

Natural Resources

The optimum arrangement of land uses in a community is that which properly utilizes the natural resources and physical features of that community, so that any given land use is located only in an area where the natural resources and physical features of the area are best suited for that particular use. For example, areas in a community that have soils that are considered “prime agricultural soils” and are relatively flat and free of wetlands are best suited for farming uses. Other areas that contain woodlands may be better suited for recreation uses. Still other areas may have natural features best suited for residential development. Thus, it is very important to make a thorough inventory of the natural resources and features in Brockway Township.

Topography

The land surface of Brockway Township is relatively uneven, with the Mill Creek valley cutting through the much of the eastern and northwestern parts of the Township, and ridges running through the western and extreme northwestern portions of the Township. The highest points in the Township, which exceed 850 feet above mean sea level, are on the aforementioned ridges in Sections 20 and 29. A low point of 740 feet occurs along Mill Creek in Section 36. The remainder of the Township has elevations of 770 to 825 feet above mean sea level, gradually increasing from east to west.

Geology

BEDROCK GEOLOGY

The uppermost layer of bedrock below the soil in Brockway Township consists entirely of coldwater shale of the Mississippian and/or Devonian stratigraphic unit.

QUATERNARY GEOLOGY

The Quaternary Geology map shows the geological features and characteristics near the ground surface of Brockway Township (between the bedrock and the topsoil). Brockway Township lies within an area that was likely covered by or on the fringe of the glacial stages of the Great Lakes.

The geological deposits found in Brockway Township mirror the glacial history of the region. Much of the Township consists of *lacustrine clay and silt*, which are generally found at the former lakebed sites of the glacial Great Lakes, and *lacustrine sand and gravel*—glacial debris predominantly made up of sand, with many cobbles mixed in with the sand. The remainder of the Township consists of *end moraines of fine-textured till*, which are systems of hills formed from glacial deposits, and *fine-textured glacial till*, which are glacial outwash deposits of sand and gravel.

Soils

Soil characteristics are an important determinant of land use potential. Not only do soils influence the suitability of land for agricultural purposes, they also help to determine whether or not a parcel is suitable for more urban forms of development such as housing, business, industry, roads and utilities (water, gas & sewer).

SOIL ASSOCIATIONS

There are twelve major soil associations found in St. Clair County, according to the *Soil Survey of St. Clair County*. These soil associations are areas with a distinctive and/or proportional pattern of one or more major soils and/or soil complexes and at least one minor soil. Of the twelve major soil associations, four can be found in Brockway Township and they are as follows:³

Blount-Parkhill Association

Nearly level to gently sloping, somewhat poorly drained and poorly drained soils that have a dominantly loamy subsoil. Occurs primarily on till plains throughout most of the Township. Most areas of the soils in this association are used for farming (dairy and cash crop). The major soils have a very high seasonal water table and require drainage for most uses. Also, the seasonal high water table of these soils create severe limitations for the use of septic tank disposal fields. However, an on-site investigation of the soils is necessary to determine the suitability of a particular site for septic tank/field use. Erosion is a moderate hazard on slopes.

Wainola-Deford Association

This association has nearly level, somewhat poorly drained and very poorly

³Please see the *Soil Survey of St. Clair County, Michigan*, p. 2 -6: 1974, USDA Soil Conservation Service

drained soils with a sandy subsoil. Within the Township, the Wainola-Deford association is found in a narrow north-south band in the south-central portion of the Township. This area is mostly open and cropland, with scattered urban uses (in some parts of the County). The major soils have low natural fertility and low available water capacity. They have a seasonal high water table and need drainage for most uses. Where the water table is low in midsummer, the soils are droughty.

Bach Association

Nearly level, very poorly drained, dominantly high-lime soils that have a loamy subsoil. Occurs in glacial drainageways and on lake plains in the western part of the Township (Sections 5, 6, 19, 25, 31 & 32). Many areas of this association have been cleared and cultivated (dairy, beef, crop & sod farming). The major soils have a very high seasonal water table and are subject to periodic flooding. Drainage is needed for most uses.

Alluvial land-Rough broken land Association

Nearly level to gently sloping, well drained to poorly drained soils on flood plains and the adjacent steep to very steep soils on bluffs. This association occurs on the flood plains and steep bluffs along Mill Creek. Most areas of this association are pastured, forested or idle and covered with brush. Alluvial land has a seasonal high water table is subject to flooding. Rough broken land is subject to severe erosion and is too steep and rough for farming. Urban use of these lands (as well as road building) is very difficult.

LIMITATIONS OF SOILS FOR SEPTIC FIELDS

The *Soil Survey for St. Clair County* also classifies individual soils by the degree of limitations for use in septic tank disposal fields.⁴ In determining these limitations, the factors considered are depth to the water table, permeability rates, hazard of flooding, and topography. The rating of the soils is based on the limitations of the soils to absorb effluent from septic tanks. Soils are rated for three degrees of soil limitations:

1. **Slight**, where the soil is relatively free of limitations or limitations are easily overcome.
2. **Moderate**, where soil limitations need to be recognized but can be overcome with good management and careful design.
3. **Severe**, where soil limitations are severe enough to make use questionable.

Generally, urban and residential development beyond existing public sewer areas should be limited to those areas having soils with only slight or moderate limitations for septic use.

⁴ Please see the *Soil Survey of St. Clair County, Michigan*, p. 103: 1974, USDA Soil Conservation Service

Most of the soils found within the Township are classified as having severe limitations for septic field use. Small areas of soils with slight and moderate limitations can be found throughout the Township, in particular in the western two-thirds of the Township.

Wetlands

Wetlands serve a number of important environmental functions that need to be considered during the community planning process. The most important functions of a wetland are to serve as a natural stormwater filtration device, by trapping and storing nutrients from upland stormwater runoff in plant tissue and to serve as a settling basin for silt generated from upland erosion. These functions can be seriously damaged and possibly destroyed by poor land use practices. Since every wetland has a unique tolerance for filtering stormwater runoff from the uplands surrounding it, development in those adjacent areas can create more nutrient and sediment inflow than the wetland can handle. Such an overload can damage the wetland to the point where it can turn into a settling basin of polluted, foul water, destroying the area's ecological health and possibly posing a threat to the physical health of the area's human and wildlife population.

Even more serious is the removal of wetlands. The removal of these natural features by dredging or filling will have an immediate impact on the water quality of streams and lakes below them in the watershed system. Preserved wetlands improve water quality, moderate flooding, and stabilize water supplies, thereby providing for overall environmental health and stability.

WETLANDS PROTECTION

In recognition of the importance of wetlands, the State of Michigan enacted the *Goemaere-Anderson Wetlands Protection Act* (Act No. 203 of the MI Public Acts of 1979), authorizing regulation by the DNR of development in and around wetlands. This legislation defines wetlands as "land characterized by the presence of water at a frequency and duration sufficient to support and that under normal circumstances does support wetland vegetation or aquatic life" and generally regulates the development of wetlands over five acres in size, or which are contiguous to the Great Lakes or to a river, stream, pond or inland lake. Permits are required for the following activities:

- depositing or placing fill material in a wetland;
- dredging or removing soil from a wetland;
- constructing, operating or maintaining any use or development in a wetland;
- draining surface water from a wetland.

The issuance of permits for these activities depends on whether or not the activity in question is in the public interest and whether or not it is otherwise lawful (that is, permitted by the zoning ordinance and/or other ordinances of the community).

IDENTIFYING WETLANDS

As important as wetlands are, it can sometimes be very difficult to properly identify and define a wetland. Often, the only sure way to determine if a particular parcel is a wetland or not is to do on-site surveys. This is because (physically & legally) land does not have to be wet all of the time in order to be defined as a wetland. Repeated site surveys can show if water is present frequently enough for the parcel to qualify (legally) as a wetland. Also, wetlands normally contain unique forms of plant life, which, again, are best identified by on-site surveys.

Hydric Soils

However, for planning purposes, extensive on-site surveys are rather impractical (too time consuming and often too expensive), so other sources of wetland information must be used to help us determine what areas of the Township contain wetlands. One possible source is the list of “hydric soils”—those soils deemed likely to support wetlands—developed by the Soil Conservation Service (SCS) of the U.S. Dept. of Agriculture. This list is keyed to the SCS Modern Soil Survey maps, thus making it possible to show where such soils can be found, and hence, what areas are likely to be wetlands.

There are three limitations to using the soil surveys and the list of hydric soils. First, the soil maps cannot show smaller occurrences of soil types, particularly those smaller than two acres. Also, the presence of a wetland soil does not legally define an area as a wetland, so this information cannot be used as a legal guide. Finally, as with all information sources, there are occasional errors.

National Wetland Inventory

Another source of information on wetlands is the National Wetland Inventory (NWI) maps. These maps are created by interpretation of aerial photographs and overlaying apparent wetland areas onto standard topographic maps.

Again, there are limitations to using this kind of information. Since they are produced by mass scale aerial photograph interpretation, there is a significant source of error. Some areas have been interpreted from black & white photographs, others from infrared color photographs that are easier to interpret. Most areas have not been verified by field checks. Due to scale, small areas might be missed. Finally, an aerial photograph reflects a specific time and condition and may not reflect a “typical” condition.

BROCKWAY TOWNSHIP WETLANDS

For this plan, the National Wetlands Inventory map of Brockway Township will be used. According to this map, there are a significant number of wetlands located in Brockway Township. Many of these wetlands are located adjacent to Mill Creek. Others are located near the many county drains found in the Township. The rest are scattered throughout the Township and are not associated with any watercourse.

Floodplains

Floodplains are areas where floodwaters spread when the natural stream or river channel overflows its banks because it cannot accommodate runoff from storms or melting snow. Dissipation of flood waters into the floodplain helps reduce the amount of damage incurred by flooding. In addition to providing natural buffers for floods, floodplains provide critical functions as groundwater recharge areas and wildlife habitat.

When the floodplain is altered by grading, filling, or the erection of structures, its flood-dissipating functions are reduced. Oftentimes, changes to the natural system aggravate flooding and damages. Factors that increase flooding problems include:

- Removing vegetation that stabilizes banks of streams and rivers and slows flood waters.
- Erecting structures that deflect or inhibit flow of floodwaters can increase flood elevations and modify flow paths, shifting flooding problems and increasing erosion.
- Constructing bridges, culverts, building, or other structures that encroach on the floodplain and reduce the storage area available for floodwaters.
- Building drainage systems that quickly feed stormwater into the receiving body.
- Channelizing streams (straightening meandering watercourses to expedite drainage) which transfers flooding problems downstream alters wildlife habitat.
- Filling and dumping in floodplains, which can cause a considerable amount of damage as floodwaters rise and transport debris that can interfere with the movement of floodwaters.

NATIONAL FLOOD INSURANCE PROGRAM

In response to widespread life and property loss associated with flooding, and to help those affected by floods, the federal government has promoted local floodplain management strategies through education programs and enactment of the National Flood Insurance Program (NFIP). The insurance program is basically the only source of flood insurance and is only available to property within communities participating in the NFIP. It is administered by the Federal Emergency Management Agency (FEMA). In order to participate in the subsidized insurance program, communities are required to adopt and enforce regulations regarding development in flood-prone areas. Participation in the program is voluntary and relies heavily on state and local involvement. However, there is a strong incentive to participate, as FHA, VA, and other federally insured mortgages are prohibited in identified floodplains, unless flood insurance is carried.

