushers will meet the requirements of the rules of the MDEQ. For any portable bituminous or concrete plant or crusher, the contractor must apply for a permit-to-install or general permit. This permit should be applied for a minimum of 30 calendar days for plants with an active MDEQ permit (or 60 calendar days for plants not previously permitted in Michigan) prior to the plant being installed.

Dust collectors must be provided on all bituminous plants. Dry, fine aggregate material removed from the dryer exhaust by the dust collector must be returned to the dryer discharge unless otherwise directed by the project engineer.

5.12 Wetland Mitigation

Preliminary consultation regarding mitigation for wetlands was undertaken during delineation of wetlands. Mitigation of proposed wetland impacts has followed three sequential steps: 1) avoidance of wetlands where feasible, 2) minimization of unavoidable impact by adjustments to the project alignment and typical section, and 3) compensatory wetland construction or restoration. The first two steps have been integral to project development. Specific mitigation measures would be done in accordance to all applicable statutes administered by appropriate agencies.

As wetlands were delineated, the project was revised to avoid and minimize wetland impacts along the proposed M15 project right-of-way. Wetlands along the route were evaluated and maximum efforts were made to avoid and minimize wetland impacts, particularly to the higher quality wetlands. Minimization of wetland impacts during construction would be further accomplished by soil erosion and sediment control practices consistent with conditions of a Soil and Erosion Control Permit. Further, side slopes may be increased with placement of guard rails to keep the toe of slope as close as possible to the roadway edge.

Compensatory wetland restoration or creation is planned, in accordance with state and local wetland protection ordinances, to mitigate unavoidable impacts to approximately 13.4 acres of regulated wetlands. Of this area, approximately 2.5 acres is comprised of forested or lake-fringe wetland. These wetlands are usually mitigated at a 2:1 ratio, i.e., 2 acres of mitigation for every acre of impact. Thus, about 5.1 acres is needed for mitigation. Most other kinds of wetlands, including emergent and scrub shrub wetlands are mitigated at a 1.5:1 ratio, so that each acre of impact is compensated with 1.5 acres of mitigation wetland, for a mitigation need of about 16.3 acres (Table 5-1).

**Table 5-1
Regulated Wetland Acreages Affected**

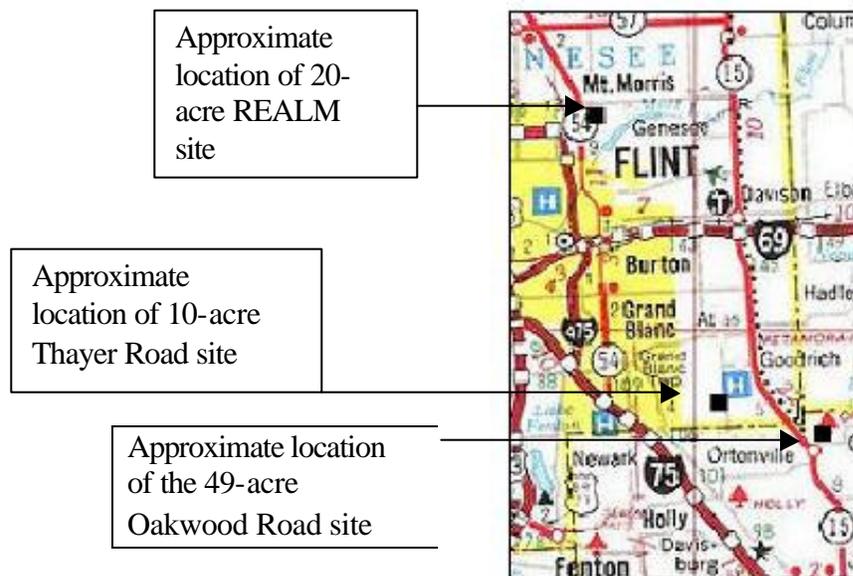
Wetland Type Impacts	Impact Acreage	Probable Mitigation Ratio	Estimated Mitigation Acreage
Forested and Lake-fringe wetlands	2.54	2:1	5.1
Open water, emergent, scrub-shrub	10.86	1.5	16.3
Subtotal	13.40		21.4
Less 20 percent reduction credit			4.3
Total Mitigation acreage needed			17.1

The amount of compensatory mitigation wetland required by the MDEQ may be reduced by up to 20 percent due to the specific conditions of the wetlands being impacted (1994 P.A 451, Part 303, R281.925). MDEQ has granted this 20 percent reduction in mitigation required for the proposed M-15 impacts (see letter dated September 26, 2001, Appendix C). Most wetlands impacted by

the proposed project are of low biological quality and are dominated by common reed (*Phragmites australis*), cattails (*Typha* spp.) and reed canary grass (*Phalaris arundinacea*). The result of the 20 percent reduction is an estimated mitigation need of 17.1 acres.