STATE FLOODPLAIN PROTECTION

Augmenting federal protection measures, the State of Michigan has implemented rules that require a permit to occupy, fill, or grade lands in a floodplain, streambed or channel of a stream. FEMA flood insurance studies, rate maps and other state data are used to determine floodplain boundaries. The flood area within the jurisdiction of state and federal programs is the 100-year floodplain. A 100-year flood (which results from approximately 5 inches of rainfall in 24 hours) has a one percent chance of occurring in any given year. This means that a structure in the 100-year floodplain has a 26% chance of being flooded before the average mortgage is paid off, if it is not properly elevated.

BROCKWAY TOWNSHIP FLOODPLAIN

Brockway Township does not participate in the National Flood Insurance Program. Thus, there are no flood insurance rate maps showing the 100-year floodplain. However, a good approximation can be found by mapping Alluvial lands as shown in the *Soil Survey for St. Clair County*. These Alluvial lands are found primarily in floodplains and therefore, show the general location of the floodplain area. In Brockway Township, Alluvial lands are found along Mill Creek in Sections 3, 4, 7, 8, 10, 14, 17, 18, 23, 26, 27, 35 and 36.

Woodlands

Wooded areas also serve significant environmental functions that need to be recognized and acknowledged. These functions include watershed protection, air quality protection, noise abatement and weather protection. There are also many less quantifiable, but highly important benefits provided by woodlands.

WATERSHED PROTECTION

A wooded area can be of great value to a watershed area. The canopy of trees aid in breaking the force of precipitation, thereby decreasing erosion. Erosion is further inhibited by the fibrous root system of the understory plants, as well as the layer of leaf or needle litter. Woodlands can also reduce the volume of stormwater runoff. Clear-cut lands can produce excessive runoff unless trees are replaced by other vegetation with comparable water retaining capacity. With no soil and vegetation to moderate runoff from precipitation, flooding may result, in addition to a loss of precipitation ordinarily retained and recharged into groundwater reserves by the woodland.

AIR QUALITY PROTECTION

Woodlands improve air quality and afford protection from wind and dust. Leaves and branches moderate the strength of winds and, when moistened with dew or rainwater, reduce suspended particles in the air, which are later washed off with rainwater. Plants also serve to moderate the effect of chemical pollutants in the air by absorbing some ozone, carbon dioxide, and sulfur dioxide.

NOISE ABATEMENT

A dense stand of trees can significantly cut noise from adjacent factories or highways by six to eight decibels per 100 feet of forest. Moreover, the moderating effects of forests on temperature and wind can significantly cut the sound-carrying capacity of the atmosphere.

WEATHER PROTECTION

The resilience of woodlands creates a microclimate around the tree stand itself. Woodland qualities that moderate and buffer temperature, precipitation, runoff, wind and noise are features of this microclimate effect. The benefits of this microclimate effect to surrounding urban and suburban areas can be significant. An urban area devoid of vegetation is the exact opposite of the forest microclimate. It increases the range of temperature fluctuations much like the climatic extremes of a desert.

The sun's energy striking streets and buildings is changed into heat, further increasing the temperature on a hot day; at night, the buildings lose heat and offer no protective cover from night chill or winter winds. Thus, if woodlands are interspersed among built-up areas, the effects of their microclimates can be felt in adjacent urban areas, moderating fluctuations in temperatures by keeping the surrounding air cooler in the summer and daytime and warmer in the winter and evening.

OTHER BENEFITS OF WOODLANDS

The significance of woodlands is given added weight by the less quantifiable benefits that they provide to the public. Not only are woodlands important buffers, they also add aesthetic values and provide attractive sites for recreational activities such as hiking, camping, and other passive recreational pursuits.

Continued stability of good real estate values is a secondary benefit offered by woodlands. Since people choose to live in and around woodlands, providing for woodland protection in the planning of development projects will maintain favorable real estate values.

WOODLANDS IN BROCKWAY TOWNSHIP

Because most of the land in Brockway Township has been cultivated, there are only a few large woodland areas left in the Township. These large woodland areas are located in Sections 25, 26, 27, 31 and 32. Smaller woodlands are scattered throughout most of the remainder of the Township.

Agricultural Lands

Soil data is the principal source of information used by the U.S. Department of Agriculture Natural Resources Conservation Service (NRCS) to determine those areas of the Country that have the greatest potential for long-term agricultural

production. St. Clair County includes a considerable amount of land (over 294,000 acres) that has been designated by the NRCS to be either prime or unique farmland. Prime farmland, because of characteristics such as level topography and soil characteristics (fertility, moisture levels, depth, and texture) is the land most suitable for row crops. Unique farmlands are lands other than prime lands that have a special combination of characteristics (e.g., soil qualities, location, topography, and growing season) that make them ideally suited for specialty crops like vineyards, orchards, and vegetables. Much of this prime and unique farmland is confined to the western portions of the County.

PRIME FARMLAND IN BROCKWAY TOWNSHIP

Most of the land in Brockway Township is classified as prime farmland. Prime farmland areas can be found in every section of the Township, except for lands adjacent to Mill Creek and narrow bands along County drains in the southwestern quarter of the Township.

The long-term use of this prime farmland for agricultural purposes will be influenced by factors other than just soil characteristics. These factors include land speculation activity, increasing land values, taxation and assessment practices, and general economic trends. The desirability of preserving land for long-term agricultural purposes and to accommodate the demand for a range of urbanized uses are situations that will be addressed during the planning process.

Watersheds

A watershed is another word for a river basin. It's an area of land that catches rain or snow melt and drains it to a common stream, river or lake at the lowest point of the watershed. All land is located within some sort of watershed.

Brockway Township is located entirely within the Black River watershed (Mill Creek, which runs through the Township, is a major tributary of the Black River).

Community Facilities & Services

The facilities, services and programs offered by the Township to its residents and businesses are essential to maintaining an adequate standard of living and are an essential factor in determining whether or not a community can thrive and grow.

Township Hall

The Brockway Township Hall is located on a 4-acre parcel at 7645 Sayles Road in Section 15. The Township Hall contains the Township administrative offices and a meeting room that is used for the public meetings of the Township.

Public Safety Services

POLICE

Police protection for the Township is provided by the St. Clair County Sheriff's Department and Michigan State Police as part of their regular patrols and service.

FIRE PROTECTION

The Brockway Township Fire Hall is located at 7643 Brockway Road, just inside the south city limits of the City of Yale. While the Fire Hall is owned by Brockway Township, it houses trucks and equipment for both the Township department and the City of Yale Fire Department. The Fire Hall, which was constructed in 2004, is an 11,000 square foot building with five full bays and has the capacity for 10 trucks and/or rescue vehicles. The facility was also designed as an emergency shelter for disaster relief. It features a full kitchen, meeting area and training room.

Parks & Recreation

The range of recreation facilities available within the Township are described as follows:

TOWNSHIP FACILITIES

Brockway Township has a 38-acre park on the east side of Sayles Road near the Brockway Township Hall. The Brockway Township Community Park has soccer fields, baseball fields, basketball and sand volleyball courts, a playground (with equipment), walking trails, horseshoe pits and a fishing dock allowing handicap access to Mill Creek. The park also has a picnic area with picnic tables, barbecue grills, a pavilion and park benches. During the winter months an ice skating rink is available.

Future plans for park development include construction of a concession stand.

Schools

A wide range of educational opportunities and services are available to Township residents. They are described as follows:

YALE PUBLIC SCHOOLS

Brockway Township is located almost entirely within the boundaries of the Yale Public School District. At this time, the district does not have any existing school facilities within the Township. The district does own a vacant 80-acre parcel on the west side of Emmett Road north of Metcalf Road in Section 36 that could eventually become a school site. The closest existing district facilities are Yale High School, Yale Junior High School and Yale Elementary School, all located in the City of Yale.

CAPAC COMMUNITY SCHOOL DISTRICT

The extreme southwestern corner of the Township (the south ½ of Section 31) is served by the Capac Community School District. The district does not have any school sites within the Township and none are expected to be constructed within the Township during the planning period. The closest district facilities are the high school, middle school and elementary school in the Village of Capac.

REGIONAL EDUCATIONAL SERVICE AGENCY

The St. Clair County Regional Educational Service Agency (RESA) provides adult education services, vocational programs and special education services to eight school districts in the County, including the Yale Public School District and the Capac Community School District. These services are provided by facilities at the Educational Service Center, located at 499 Range Road in Kimball Township.

One such facility is the Technical Education Center (TEC), which offers job training and placement opportunities for nearly 1,200 high school and adult students. These programs are competency based, allowing students to progress according to individual ability and experience.

As part of the Educational Service Center complex, severely and profoundly mentally impaired students are provided training, education and enrichment opportunities at the Woodland Development Center.

Curriculum development, media, instructional materials and training for teachers and volunteers are other RESA supportive services designed to strengthen area school programs.

Pine River Nature Center

Also, the RESA has an 80-acre property, known as the Pine River Nature Center, located between I-69 and the Grand Trunk & Western railroad at Castor Road, south of the County Park. A nature education center, with a Nature Center Building (with two classrooms) have been developed on the site. Mature hardwood forest, wetlands, prairie and the Pine River are some of the many habitats that can be explored through a system of trails that extend over two miles on the site. The center was established in May 2003 and provides science and environmental education programming (at all levels) for St. Clair County schools. The facilities are also open to the general public. Hiking, bird watching, and cross-country skiing are welcome on the center's trails, which are open daily from dawn to dusk.

ST. CLAIR COUNTY COMMUNITY COLLEGE

St. Clair County Community College, located at 323 Erie Street in Port Huron, is a comprehensive community college offering associate degrees in both transfer and occupational areas. The college provides the freshman and sophomore courses needed to fulfill requirements for transfer to a senior college or university. The occupational curriculum is designed for those who plan to enter directly into business or industry from community college.

The St. Clair County Community College University Center is an educational center that houses programs and courses offered by several universities. Located in the Citizens First Michigan Technical Education Center (M-TEC), the University Center offers students the convenience of completing a bachelor's, master's or doctoral degree close to home or online.

The Community and Business center of the Community College works closely with business to schedule seminars and classes for employee upgrading and training on campus as well as in the work place.

BAKER COLLEGE OF PORT HURON

Baker College of Port Huron, located at 3403 Lapeer Road in Port Huron Township, is a private, non-traditional, college offering associate, bachelor and

masters degree programs in various technical and occupational areas. These are intended primarily for working adults and other non-traditional students seeking additional training in their current profession or retraining in a new profession.

Library

Library services are available to Township residents through the St. Clair County Library System, which has a branch located in the City of Yale at 2 Jones Street. The library offers a wide range of materials, many programming events, tours, a children's room and electronic information access (including the Internet).

Utilities

Currently there are no public water or sewer facilities available in the Township, nor is it expected that such will be provided during the period covered by this Master Plan. Residences and businesses in the Township are served by individual on-site wells and septic tanks. Electric power is provided to all areas of the Township by Detroit Edison. The Township is within the gas service area of the Southeastern Michigan Gas Company, with natural gas service available to parcels along much of M-19 and M-136 within the Township. Many residences utilize on-site propane or fuel oil tanks or, in some cases, wood.

Cemeteries

There are four cemeteries located within Brockway Township. Two of them are located adjacent to each other on Yale Road just west of the City of Yale. One of these (containing nine acres) belongs to the Sacred Heart Catholic Church in Yale, the other (containing 23 acres) is owned by the City of Yale. Township residents may purchase lots in these cemeteries.