Three sites have been identified as potential wetland mitigation areas for the proposed project: an Oakwood Road site (already owned by MDOT), a General Motors-owned “REALM” site, and a Thayer Road site (Figure 5-1). Total acreages at these sites are 49, 20, and 10 acres, respectively. The reason for identifying three sites is to prepare for a variety of wetland mitigation scenarios. For example, the Oakwood Road property will likely be used to fulfill the mitigation needs of the proposed M-24 project. Wetland mitigation needs associated with the M-24 project may change as design modifications proceed. Availability of a single mitigation site may be lost in the event the property were to be sold prior to needed acquisition by MDOT. Therefore, the three sites described below contain a surplus of available mitigation area to help ensure an adequate supply of mitigation land. All three sites are within the Flint River Watershed.

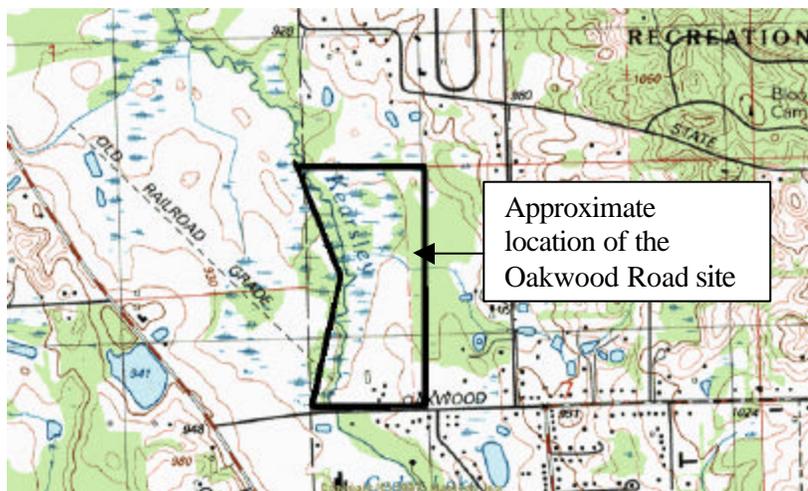
**Figure 5-1
Potential Mitigation Sites**



Oakwood Road Site - A 49-acre parcel of property located on the north side of Oakwood Road in the northwest ¼ of Section 7, T5N R9E, Brandon Township, Oakland County, Michigan, was recently purchased by MDOT for the purpose of building and/or restoring compensatory mitigation wetland needed to offset impacts due to highway improvements on M-24 and M-15. Approximately 22 acres of the property are available for wetland mitigation, of which approximately 13 acres is slated for M-24 mitigation. The remainder of approximately 9 acres would appear to be available for the proposed M-15 project. The parcel borders on Kearsley Creek, a designated trout stream, and a large wetland complex to the north. The Oakwood Road site appears to be an excellent choice for wetland mitigation for the following reasons:

- Restoring/building mitigation wetland would add protection to Kearsley Creek, a designated cold-water trout stream.
- Potential wetland hydrology appears to be readily available both from creek flood flows and lateral groundwater flow from east to west toward the creek. A drain that was previously built on the property could be easily blocked to restore wetland hydrology to the lower non-wetland areas. The higher elevations of the potential mitigation site have sandy soil that would not seem to require, on average, more than a few feet (or less) of excavation to reach the average water table. Artesian wells on the property could potentially be directed to support restored/constructed wetland.
- Wetland construction/restoration could expand and enhance a large natural area/wetland complex that includes lowland hardwoods, forested wetland, emergent and scrub-shrub communities, and trout stream. The occurrence of tamarack, northern white cedar, ninebark, and shrubby cinquefoil suggest calcareous groundwater conditions typical of fens. The upland Oshtemo-Boyer soil is known to have a calcareous subsoil (Feenstra, 1982). Soil and groundwater conditions (with some grade modifications) at this property appear suited to growing northern white cedar and other calciphile wetland (fen) plants.
- The property has good accessibility from M-15 via Oakwood Road for construction equipment access.
- The high-quality existing wetland brings preservation credit for mitigation.