The third cemetery in the Township contains 1.68 acres and is located on the east side of Arendt Road just north of Jeddo Road in Section 4. The fourth contains 3.9 acres and is located on the north side of Norman Road in Section 26. Both of these are owned by the Township. No new burials are accepted in these two cemeteries.

Airport

Yale Airport is a privately-owned, 2,300-foot long grass airstrip located on the east side of Brockway Road south of Oatman Road. This airstrip is intended for limited general aviation use only.

Thoroughfare Plan

An important element of the Master Planning process is the development of a plan for the over-all system of streets and roads in a community. This system provides for the movement of people and goods to and from places both inside and outside the community. Also, the right-of-ways of roads provide places for various public utilities such as: water lines, gas lines, sanitary and storm sewers, cable television lines, electrical power and telephone lines, in addition to the actual roadway surface. Because of these functions of roads, the system of roads in a community can impact on economic conditions, environmental quality, energy consumption, land development and the overall quality of life in a community.

With the implementation of the Thoroughfare Plan, strength will be lent to the development of the Township in the pattern envisioned by the Future Land Use Plan. Because of the close relationship between transportation and land use, improvements to the system of thoroughfares will increase the development possibilities for the Township.

Principles

To be effective, a Thoroughfare Plan must adhere to certain principles. The principles associated with developing an effective thoroughfare plan are as follows:

- The Thoroughfare Plan must provide for a road system in the Township that will be safe, convenient and efficient in the movement of people and goods.
- The Thoroughfare Plan must effectively integrate local roads with regional thoroughfares, but segregate through traffic from local residential streets.
- The Thoroughfare Plan must ensure adequate ingress and egress for all land uses.

- The Thoroughfare Plan must ensure right-of-way dedications and reservations consistent with local, county, and state proposals.
- There must be coordination of the Thoroughfare Plan with the existing and proposed patterns of land use.
- The Thoroughfare Plan must be developed to accommodate all types of traffic expected in the Future Land Use Plan.
- The Thoroughfare Plan must facilitate governmental and private development of streets and thoroughfares through an orderly and progressive Capital Improvement Program for the Township.
- Modern design standards must be used in planning rights-of-way, pavement width and other characteristics of streets.

Functional Classification of Streets & Roads

The first step in creating a thoroughfare plan is to inventory the Township road network by classifying each road by planned function/right-of-way categories. The four categories used in this plan will be:

1. Major Thoroughfares
2. Secondary Thoroughfares
3. Collector Thoroughfares
4. Local Thoroughfares

These functional classifications are defined as follows:

MAJOR THOROUGHFARES:

These roads have a planned right-of-way of at least 150' and are intended to carry high volumes of through traffic both within the Township and to or from the surrounding region. Major thoroughfares also can provide access to larger abutting properties and large commercial or business areas, such as shopping centers, factories and industrial parks.

SECONDARY THOROUGHFARES:

These roads have a planned right-of-way of 120' and serve many of the same functions as major thoroughfares (carrying through traffic and providing access to large scale abutting uses), but at somewhat lower traffic volumes and speeds. Furthermore, secondary thoroughfares primarily carry through traffic only within the Township, not to or from the surrounding region.

COLLECTOR THOROUGHFARES:

These roads have a planned right-of-way of 86' and have three purposes. First, they collect traffic from local streets and distribute that traffic to local destinations or major and secondary thoroughfares. Second, they funnel through traffic from major and/or secondary thoroughfares to local destinations. Third, collector streets can provide internal circulation and access to major shopping centers and industrial parks.

LOCAL THOROUGHFARES:

These roads have a planned right-of-way of 66' and are intended to provide access to adjacent land uses, such as residential neighborhoods. Generally, these roads carry relatively small volumes of traffic.

County Road Classifications

The St. Clair County Road Commissions also uses, for maintenance purposes, a classification system based on the source(s) of funding for repairs and upgrades. This classification system has two categories:

COUNTY PRIMARY:

These are roads for which the County is responsible for providing funds for maintenance and upgrades.

COUNTY LOCAL:

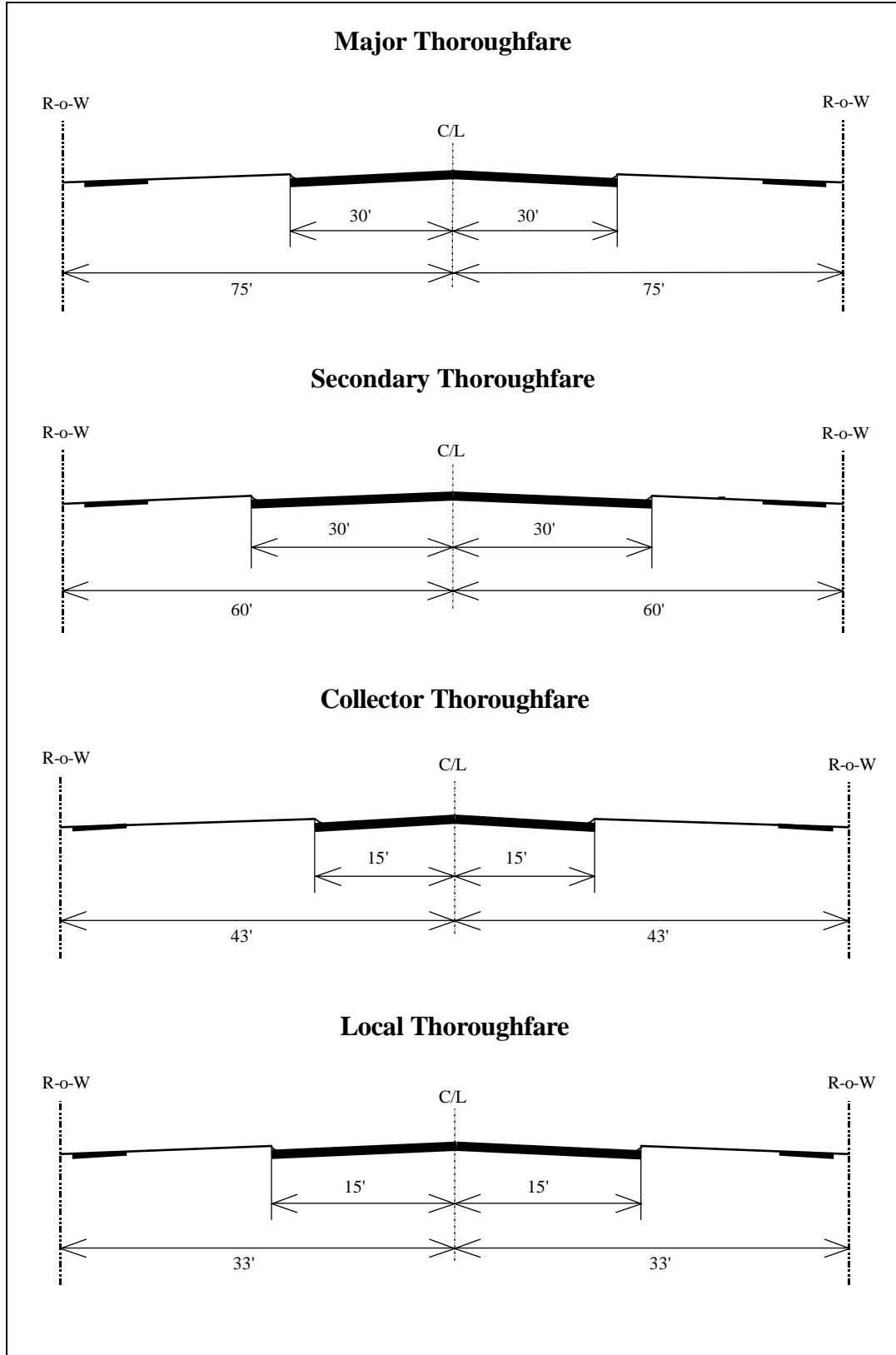
These are roads for which the County and the local community share in the maintenance and upgrade costs.

Cross - Section Standards

To aid local communities in implementing thoroughfare plans, the St. Clair County Road Commission has established cross-section standards (showing the arrangement of the road surface, shoulders, median strips and utilities/drainage located within the various widths of road right-of-way) for the four road classifications given above (as well as for expressways).⁵ According to these standards, local and collector thoroughfares (66' & 86' planned right-of-way) are limited to two lanes of traffic and major and secondary thoroughfares (150' & 120' planned right-of-way, respectively) can accommodate up to four lanes of traffic (two lanes in each direction) plus a left-turn lane. Major thoroughfares can also be divided with a 60' wide median.

⁵*St. Clair County Thoroughfare Planning Guide*, p. 33

Figure 13: Typical Cross-Sections



Existing Road Network

An effective thoroughfare plan can only be prepared after a study of the existing road network is complete.

COUNTY & STATE ROADS

The layout of Brockway Township was influenced by the Land Ordinance of 1785, which established a land survey system that divided the land into six-mile square **townships** (containing 36 square miles). Each square mile in a township is called a **section**.

The establishment of townships and sections has created a logical system for the provision of County roadways along the mile-grid section lines. East-west mile roads in the Township include:

- **Metcalf Road** – a gravel County Local road west of State Highway M-19; east of M-19 Metcalf Road forms part of State Highway M-136;
- **Norman Road** – a gravel County Primary road that traverses the width of the Township;
- **Wilkes Road** – a gravel County Local road that runs from Cork Road west to Perry Road, except for that portion between Emmett Road and Brockway Road, which is paved and serves as part of State Highway M-19;
- **Oatman Road** – a gravel County Local road that runs from Cork Road west to Brockway Road;
- **Speaker Road** – a gravel County Local road that runs from Sayles Road west to the west Township limits (Speaker Road runs along the same mile-grid section line as Oatman Road);
- **Yale Road** - a paved County Primary road that traverses the width of the Township;
- **Jeddo Road** – a gravel County Local road that traverses the width of the Township;
- **Fisher Road** – a gravel County Local road that runs from Cork Road west to Collins Road and from Owens Road west to the west Township limits. (NOTE: That part of Fisher Road east of Owens Road is under the jurisdiction of the Sanilac County Road Commission.

North-south mile roads in the Township include:

- **Cork Road** – a gravel County Local road that runs intermittently from Norman Road to Oatman Road (part of this segment south of Wilkes Road is unimproved) and from Yale Road to Fisher Road;

- **Duquette Road** – a gravel County Local road that runs between Yale Road and Fisher Road;
- **Brockway Road** – a paved road that serves as part of State Highway M-19 that runs from Fisher Road south to the north city limits of Yale, and from the south city limits of Yale south to Wilkes Road (that portion south of Yale runs a somewhat curved route not along a section line);
- **Jorden Road** – a gravel County Local road that runs from Fisher Road to Norman Road (much of the road between Wilkes Road and Norman Road is unimproved);
- **Arendt Road** – a gravel County Local road that runs from the north Township line to Wilkes Road;
- **Owens Road** – a gravel County Local road that runs from Fisher Road to Jeddo Road and from Norman Road to Metcalf Road (this second part of the road is parallel to, but not on a section line);
- **Carson Road** – a gravel County Local road that runs from Yale Road to Wilkes Road.

Other north-south roads lie parallel to, but not on a section line. These include:

- **Emmett Road** – a gravel County Local road that runs from Jeddo Road to Yale Road, then a gravel County Primary road that runs from Yale Road to Wilkes Road, then a paved portion of State Highway M-19 from Wilkes Road to Metcalf Road;
- **McMahon Road** – a gravel County Local road that runs partially from Norman Road to Metcalf Road;
- **Sayles Road** – a paved County Primary road that runs from the south Yale city limits to Speaker Road, then continues from a point one-quarter mile to the west to Wilkes Road;
- **Connell Road** – a gravel County Primary road that runs from Wilkes Road to Metcalf Road;
- **Welch Road** – a gravel County Local road that runs from Wilkes Road to Metcalf Road;
- **Perry Road** – a gravel County Local road that runs from Wilkes Road to Norman Road.

Two roads in the Township are not located on (or parallel to) the mile-grid section lines. Collins Road, a gravel County Local Road, runs diagonally to the northeast from Yale Road to Fisher Road in the northwest corner of the Township and Fulton Road runs diagonally to the northwest from Wilkes Road to the west Township line.

All county roads in the Township are two-lane roads with right-of-way widths of 66–100 feet.

LOCAL ROADS

Four roads in the Township can be considered local roads. Three of these are located in or near the Brockway Plat, located at the corner of Emmett Road and Metcalf Road. The fourth is located in the Dunrentin Heights subdivision, located on the east side of Brockway Road north of the Yale city limits. These local roads have right-of-way widths of 26–66 feet.

National Functional Classification

The Federal Highway Administration (FHWA) also developed a system of classifying all streets, roads and highways according to their function, known as the National Functional Classification (NFC). All public streets, roads and highways in Michigan have an NFC designation.

NFC CLASSIFICATIONS DEFINED

The NFC system uses the following classifications:

Principal Arterials

Principal Arterials generally carry long distance, through-travel movements. They also provide access to important traffic generators, such as major airports or regional shopping centers. Examples of principal arterials include: Interstate and other freeways; other state routes between large cities; important surface streets in large cities.

Minor Arterials

Minor Arterials are similar in function to principal arterials, except they carry trips of shorter distance and to lesser traffic generators. Examples of minor arterials include: State routes between smaller cities; surface streets of medium importance in large cities; important surface streets in smaller cities.

Major and Minor Collectors

Major and Minor Collectors tend to provide more access to property than do arterials. Collectors also funnel traffic from residential or rural areas to arterials. Examples of major and minor collectors include: County, farm-to-market roads; various connecting streets in large and small cities.

Local

Local roads primarily provide access to property. Examples of local roads include: Residential streets; lightly-traveled county roads.

FEDERAL-AID ROADS

The NFC designation of a given road determines whether it is a federal-aid road. Federal-aid roads are eligible for federal funds, either as part of the National Highway System (NHS—usually limited to principal arterials) or through the Surface Transportation Program (STP). Federal-aid roads are, collectively: all principal arterials, all minor arterials, all urban collectors and all rural major collectors. If a road has an NFC designation of rural minor collector, it is not included in the definition of federal-aid road, but it does have some limited eligibility for federal funds. Roads classified as urban or rural local, are not eligible for federal-aid.

TOWNSHIP ROAD NFC DESIGNATIONS

In Brockway Township, State Trunkline M-19 is designated as a Minor Arterial; Yale Road, Norman Road west of M-19, and Metcalf Road (M-136) east of M-19 are designated as Major Collectors; Sayles Road and Connell Road are designated as Minor Collectors. The remainder of the roads in the Township are designated as local roads.

Problem Intersections

Some intersections in the Township could be identified as **problem intersections**. Problem intersections are defined in three ways:

1. **Two or more intersections falling closely together:**

When this happens, the number of turning movements will rise, thus increasing congestion and traffic hazard. At this time, there are no intersections of this kind in the Township.

2. **Intersecting streets that meet at angles other than 90 degrees:**

These kinds of intersections limit horizontal sight visibility and can create odd shaped lots that can be difficult to develop. The intersections of Collins & Fisher, Collins & Yale, Collins & Jeddo and Collins & Arendt all fall into this category.

3. **More than two streets intersecting in one spot:**

These kinds of intersections create additional turning movements and increased driver confusion, thus increasing congestion and traffic hazard. At this time, there are no intersections of this kind in the Township.

Generally, problem intersections can be corrected by realigning one or more of the roads in the intersection(s). If that is not possible due to space or geographic limitations, the addition of special signalization (and possibly channelization) can help to mitigate hazards associated with such problem intersections. Furthermore, future subdivisions, residential areas, and other local uses with access roads, must be carefully planned so as not to create new problem intersections.

Thoroughfare Plan

In formulating the Thoroughfare Plan, two important points must be understood. First, the existing mile-grid section line road system prevails in the Township and cannot be easily altered in any major way. Second, St. Clair County owns, maintains and has jurisdiction over most of the roads in the Township. Thus, the Township Thoroughfare Plan must take into account any plans made by the St. Clair County Road Commission.

COUNTY THOROUGHFARE PLAN MAP

The most recent thoroughfare plan map was prepared for Brockway Township in 1973 by the St. Clair County Road Commission in accordance with the Inter-County Highway Plan developed by the Inter-County Highway Commission of Southeastern Michigan (ICHC)⁶. The purpose of the ICHC (of which St. Clair County was a member) was to coordinate and acquire rights-of-way of inter-county highways on the ICHC Plan.

The County thoroughfare plan map also divided the County Thoroughfares of the Township into three of the four function/right-of-way categories described above. The County's planned designations are as follows:

Major Thoroughfares (150' R-o-W):

- Metcalf Road
- Emmett Road (from Metcalf Road to Oatman Road)
- Brockway Road (from Jeddo Road to Fisher Road)

Secondary Thoroughfares (120' R-o-W):

- Fisher Road
- Jeddo Road
- Yale Road
- Oatman Road
- Speaker Road
- Wilkes Road
- Norman Road
- Cork Road
- Brockway Road (from Wilkes Road to Jeddo Road)
- Sayles Road
- Connell Road

⁶Established in May 1956 under the Inter-County Highway Commission Act of 1925, as amended by Act 195 of 1955.

- Jordan Road
- Arendt Road
- Owens Road (from Jeddo Road to Fisher Road)
- Carson Road

Collector Thoroughfares (86' R-o-W):

- Emmett Road (from Oatman Road to Jeddo Road)
- Duquette Road
- McMahon Road
- Welch Road
- Owens Road (from Metcalf Road to Norman Road)
- Perry Road
- Fulton Road
- Collins Road

BROCKWAY TOWNSHIP THOROUGHFARE PLAN

In addition to the recommendations made by the County Thoroughfare Plan, this Master Plan makes the following recommendations:

1. Cork Road between Norman Road and Oatman Road should be downgraded from a secondary thoroughfare to a collector thoroughfare. This section of Cork Road has become isolated because of the de-certification of the section between Oatman Road and Yale Road. Therefore, it functions more as a collector thoroughfare than as a secondary thoroughfare.
2. Yale Road be should upgraded from a secondary thoroughfare to a major thoroughfare. Yale Road forms part of a County highway that runs from Lakeport west through to the City of Yale, then continues west into Lynn Township, then turns north to Brown City. Thus, Yale Road functions more as a major thoroughfare.
3. Brockway Road between Jeddo Road and Wilkes Road, and Wilkes Road between Emmett Road and Brockway Road, should both be upgraded from secondary thoroughfares to a major thoroughfares. These road segments are part of State Highway M-19 and therefore, function more as a major thoroughfares than secondary thoroughfares.
4. Emmett Road between Oatman Road and Wilkes Road should be downgraded from a major thoroughfare to a secondary thoroughfare, and Emmett Road between Yale Road and Oatman Road should upgraded from a collector thoroughfare to a secondary thoroughfare. Both of these road segments are designated as County Primary roads, and would seem to function as secondary thoroughfares.

5. That section of Metcalf Road west of State Highway M-19 should be downgraded from a major thoroughfare to a secondary thoroughfare. Only that part of Metcalf Road that is a part of State Highway M-19 should remain as a major thoroughfare.
6. Owens Road from Fisher Road to Jeddo Road should be downgraded from a secondary thoroughfare to a collector thoroughfare. This road segment is only one-mile long and therefore, functions more as a collector thoroughfare than as a secondary thoroughfare.
7. McMahon Road should be downgraded from a collector thoroughfare to a local thoroughfare. Almost one-half of this right-of-way has been de-certified by the Road Commission, leaving two separated road segments, one 0.37-miles long running south from Norman Road, the other 0.18-miles long running north from Metcalf Road. Both of these segments serve local access purposes only.
8. The County Thoroughfare Plan Map for Brockway Township shows a Mowerson Road as a secondary thoroughfare running along the west Township line from Fisher Road to Jeddo Road. Although the right-of-way for this road segment still exists, it has been de-certified by the Road Commission and is unimproved. This secondary thoroughfare should be removed.

Future Land Use Plan

The goal of land use planning is the improvement of the general welfare of the people of Brockway Township through the proper development of vacant land and where necessary, the redevelopment of existing areas for new uses that create a better community in which to live, work and recreate. In general, this land use plan is a guide for locating private and public uses in Brockway Township.

The land use plan is intended to be long range, comprehensive, generalized, flexible and regional, with the following broad objectives:

- Long range planning for land development to the year 2030.
- Comprehensive planning to provide for a variety of types of land uses, bearing a relationship to the land capability and transportation system.
- Generalized planning based upon broad principles of land use allocations and relationships.
- Flexible planning that is able to accept changes, yet not detract from the total plan.
- Regional planning transcending arbitrary boundaries and which is an integrated part of the regional system.

The land use plan is more than just a graphic presentation. Behind the graphics and maps are spatial distributions and relationships reflecting the specific goals and objectives described in the “*Goals & Objectives*” section of this Master Plan.

Concept Plan

The possible physical arrangements of the various land uses on vacant ground are infinite in number. Regional consideration, roads, existing land use, soils, topography, population growth and economic potential each are constraints on the number of possible arrangements. The goals and objectives set out earlier in this

Master Plan direct the possible array to a narrow band of alternatives. These possibilities are developed into a concept of the preferred general arrangement of land uses.

Due to the absence of concentrated development, the provision of public utilities for all of Brockway Township would be prohibitive. One of the assumptions in the land use plan is that sewer and water service will only be available to selected areas in the Township by the year 2030.

The long range land use plan for Brockway Township is based on analysis of the basic data presented in this Master Plan of trends in the Township and the surrounding areas. The plan for the Township is generally compatible with the Master Plan developed for St. Clair County by the St. Clair County Metropolitan Planning Commission. The recommendations for the separate land uses are graphically and statistically presented in eight classifications:

1. Agriculture & Rural Residential
2. Single-Family Residential
3. Multiple-Family Residential
4. Commercial
5. Public, Quasi-Public, Institutional
6. Industrial
7. Recreation, Conservation, Open Space
8. Right-of-Way

In developing the land use plan, evaluations were made of locations in the Township and adjacent communities in regard to where development will and should occur.

The majority of the Township is still in agricultural and rural uses and to provide utility service is very costly. Population densities must be planned accordingly.

The generalized land use plan for Brockway Township is designed so as to derive the maximum benefit for the residents. The land use plan illustrates the arrangement of land uses to meet the goals, capacity and trends in the Township.