Figure 5-2 Oakwood Road Site

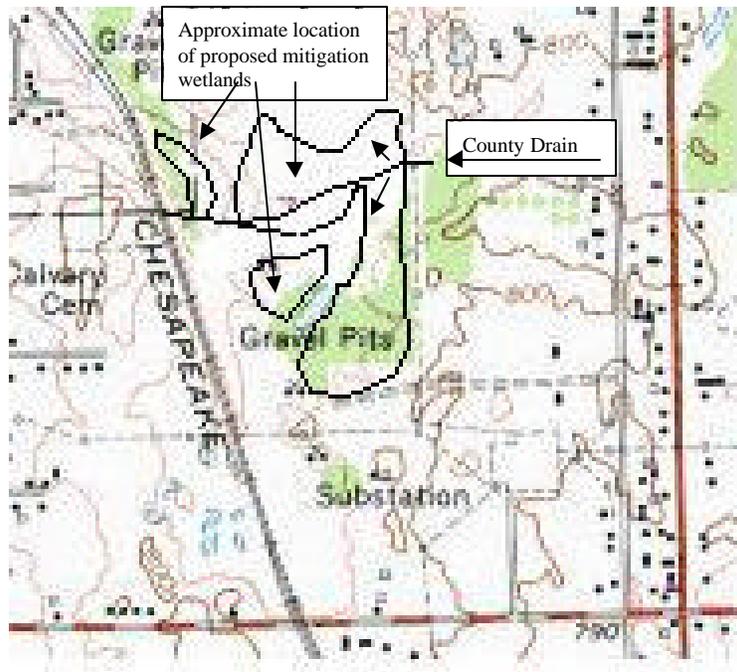


GM REALM Property - This property is located in Section 7, Genesee Township (T8N, R7E), near Mt. Morris. It is currently being used as a source of sandy loam fill material needed in land restoration efforts at retired General Motors factory sites in Flint. General Motors and their land-management subsidiary “REALM” have offered to enter into partnerships to build mitigation wetlands on the former borrow sites and place the wetlands into permanent conservation easements. Ground conditions appear to be suitable for wetland creation. Below approximately five feet of sandy loam is low-permeability clay, which would eventually form the wetland substrate. Hydrologic support for the created wetland would come from direct precipitation and runoff from the surrounding landscape. Shallow groundwater seepage has been observed at the

sandy loam-clay contact. Further hydrologic support would come from peak flows from a county drain that flows east to west across the property. The Genesee County Drain Commission Engineer has reviewed a conceptual mitigation plan for the site and agreed (meeting held December 11, 2001) to allow peak flows to be diverted from the county drain into created wetlands. It is estimated that approximately 20 acres of wetland area could eventually be created following the excavation of earthen material (Figure 5-3).

Figure 5-3 GM-REALM Site

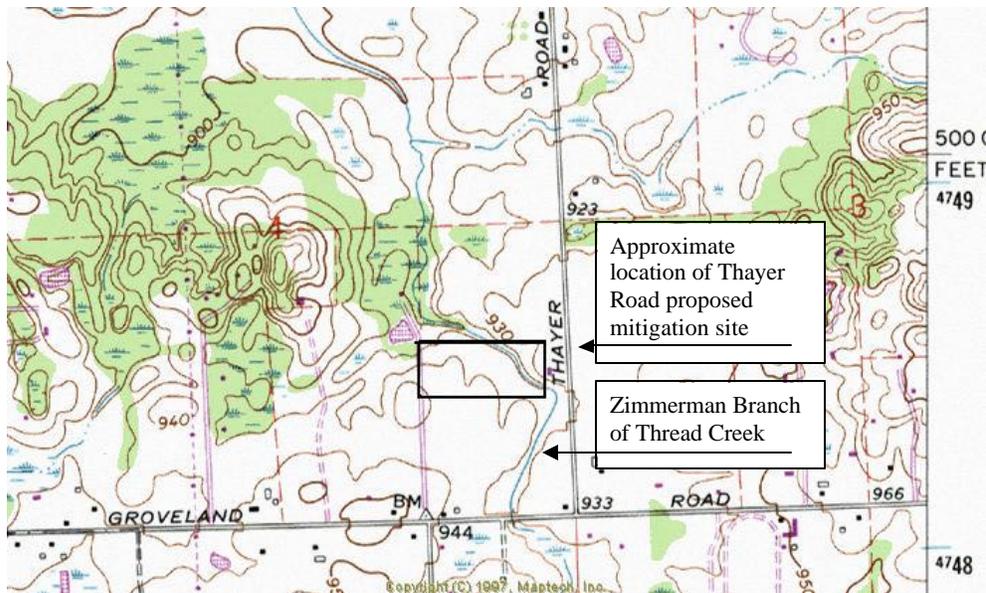
(northwest of the intersection of Stanley and Lewis Roads, Mt. Morris)



Thayer Road Site - The Thayer Road site, approximately 10 acres in area, is currently for sale (Figure 54). The site includes approximately 1.5 acres of existing wetland along Zimmerman Branch of Thread Creek. The remainder of the site is mostly upland old field with minor areas dominated by autumn olive shrubs. A large proportion of the soils are somewhat poorly drained that could likely be excavated to a modest extent to form hydric (wetlands) conditions. Zimmerman Branch is a potential source of hydrologic support. The surrounding landscape is relatively low and has a high water table. The owners are willing sellers who have agreed to allow MDOT to monitor hydrology through the early months of 2002 to help assess the hydrologic conditions at the site.

It is believed that the potential acreages available at the three identified sites would be adequate to meet the mitigation needs of the M-15 project, even if the mitigation needs for M-24 were to increase over the current estimate.

Figure 5-4 Thayer Road Site



5.13 Additional Mitigation or Modifications

The final mitigation package will be reviewed by division representatives on the MDOT project study team, in cooperation with concerned state, federal, and local agencies.

Some changes to the early mitigation concepts discussed in this document may be required when design begins or when in-depth soil borings are made and analyzed. These mitigation concepts will be implemented to the extent possible. Where changes are necessary, they will be designed and field reviewed before permits are applied for or construction begins.

These preceding mitigation concepts are based on the best information available through December 2001.