Land Use Plan Map

A Land Use Plan Map has been prepared and is a part of this document. Following is a description of the general locations of the Plan's land use classifications:

AGRICULTURE & RURAL RESIDENTIAL

One of the Township objectives is to preserve the rural character of the Township through the thoughtful and proper arrangement of residential and rural land uses

within the Township. The Future Land Use Plan has attempted to designate well-defined areas for future residential development. By doing so, agricultural and rural uses can remain relatively free from urban competition for land. Scattered residential development could tend to fragment and discourage continued agricultural practices operating in the Township.

The areas outlined for agricultural and rural residential use, comprising most of the area of the Township (16,969.26 acres or 78.37% of the land area of the Township), would be the last to receive any municipal services. It is not anticipated that there will be urban pressures on this land by the year 2030, but if changes are proposed in these areas, they should be carefully examined in light of the problems they may create in demands for public services.

Here the term “rural residential” refers to single-family homes built primarily on relatively large lots, lots that are larger than typically found in suburban residential developments, but smaller than would be practical for normal agricultural use (but could be used for small “hobby” farms). Residential unit densities in this area should be 0.2 units per acre or less. Rural residential development should be (in so far as is practical) limited or directed toward areas where the soils have only slight or moderate limitations for septic system use.

SINGLE-FAMILY RESIDENTIAL

On the Land Use Plan Map, over 1,053 acres (4.86% of the land area of the Township) have been designated for single-family residential use, at a higher density than rural residential uses. This acreage is generally located near or adjacent to the City of Yale, along Yale Road, Brockway Road, Speaker Road and Jordan Road and the Brockway Plat. Much of the planned single-family residential area contains soils that have slight or moderate limitations for septic system use. The remainder of the planned single-family residential area is located such that planned single-family units could be served by public sewer and water extended from the City of Yale (such as the planned single-family area adjacent to the east of the existing Denrentin Heights subdivision).

MULTIPLE-FAMILY RESIDENTIAL

To provide for a wider range of housing types available in the Township, a planned 52.31-acre multiple-family residential area is shown on the north side of Yale Road adjacent to the City of Yale in Section 11. This planned multiple-family residential area is also adjacent to an existing multiple-family development in the City. Given the lack of public sewer and water in the Township, only a small-scale, low-density multiple-family complex could be built, such as a small development of condominium duplexes or one-story townhouses. Alternately, if sewer and water service was extended into this area from the City, higher density multiple-family development could be built (such as a planned manufactured housing community).

Without public sewer and water, the development of any multiple-family residential complex on this land would be contingent on the provision of a well

and septic system (or other form of on-site sewage disposal system) approved by the County Health Department.

COMMERCIAL

The Future Land Use Plan Map designates 144.98 acres in the Township (0.67% of the total area of the Township) for commercial use. To ensure proper access for commercial uses, the planned commercial acreage is divided into two corridors along Brockway Road, one adjacent to the north of the City of Yale and the other adjacent to the south of the City of Yale. This planned commercial acreage contains several existing commercial uses and provides room for expansion of these uses, as well as for construction of new commercial uses.

It is expected that any new commercial uses will be relatively low-density neighborhood and highway-oriented commercial uses that serve Township residents and complement existing commercial uses in the area.

PUBLIC, QUASI-PUBLIC, INSTITUTIONAL

Approximately 445.95 acres of the Township (2.06% of the total area of the Township) are designated for public, quasi-public and institutional uses. This acreage includes the Township Hall, the Yale Airport, as well as the existing cemeteries and churches. This acreage also includes a electric power transmission corridor running east-west through Sections 25–30 (this corridor connects with the DTE Energy power plant in Greenwood Township).

INDUSTRIAL

The Land Use Plan Map allocates 112.24 acres of land (0.52% of the total area of the Township) for industrial use. All of this acreage is located on two adjacent parcels on Oatman Road east of Brockway Road (M-19), between the Yale city limits and the Yale Airport.

It is intended that this industrial area be used for a planned industrial park. The kinds of uses envisioned for this planned industrial park are small-scale manufacturing, processing, warehousing, and research facilities, uses that do not result in nuisances or negative environmental impacts.

RECREATION, CONSERVATION, OPEN SPACE

In order to meet the various open space and natural resource objectives of the Township, 2,059.31 acres of the Township (9.51% of the total area of the Township) have been designated as open space, conservation and recreation areas. Most of this area consists of flood prone alluvial land, located along and near Mill Creek throughout its length in the Township, and has been given this land use designation to discourage that land from being developed. The remainder of this designation consists of the Township Park and a private nature preserve on Speaker Rd. in Section 15.

RIGHT-OF-WAY

Approximately 816 acres of right-of-way (3.77% of the total area of the Township) have been designated for existing roads (at existing right-of-way widths). These existing roads are described in the Thoroughfare Plan section of this document.

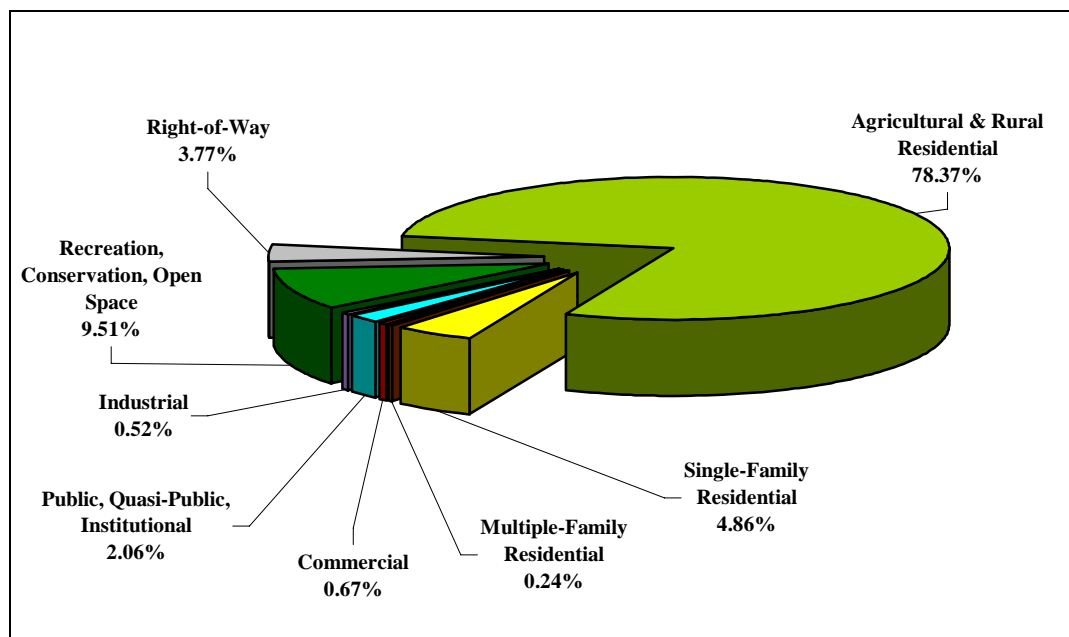
Acreege Allocations

The areas allocated to the various planned land use categories were measured from the Land Use Plan Map. The planned land use category measurements are summarized in the following table and graph.

Table 36: Planned Acreege

Land Use Category	Planned Acreege	
Agricultural & Rural Residential	16,969.26	78.37%
Single-Family Residential	1,053.02	4.86%
Multiple-Family Residential	52.31	0.24%
Commercial	144.98	0.67%
Public, Quasi-Public, Inst.	445.95	2.06%
Industrial	112.24	0.52%
Recreation, Cons., Open Space	2,059.31	9.51%
Right-of-Way	816.25	3.77%
TOTAL:	21,653.32	

Figure 14: Acreege Allocations



Capital Improvements Programming

Each type of land use has different degrees of need for local public facilities. For example, a community will need different levels of water and sewer system improvements if the comprehensive plan recommends certain densities of residential development or commercial use for a certain location. These and other possible changes in land use policies necessitate a Capital Improvements Program (CIP).

The public improvement investments expressed in a CIP can also be used to permit or control phasing of land developments, since public facilities investment decisions directly influence the location, intensity and rate of land development.

Purpose and Uses

In its basic form, a CIP is a complete list of all proposed public improvements over the next six (6) year period, including costs and operation expenses. The CIP outlines the projects that will replace or improve existing facilities or that will be necessary to serve current and projected land use development in Brockway Township.

Proper management of municipalities today requires not only that a CIP be developed, but also that it be updated annually. Advanced planning for public works projects ensures more effective and economical capital expenditures, as well as the provision of public works in a timely manner. Since municipalities face ongoing expenses, the development of a CIP makes it possible to strike a balance between maintenance and operational expenses for the construction of public works.

Recommendations presented in the CIP can serve to guide Brockway Township

investments in public facilities to provide necessary services to all land uses. Furthermore, with a CIP the Township can monitor its balance of borrowing power and municipal credit rating, which in turn affects the interest rates the Township must pay when it borrows for public works construction.

As established by the Township Planning Act (P.A. 168 of 1959), the Brockway Township Planning Commission has, as one of its powers, the power to prepare a viable and fiscally responsible program of capital improvements to facilitate the review and approval of public improvements by the Planning Commission, as required by Section 10 of the Act.

CIP Preparation

The CIP process includes the following:

- Determining the type, scale and level of service of public improvements.
- Establishing the timing and beginning date for recommended public improvements
- Determining the method of financing the public improvements, including the capability of paying operational expenses once the facility is finished.

Keep in mind that, even though the Planning Commission may be responsible for preparing the CIP, the Brockway Township Board of Trustees is always the final authority when it comes to allocating and spending money. Therefore, it is crucial that the Planning Commission work closely with the Board of Trustees and other Township officials every step of the way.

There are six major steps in the preparation of the CIP. The Planning Commission should:

1. Identify public capital facilities needed in the next six years to meet basic public service demands of Township residents.
2. Conduct special studies to further define specific public facility needs in advance of appropriating any funds for such a facility.
3. Provide Township residents with the opportunity to participate in the CIP process through public hearings.
4. Coordinate capital improvements with the Brockway Township Comprehensive Plan.
5. Reconcile capital improvement costs of the Brockway Township CIP with anticipated financial resources of the Township; identify all possible sources of revenues to aid in the financing of recommended public improvements.
6. Seek coordination of the Brockway Township CIP with similar programs of neighboring units of government and public utility companies that provide

services in the Township.

The scope and extent of a CIP will vary greatly among municipalities. In small population, slowly growing municipalities, the need for financial planning of public improvements may seem minimal, whereas in larger population, more rapidly growing municipalities the CIP may be a very sophisticated document. Regardless of the size of the municipality, the CIP must be based on realistic financing. Therefore, a working knowledge of the Township's financial position—budget revenues, annual operating expenses, debt costs and cash reserves—is necessary.

Financing a CIP

The capital improvements program provides an overview of what elected officials and policy makers within the Township foresee both as short and long term issues with respect to public investments, public facility needs and the ability of the Township to meet the investment requirements.

At this point, then, it is necessary to obtain a listing of all the sources of revenue available to the Township for financing public improvements. Among the financial sources that should be considered are: cash payments from general fund revenues, revenues from other operating funds, special assessments, general obligation (full faith and credit) bonds, revenue bonds, grants, loans or gifts.

In order to prepare a realistic set of capital project recommendations, however, it is also necessary to obtain a listing of the expenditures of the Township. This would include costs for all operations, maintenance, equipment and debt service.

Of all the expenditures a municipality incurs, debt service, of course, has priority, since it represents the Township's committed obligation to pay. Therefore, the real balance of CIP expenditures must be struck between the cost of operation and maintenance activities and capital expenditures. In short, the Township should not build that which it cannot afford to maintain.

If the Township is going to depend upon general fund revenues to finance the CIP, it will be necessary to analyze the sources of revenues for the general fund. These sources generally include property taxes, state and federal shared revenues, license and permit fees. The revenues for the life of the CIP will have to be projected from past and current general-fund revenues.

It may be possible to finance some public improvements, at least in part, from separate operating funds or voted special millage. Many public utilities operated by municipalities have special purpose funds designed to finance, operate, maintain and improve the utility system. These funds are, by law, separately accounted for and segregated from the general fund. The operating income for these funds comes from customer service bills and connection fees. Such funds should be evaluated in the same manner as recommended for the general fund.

In order to make use of the other possible sources of funding, the Planning

Commission will need some specialized help. A planning commission, of course, cannot simply declare a special assessment or commit a community to bonding. If these sources of revenue are to be tapped, it will be necessary to work closely with the Board of Trustees and Township Attorney. Permission to sell full faith and credit bonds must be given by the electorate. If the Township uses bonding to finance its CIP, it will be necessary to include the debt service costs in each year's operating budget.

Regardless of how the CIP is financed, only part of the work is done when revenues have been estimated. It is then necessary to estimate projected expenses for the next six years. Each year as the CIP is updated, it is necessary to add another year's revenues and expenses.

Projecting expenses, especially those to be incurred by the general fund, is neither easy nor precise. The need for services, maintenance operating costs and increases in personnel cannot be precisely predicted six years in advance. Furthermore, it is necessary to make predictions for every department in the Township, as well for all those functions operated jointly with other units that draw from the Township's general fund. Some allowances must also be made for inflation.

Once revenues and expenses have been evaluated for the next six years, the two must be compared to determine how much the Township can afford, at least from these sources, for capital improvements. If the revenues the Township has calculated do not cover the expenses expected, the CIP may have to be scaled down, unless some additional means of financing can be found or cuts operation expenses can be made.

Classification of Proposed Capital Improvement Projects

Once the evaluation of future revenues and expenditures is complete, the Planning Commission should make an inventory of all proposed public improvement projects. Quite likely, the cost of all the projects will far exceed anticipated financial resources. Therefore, it will be necessary to develop a system of project classification and priority selection that will balance the cost of the projects with the available money.

The procedure should ensure that the projects are judged objectively. The system should coordinate and time public projects to afford maximum public benefit and to ensure an adequate level of public service to developing neighborhood areas. One way to classify projects is to divide them into three categories:

PHYSICAL CAPITAL IMPROVEMENT PROJECTS

These are projects for land acquisition or for the development of physical assets in the Township. They include buying land for a new park, improving or constructing Township buildings, installing sewer or water lines, or paving a previously unpaved road.

CAPITAL REPLACEMENT/MAINTENANCE PROJECTS

These projects include the replacement or major repair of a fixed tangible asset owned and used by the Township. Includes replacement of an automobile, fire truck or construction of a replacement garage. Examples of capital maintenance would be resurfacing a public street or renovating a Township owned building.

CAPITAL PROJECT FEASIBILITY/NEEDS STUDY

Sometimes studies are necessary to clarify and define proposed projects. Often there is a general awareness of the need for projects of a particular type, but there is insufficient information available to demonstrate the scale, time, feasibility or cost of such a project. Such studies provide a firmer information base for future capital improvements that more accurately reflect existing and expected needs.

Setting Priorities

When the projects have been identified and classified, they must be placed in order of priority. At this point, the goals and policies of Township development contained in the comprehensive plan should be carefully reviewed. These goals, general as they may be, can serve as a guide to setting priorities for public improvements.

Some of the important factors that should be considered in judging the CIP proposals are:

- Protection of life.
- Maintenance or improvement of public health.
- Protection of property.
- Conservation of resources.
- Maintenance of physical property.
- Provision of necessary and basic public services.
- Replacement of obsolete facilities.
- Public comfort and convenience.
- Reduction in operating costs.
- Recreation value.
- Economic value.
- Social, cultural or aesthetic value.
- Potential effect on future developments.

- Relative value with respect to other services.

CIP Process in Detail

1. The Planning Commission requests all publicly supported agencies to submit a CIP budget form for every proposed project for at least the next six years. Each proposal form for each project should include:
 - Name and description of the project.
 - Estimated cost.
 - Proposed method of financing.
 - Agency assigned priority for the project if more than one is submitted.
 - How the project conforms to the Township's comprehensive plan and zoning ordinance.
 - Beneficiaries of the project.
 - Estimated increase (decrease) in personnel, equipment, material and supply costs that will have to be added to the annual operating budget if the project is approved.
2. The Planning Commission summarizes the projects and forms the agencies of the total listing, along with the cost estimates of each project. This summary includes CIP proposals prepared by the Planning Commission itself.
3. The Planning Commission reviews each project individually as to the agency's need and priority.
4. The Planning Commission evaluates each of the projects, including its own; sets some preliminary priorities; and prepares a tentative Township CIP.
5. The Planning Commission meets individually and collectively with the agencies and Township officials to resolve differences and come to some general agreement on projects.
6. The Planning Commission convenes a public hearing.
7. The Planning Commission prepares the final CIP and recommends it to the Board of Trustees.
8. The Board of Trustees reviews the CIP, accepts and adopts it, or returns it to the Planning Commission with recommendations for amending.
9. If the CIP has been returned, the Planning Commission reviews and deals with the Board of Trustees' recommendations and returns it to the Commission for adoption.
10. The Board of Trustees makes the final determination on the CIP. Upon adoption, the first year of the CIP becomes the capital budget portion of that

year's annual Township budget.

11. The CIP must be reviewed and updated annually. Priorities may be rearranged from one year to the next; funding may change; etc. Both the Commission and Board of Trustees must be alert to changes within the Township so that the CIP remains useful and current.

Implementation Strategies

It should be realized that the Comprehensive Master Plan represents what the Planning Commission believes to be the best future use of land based upon today's knowledge and trends. The Plan is not a rigid, unchanging document. Changes will be necessary and should be made not only to adjust to new trends as they become apparent, but also to allow flexibility in cases where an alternative use may be as desirable as the one shown on the Plan. Timing is a very important aspect. Some proposals should be carried out as soon as possible, especially those that require acquisition of land that will eventually become more expensive as development occurs. Other proposals, however, should be delayed until the need arises as the land use relationships indicated on the Plan begin to materialize.

If the Plan is to be eventually realized, planning must be established and worked at on a continuing basis. The Planning Commission should continue to take an active role in reviewing proposed developments in the light of the long-range goals of the Township. Certainly, the Plan must not be regarded as a "straight jacket" for growth. Changing conditions and technology will necessitate revision in the future. The Comprehensive Master Plan should instead be thought of as a flexible framework within which public and private action may take place, thus producing a Township in which the citizens are afforded a maximum of convenience and enjoyment.

Implementing the Plan

There are four primary means through which the policy recommendations of the Comprehensive Master Plan can be implemented:

1. Updating the Zoning Ordinance
2. Capital Improvements Budget
3. Site Plan Review

4. Code Enforcement

The following is a brief discussion of the various activities that should be considered in implementing the Comprehensive Master Plan.

UPDATING THE ZONING ORDINANCE

The Township, upon adoption of the Comprehensive Master Plan, should undertake a review of its zoning ordinance. The Comprehensive Master Plan should serve as the guide for future zoning action. The Plan illustrates what would be most desirable and shows the direction that future zoning changes should take. The zoning map may be thought of as a very short-range plan that is designed to protect existing development from encroachment by incompatible uses and where possible, promotes future land use in accordance with the Comprehensive Master Plan. The Zoning Ordinance should be reviewed in relation to the Plan. Certain changes in the Zoning Ordinance, particularly in the Zoning Map, may be desirable to better reflect policies set forth in the Plan.

CAPITAL IMPROVEMENTS BUDGET

The Capital Improvements Budget is basically a financial plan. It is guided by and includes improvements indicated as needed in the Comprehensive Master Plan. Improvements such as roads, sewer and water lines, parks, parking lots, etc. are included. The first step must be to determine the priority in which the improvements are to be provided. The Capital Improvements Budget covers a five or six year period and indicates the year in which a particular improvement is scheduled and the means of funding. At the end of the period, a new Capital Improvements Budget should be prepared. Sources of funds for improvements include: the general fund of the Township; proceeds from the sale of bonds (general obligation, building authority or revenue bonds); special assessment districts; tax increment finance districts; Federal & State grants.

SITE PLAN REVIEW

Site plan review is a process by which documents and drawings specified in the zoning ordinance are reviewed to ensure that a development proposal complies with local, state and federal regulations. As defined by Michigan law, a site plan is a plan, drawn to scale, showing the layout of proposed uses and structures. Unlike a plat—which only depicts the subdivision of a parcel into smaller lots along with necessary roads and easements—the site plan includes lot lines, streets, building sites, existing structures, reserved open space, landscaping, utilities, and any other required information. Site plans should be prepared and sealed by licensed professionals including land surveyors, engineers, architects, or landscape architects.

Site plan review can be applied to all development projects. State enabling legislation requires local site plan review for subdivision plats, planned unit developments (PUDs), cluster housing and special or conditional uses specified in the zoning ordinance. For other types of permitted uses to be subject to site plan

review, the procedures and standards must be specified in the zoning ordinance. Such permitted uses may include:

- Multiple family residential;
- Site condominiums;
- Commercial and industrial uses;
- Institutional uses;
- Public projects, such as libraries, parks, government buildings, etc.

Site plan review should also be required for any changes to existing development, such as expansions, demolition, moving of structures, etc. Individual single- and two-family homes, and farm buildings are usually exempt from site plan review, requiring only a plot plan showing building setbacks, and which may include drainage provisions for a building permit.

Site plans are reviewed to assure:

- Compliance with applicable zoning standards;
- Public facilities are adequate to serve the site;
- The layout is compatible with the topography and natural features of the site;
- Structures are appropriately sited and the property landscaped to reduce impacts on adjacent properties;
- Compliance with applicable local, state and federal regulations.

The following elements should also be covered in the site plan regulations and standards contained in the zoning ordinance:

- Safe traffic flow, parking, ingress and egress, emergency vehicle access;
- Loading and unloading of goods;
- Topography and soils;
- Stormwater management;
- Sanitary sewer and water (if applicable);
- On-site septic systems and wells;
- Gas, electric, and other utilities;
- Landscaping/buffering/screening/fencing;
- Trash and dumpsters;
- Signage;
- Open space;
- Natural hazards;
- Historic structures;
- Lighting;

- Accessory structures;

Site plan review can be an effective and powerful land use decision-making tool. Any deficiencies in compliance can result in denying the proposed use for the land. From the community's perspective, site plan review can be used to ensure that development projects are consistent with the goals, objectives and policies of the Master Plan and that standards of the zoning ordinance are met. Site plan review also works well to ensure that the development has a good physical design, that it relates to the presence of the community's infrastructure, that it is compatible with adjacent land uses and it will not have an adverse effect on the natural environment. It is a tool that can help a community achieve and maintain its desired character.

CODE ENFORCEMENT

No matter how up-to-date the zoning, subdivision, or other land use ordinances may be, they are of little value unless the community has an effective code enforcement program. In order to provide an effective enforcement program, the community must have a code enforcement officer with the financial and political backing to consistently enforce the ordinances and consistent procedures for dealing with code violations.

Code Enforcement Officer

State statutes (MCL §764.9c and §41.183) implicitly allow Townships to establish by ordinance, the position of Code Enforcement Officer. The ordinance establishing the position must designate the official or other person to serve as the Code Enforcement Officer and the scope of his or her authority.

The state statutes also do not specify any specific official or other person as the Code Enforcement Officer, nor are the specific duties laid out, other than to state that the officer may issue appearance tickets for misdemeanors or citations for civil infractions. Most communities, however, may assign such duties to the Zoning Administrator or the Building Inspector.

Code Enforcement Procedures

The following is a listing of the typical steps involved in code enforcement:⁷

1. The zoning ordinance (or subdivision, etc.) violations are "discovered" when the community becomes aware of their existence. The two primary means of discovery are active enforcement and complaint. Active enforcement occurs when the enforcement official seeks out violations by frequently monitoring properties in the community. For example, the enforcement official may periodically drive through residential areas looking for non-conforming uses. Complaint-based discovery occurs when an individual reports a possible violation to the Township. For example, someone reports that a neighbor is

⁷ *The Township Guide to Planning and Zoning*, pp. 186-189: 1998, Michigan Townships Association

using a garage as an auto repair business. No matter what form of discovery is involved, photographs or videotape recordings, if appropriate, showing the violation should be taken when an ordinance violation is discovered. These should always be dated and the location and time of day noted.

2. The property owner is notified in writing of the violation. The written notice should indicate: the nature of the violation, including the appropriate ordinance reference or a copy of the ordinance or provision; the name and address of the property owner (who is ultimately responsible for the violation); the date the violation was discovered and by whom; actions necessary to bring the situation into compliance; potential penalties, and a date by which the violation must be corrected.
3. A reasonable time limit should be given that is related to the effort needed to correct the violation. If the violation is a clear safety hazard, it should be corrected immediately. Shortly after the date given for correcting the violation, the enforcing officer should recheck the situation to ensure compliance has been achieved. However, note that the violator may also appeal a zoning ordinance violation to the zoning board of appeals or request a variance.

If the recheck finds that the violation is still present, the enforcement officer may either proceed directly to legal action, or send a second notice. The second notice, which should be more strongly worded than the first, should be sent by return receipt mail. This notice may be prepared by either by the Township attorney or by the enforcement officer. If written by the enforcement officer, a copy should be sent to the Township attorney. The second notice should have the same information as the first, but will normally have a shorter completion date.

4. When written notices fail to produce compliance, the last step in the enforcement process is any legal action necessary to produce compliance. Depending on how the township zoning ordinance treats the violation, the violation may be enforced as a misdemeanor, a municipal civil infraction, or a Circuit Court injunction.

Until 1994, a violation of any township ordinance, including the zoning ordinance, could only be punishable as a criminal misdemeanor, subject to fines not exceeding \$500 and/or 90 days in jail. For violations involving misdemeanors, a notice to appear before the district court is served on the violator. If the violator fails to appear, a complaint and warrant for the violator's arrest and arraignment before the district court is issued.

Effective May 1, 1994, townships are authorized to decriminalize all or some of their infractions by amending ordinance penalty clauses to provide for civil infractions. PA 24 of 1994 amended the Township Zoning Act to either impose a penalty for violating an ordinance or designate the violation as a municipal civil infraction and impose a civil fine. The new Michigan Zoning Enabling Act (Act 10 of 2006) also continues this provision. Also, townships are

authorized by the Municipal Civil Infractions statute (MCL §600.8701, *et seq.*) to establish by ordinance a municipal ordinance violations bureau to accept admissions of responsibility for municipal civil infractions and to retain the fines and costs received on such matters for the township. The bureau must use a fee schedule adopted by the township board designating the prescribed fines and costs for each violation.

The civil infractions process is similar to that used by police for speeding tickets and other moving violations. Township officials can write civil infractions tickets with little or no involvement by the township attorney. A district court judge makes the final decision if a defendant challenges a civil infraction ticket. The court has much more discretion in setting fines for civil infractions than misdemeanors, including the possibility of ordering the defendant to reimburse the township for its attorney fees, engineering fees or other associated costs. The court also has some equitable jurisdiction where a civil infraction is involved, with the authority to issue an order requiring the violator to cease and desist or correct the situation, a power that is generally not present with a criminal misdemeanor.

In some situations, equitable relief such as an injunction or a mandatory order is more desirable. This may be accomplished more directly in Circuit Court by a written complaint and summons served on the violator. The township attorney will guide the actions of the enforcement officer in cases such as these. It is essential that all notes, pictures, videotape, copies of notices, copies of relevant ordinance provisions and any other materials related to the violation should be gathered and protected from loss. The enforcement officer should be aware of the legal process, including knowledge of depositions, testifying, and other relevant requirements.

Additional Strategies

Following are a few additional strategies that the Township may want to pursue in order to encourage and control development within the Township.

FARMLAND PRESERVATION

With regards to the Township's objective for preserving and protecting farmland, agricultural land uses and the rural character of the Township from development, the following tools may assist the Township in achieving those objectives:

Farmland Agreements (formerly P.A. 116)

An important tool used across the State in protecting farmland from urban development is Part 361 of the Natural Resources And Environmental Protection Act, P.A. 451 of 1994 (the terms of which were formally found in P.A. 116 of 1974). Under the terms of Part 361, an owner of certain kinds of agricultural lands may enter into a Development Rights Agreement with the State, whereby the landowner agrees to keep the land in question in agricultural use for at least ten years (or up to 90 years, as established in the agreement). In return for this

Agreement, all property taxes paid in excess of 3.5% of the landowner's income will be refunded in the form of a State income tax credit. In addition, the property in question will be exempt from any local special assessments imposed during the term of the agreement. If the landowner terminates the Agreement before it expires, all tax credits attributable to the Agreement received in the last seven years of the agreement must be repaid to the State, plus interest (except for special cases, where repayment terms may differ). Agreements may be renewed for a minimum 7-year term (up to 90 years total). If the landowner chooses to let the Agreement expire without renewal, then repayment of tax credits attributable to the Agreement received during the last seven years under the agreement is required (without interest).

Eligible agricultural lands include:

- An operating farm of more than 40 acres in size;
- An operating farm of 5 to 40 acres with a gross annual income of \$200 per tillable acre;
- An operating specialty farm (as designated by the Michigan Department of Agriculture) of at least 15 acres with a gross annual income of at least \$2,000.

At least 51% of the land in an operating farm must be under active cultivation or in pasture. The property owner does not have to provide public access to the land and the property may be sold. New owners, however, are bound by the agreement until it expires.

Although this is a State program, local communities are responsible for processing and approving applications to enroll in the program. Furthermore, the Township can encourage owners of prime and unique agricultural land within the community (and lands designated for agricultural use in the Master Plan) to enroll in the program.

Purchase of Development Rights

Development rights represent the right of a landowner to develop property to the extent allowed by law. All parcels of property have a variety of rights associated with them, such as mineral rights, access and utility easements, and development rights. These rights may be conveyed or sold off by the property owner to other parties.

A purchase of development rights program (PDR) is a means of compensating farmers for their willingness to accept a deed restriction on their land limiting or prohibiting future development of the land for non-agricultural purposes (i.e., giving up the development rights). Generally, landowners are compensated for the fair market value of their land, based on the difference between what it could be sold for on the open market with no restrictions and what it could be sold for once an easement restricting development is placed on the land. An easement is a restriction on private property that is legally binding on present and future landowners (the easement "runs with the land").

PDR—State Program

Section 36111 of Part 361 of P.A. 451 of 1994 directed that all proceeds from expired or terminated farmland agreements be set aside for a state PDR Program until October 1, 2000. After that date, all proceeds from expired or terminated farmland agreements, as well as all unexpended funds from the state PDR program were to be placed into the Agricultural Preservation Fund, effectively ending the state PDR program (at least in terms of direct purchases by the state).

The Agricultural Preservation Fund was created by Part 362 of P.A. 451 of 1994 to provide grants to eligible local units of government to purchase agricultural conservation easements from the owners of eligible farmland. Local units of government obtain grants from the Fund by submitting an application to the Agricultural Preservation Fund Board.

PDR—County Program

Some counties in Michigan have established (or are in the process of establishing) their own PDR programs to complement that run by the State. These county-level PDR programs are often supported by a specially designated millage. In 2004, St. Clair County established its own PDR program, administered by the St. Clair County Agricultural Preservation Board. The program is financed by the St. Clair County Farmland Preservation Fund, which is made up of funding from county, state, federal and private funding sources.

Owners of qualifying agricultural parcels may apply to the Agricultural Preservation Board to sell the development rights of those parcels during the annual application period. Qualifying agricultural parcels are those that have at least 51% of the parcels area devoted to active agricultural use and no more than 49% devoted to non-agricultural open space consisting of wetlands, woodlands or otherwise unusable land. Qualifying agricultural parcels must also meet requirements for local zoning and master planning designations.

After the application deadline, the Agricultural Preservation Board reviews submitted applications and ranks the applications according to selection criteria found in the ordinance establishing the program. The Board then prioritizes the top-scoring applications based on available funding, and submits this prioritized list to the County Board of Commissioners for preliminary approval.

The Agricultural Preservation Board appraises all parcels that it selects to purchase development rights of and then settles on purchase terms with the parcel owners. After final approval by the County Board of Commissioners, the PDR transactions are completed.

OPEN SPACE PRESERVATION

With regards to the Township's objectives for preserving and protecting open space from development, the following tools and techniques may assist the Township in achieving those objectives:

Land Acquisition

The most effective control over land use from the public perspective comes when the public owns the land. This is especially true when communities wish to set aside land for open space and conservation purposes. However, many communities, particularly rural ones, do not have the financial resources to purchase sufficient amounts of land.

Fortunately, there is Federal, State and County funding available to assist local communities in acquiring open space and conservation land. The Land and Water Conservation Fund, a Federal grant program, and the Michigan Natural Resources Trust Fund, a State grant program, both provide sources of funds for public acquisition of lands for recreation and conservation purposes. To qualify for funding under these two programs, communities must have a parks and recreation plan that complies with current Michigan Department of Natural Resources requirements. In addition, revenues from the St. Clair County Parks and Recreation Millage are distributed to the municipalities of the County, to be used to fund local recreation projects and programs, including land acquisition for parks.

Conservation Easements

A conservation easement is a method of preserving open space without purchasing all rights to a parcel of property. Rather than obtaining *fee simple*, or complete ownership, a community (or non-profit land trust or land conservancy) can purchase (similar to the purchase of development rights programs described earlier) or acquire by gift an easement to the property. Initiation of easements by the landowner is voluntary; however, after signing, the easement is an enforceable document binding both parties. When an owner places a conservation easement on a parcel of property, certain rights to develop all or part of the land are transferred to another person or organization. When the easement document is properly signed and recorded in the county land records, owners cannot exercise the rights that have been given up.

Under Michigan law, conservation easements may extend for a limited period (such as 10 to 20 years) or they may be permanent. However, to benefit from Federal income tax and estate tax reductions, a permanent conservation easement must be granted. Conservation easements must be donated to a government agency, a university or a non-profit organization to be eligible for tax reductions.

Furthermore, conservation easements:

- Are very flexible; the owner may restrict, limit or decide how development will proceed on the subject parcel;

- Do not remove the land from the property tax rolls;
- Do not automatically allow public access to the subject parcel, unless that is part of the easement agreement;
- Do not limit the owner’s right to lease or sell the subject parcel, but because the easement runs with the land, subsequent owners/lessors are bound by the easement agreement;
- May specify what the land may be used for in future years;
- May identify where structures may or may not be placed;
- May provide access for fishing or hunting;
- May provide for future activities such as construction of trails or other recreation facilities;
- May prohibit location of commercial and multifamily structures or billboards, or other uses on the subject parcel;
- May prohibit excavation or removal of gravel, soil and/or vegetation.

Local government officials can take several steps to encourage the use of conservation easements:

1. Identify priority resource areas where conservation easements would be beneficial for the protection of water quality, wildlife habitat and environmentally sensitive lands and resources.
2. Contact landowners in the selected areas, informing them of the option of easements and related financial incentives.
3. Encourage the participation of local land trust and land conservancy organizations to promote the easement concept and to receive conservation easements if there is a high degree of citizen interest for the preservation of open space. Land trusts and land conservancies are non-profit organizations directly involved in protecting land for its natural, recreational, scenic, historical or agricultural value. Two land conservancies that serve St. Clair County are the Blue Water Land Conservancy and the Southeast Michigan Land Conservancy.

Open Space Agreements

Landowners may dedicate a portion of their development rights to either the State or the Township through the “open space” provisions in Part 361 of the Natural Resources And Environmental Protection Act, P.A. 451 of 1994. These provisions enable a landowner to enter into a development rights easement in exchange for property tax relief. The minimum time allotment for an Open Space Agreement is ten years. Agreements may be renewed if the property owner desires.

There are two open space options with which a property owner may become involved: **designated** open space lands or **local** open space lands. Designated lands are those recognized as unique or sensitive by the State and include open spaces with historic, riverfront, or shoreland areas. The program requires that the

parcel be undeveloped, and recognized as either historic by Federal standards or included in areas designated for protection under State acts (e.g., area designated as a natural river per P.A. 231 of 1970, or high risk erosion area under Part 323 of the Natural Resources And Environmental Protection Act, P.A. 451 of 1994). Designated open space agreements are between the property owner and the State. There is no loss of property taxes to the local government for state designated areas.

Local open space lands are those areas approved by a local governing body to conserve natural or scenic resources, promote conservation of soils, wetlands, beaches, or preserve historic sites and idle potential farmland. Local open space agreements are between the property owner and the local unit of government. The local governing body provides a tax break to the property owner based on the difference between the value of the unrestricted land versus the value of restricted land under the agreement.

The property owner does not have to provide public access to the land (although the owner may do so), and the property may be sold. New owners, however, are bound by the agreement until it expires. Although the community loses taxes in the form of reduced assessments, it can avoid many of the high costs of providing public services to lands that have been prematurely developed.

The local community does have the right to place a lien on the property in an open space agreement and to collect ad valorem taxes for the last seven years of the agreement if it is sold after the agreement is expired, or if it is converted to a use prohibited by the former open space agreement.

Rural Clustering

Rural clustering is a set of techniques (primarily zoning) that focus on preservation of open space in rural areas by encouraging new residential development to cluster in a few selected areas on a parent parcel, rather than being spread across the entire site. This permits large portions of the parent parcel to remain open. The dwelling units are clustered in areas that are screened from main roadway views, out of sensitive environmental areas, avoiding prime farmland (unless there is no other location), and in locations where they can be effectively provided with services. Open spaces remaining after clustering are protected in perpetuity through a range of legal mechanisms (such as conservation easements). While the development rights of open space on a parcel approved for rural clustering will have been permanently retired, the land can still be actively farmed, used for woodlots, nurseries, pasture, or recreation. Ownership typically remains with a property owners association, a condominium association, or the open space can be transferred to a conservancy or the community. Two principal variations include:

1. Clustering options that create common landscaped open space for recreation by residents of clustered units in addition to the larger, more natural (unaltered) open space, and,
2. Cluster layouts that focus more on individual lot open space that is integrated with the larger, more natural open space area.

Figures 15 and 16 illustrate examples of a standard subdivision and a cluster subdivision on the same parcel.

Figure 15: Standard Subdivision

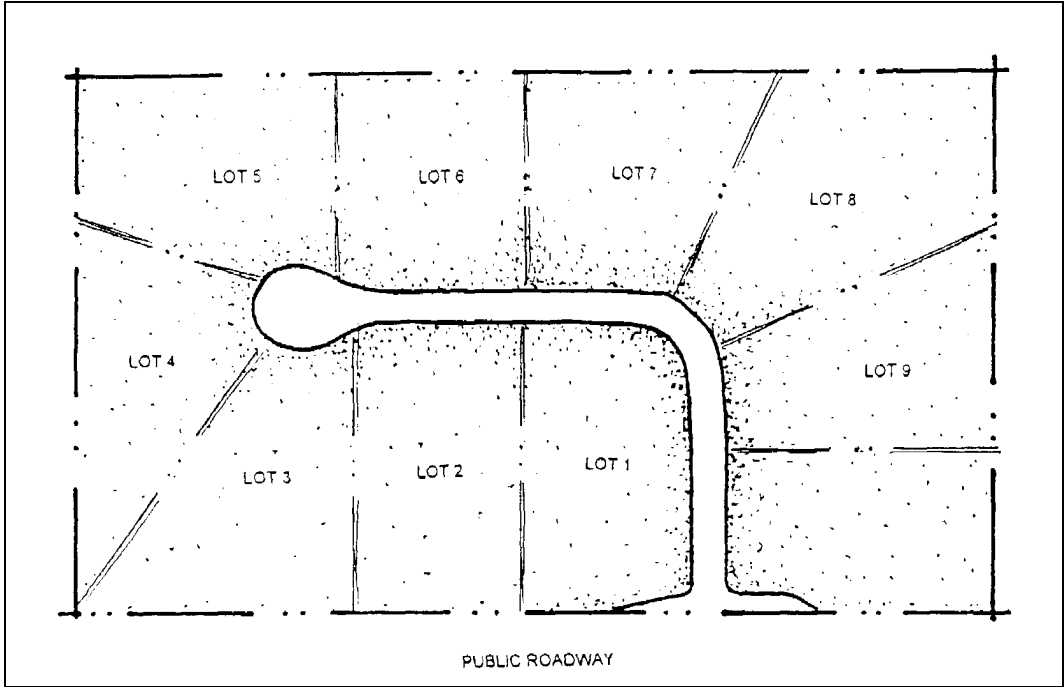
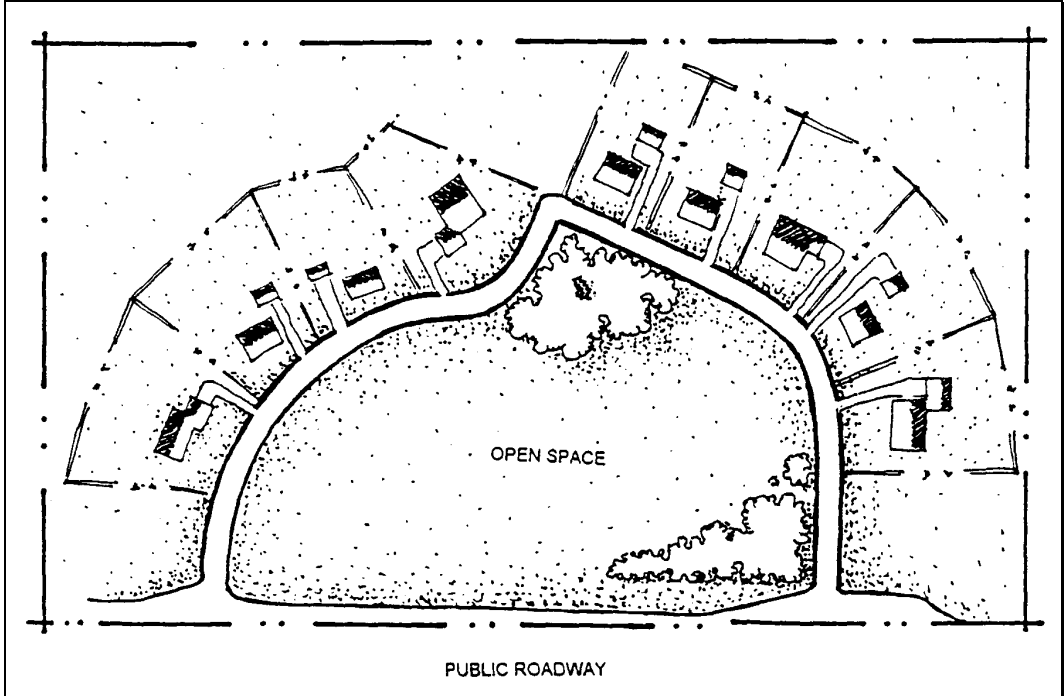


Figure 16: Cluster Subdivision



STORM WATER MANAGEMENT

Storm water runoff is precipitation in the form of rain or melted snow that flows over the ground and other surfaces and into drains (man-made and natural), streams, rivers and lakes. The quality and amount of storm water runoff can have serious impacts on the quality of streams, rivers and lakes. As storm water runs across yards and fields, it can pick up excess fertilizer and pesticides and as it runs across roads and parking lots, it can pick up debris, oil, grease, excess road salt and other materials. These materials, once they are carried into streams, rivers and lakes by the storm water runoff, can severely damage the ecosystems of those bodies of water. Impervious surfaces such as parking lots, roofs and roads can increase the flow rate of storm water runoff far beyond the natural rate. This can lead to overloaded drains, floodplains, wetlands and sewer systems. Storm water runoff flowing at a high rate can also lead to erosion of riverbanks and shorelines, which can produce excess sedimentation that can also damage the ecosystems of streams, rivers and lakes.

In order to protect the quality of water in streams, rivers and lakes, communities should have policies and standards in place that encourage the use of storm water Best Management Practices (BMPs) whenever possible to minimize, collect and treat storm water. Storm water BMPs consist of methods or a combination of methods that prevent or reduce water pollution, such as the following examples:

- Require developers to include detention ponds that detain storm water, and let it out slowly (at the “natural” flow rate) until the pond is dry;
- Require developers to include retention ponds that “retain” storm water, holding it until it infiltrates into the ground or evaporates;
- Regularly clean and maintain municipal storm water systems;
- Encourage the preservation of natural vegetation along riverbanks and shorelines, to help filter pollutants and sedimentation from storm water;
- Make off-street parking requirements more flexible, allowing for smaller parking lots to reduce the amount of impervious surfaces in the community;
- Encourage parking lot landscaping that can also serve to filter and reduce the flow rate of storm water;
- Discourage the overuse of fertilizer and pesticides;
- Encourage the proper disposal of waste oil and other refuse;
- Encourage cluster housing developments that require fewer roadways and shorter driveways;
- Prohibit all physical connections to the storm water drainage system that convey any material other than stormwater;

- Implement measures to detect, correct and enforce against illegal dumping of materials into storm drains, lakes and streams,
- Implement spill prevention, containment, cleanup and disposal techniques to prevent or reduce the discharge of pollutants from commercial, industrial and municipal sources into stormwater.

A comprehensive listing of storm water Best Management Practices can be found in Chapter Six of St. Clair County's Northeastern Watersheds Watershed Management Plan, which was adopted in 2006.