Table 1. Descriptions of Regions Defined on the Map of Summer Total Phosphorus in Lakes in Minnesota, Wisconsin, and Michigan.

Each map unit was defined by the apparent pattern in total phosphorus values and associations with geographic characteristics, including physiography, soils, geology, land use, vegetation and lake density. The regional descriptions of each map unit are described below, especially those features that distinguish one region from its neighboring regions. The variations in the descriptions are due to the lack of uniformity of classifications used in the individual state maps

The reliability indicator for each region was determined by assessing the heterogeneity in the pattern of phosphorus values, the quality and the quantity of the data that were used to establish the boundaries, and the strength of the associations between patterns of total phosphorus values and geographic characteristics. Each region has an indication of reliability; either good, fair, or poor.

47-1

Region 47-1 is characterized by very high total phosphorus values, most are greater than 100 μ g/l and nearly all are more than 50 μ g/l. These concentrations are associated with the predominance of agriculture and prairie potential natural vegetation (PNV). Reliability: good

49-1

Region 49-1 is a distinctive area of relatively high total phosphorus values likely to be greater than 50 μ g/l. There are few lakes in this area, although there are two very large lakes. The lakes are usually shallow and bog-stained. These characteristics coincide with PNV of mostly conifer bogs and swamps and soils derived mainly from organic matter. Reliability: poor

50-1

Region 50-1 covers a very large area with a wide range of total phosphorus values; the median value is between 20 and 24 μ g/l. The total phosphorus values for shallow lakes are usually greater than 20 μ g/l. Many of the higher quality lakes in this area receive intensive use. Lake density is fairly high throughout the region, although there are areas of few lakes. Lake density in 50-1 is usually greater than in the adjoining regions with the exception of the region to the west (51-1). Region 50-1 is mostly forest; regions to the west and south are generally more agricultural, and those to the north, more marshy. The surficial geology in this region is very complex, but there are general associations that vary in their existence and importance from one area to another. For example, in the northern part of the region, most of the deposits are associated with the Des Moines Lobe (gray calcareous drift), and the boundaries with adjacent regions correspond with boundaries of other surficial geology types. Peat deposits help delineate the boundary with 49-1, and deposits associated with the Rainy Lobe, Nashwauk Moraine Association (noncalcareous, brown silty till) mark the boundary with 50-3. Reliability: good

50-2

Higher total phosphorus values are found in region 50-2 than in 50-1, the surrounding region. The median value is between 30 and 50 μ g/l. This pattern of values is mildly associated with outwash from the Wadena and Des Moines Lobes and ground and end moraines of the St. Croix Moraine Association. The fact that this area receives relatively high recreational use may contribute to the higher values. Reliability: good

50-3

The total phosphorus values are relatively high in region 50-3; the median value is between 30 and 50 μ g/l. The region includes the Mesabi Iron Range and some areas of development. Some of the lakes in the area are bog-stained. The Quaternary geology is distinctive. The deposits are associated with the Nashwauk Moraine Association of the Rainy Lobe, which is noncalcareous brown silty till. This is in contrast to most of the surrounding areas, where deposits are associated with gray calcareous drift of the Des Moines Lobe. To the northeast of the region, the deposits are associated with the Vermilion Moraine Association of the Rainy Lobe in which the till is extremely sandy and stony, containing only trace amounts of clay. Reliability: good

50-4

The range of total phosphorus values in 50-4 is apparently related to lake depth, land use, and surficial geology type. Values are generally high in this region and there is a moderate amount of variability. The median value is between 30 and 50 μ g/l. The lower total phosphorus values tend to be found in deeper lakes and in those shallower lakes formed in patches of glacial outwash. There is a predominance of ground and end moraines in this region. Total phosphorus values are lower than in the region to the south, where there is more agricultural land. Reliability: good

50-5

The total phosphorus is generally low, although there is some variability. The median value is between 10 and 14 μ g/l. Many of the lakes are bog-stained and some of them are shallow. The density of lakes is higher than in the areas to the west and south. The soils here have generally been formed in very thin to very thick, noncalcareous, loamy glacial drift overlying bedrock. In the western part of this region, lacustrine associated deposits are common and are associated with low lake density. To the south of the region the soils were formed in outwash sediments or in glacial drift overlying outwash. Bedrock is a mixture of slate and granite. Reliability: fair

50-6

The lakes in region 50-6 are very low in total phosphorus; the median value is between 5 and 9 μ g/l. Deep lakes and granitic bedrock contribute to the low total phosphorus values. Reliability: good

50-7

Relatively high total phosphorus values are found in region 50-7; the median value is between 30 and 50 μ g/l. The land-surface form is slightly different from the surrounding areas, including more deeply incised streams and fewer and shallower lakes. Also, some of the lakes are bog-stained. Reliability: good

50-8

Region 50-8 contains a small cluster of higher total phosphorus values. The numerous bog-stained lakes show little spatial association with geographic characteristics. The median value is between 25 and 29 μ g/l. There is more development here than in the surrounding regions, which may contribute to the higher total phosphorus values. Reliability: good

50-9

In region 50-9, the lakes are relatively low in total phosphorus; the median value is between 15 and 19 μ g/l. Some of the lakes are very deep and, in the west, are interspersed with bog-stained lakes. The surficial geology and the high density of lakes in this region make it distinctive. The density of lakes is especially high in comparison to the regions to the south. Surficial geologic deposits are of the Vermilion Moraine Association, which are predominantly ground moraine of thin and patchy till over a hilly terrain of scoured bedrock. The till is extremely sandy and stony and contains only trace amounts of clay. Reliability: good

50-10

The total phosphorus values in 50-10 are slightly higher and the lake density is lower than in the region to the north. The median value is between 20 and 24 μ g/l. The lakes are generally quite shallow and some are bog-stained. The soils are deeper here than to the north. The surficial geologic deposits are of the Mille Lacs-Highland Moraine Association. The till in this association is not as sandy and stony as in the Vermilion Morain Association found to the north. A possible contributing factor to the higher total phosphorus values here is the greater amount of development as compared with the area to the north, which is predominantly the Boundary Waters Canoe Area. Reliability: good

50-13

Region 50-11 is a distinctive, discontinuous area in Northeastern Minnesota, Northern Wisconsin and the Upper Peninsula of Michigan. The surficial geologic deposits are predominantly glaciolacustrine and the soils are mostly clays. Due to the glacial history of the area, there are few glacial lakes. Although total phosphorus data for this region are lacking, values for the few existing lakes and for reservoirs that may be constructed, would likely be fairly high, with a median value between 30 and 50 $\mu g/l$. This area has some patches of agriculture, which are almost nonexistent in adjacent regions. Reliability: poor

50-12

Relatively low total phosphorus values are found in region 50-12; the median value is between 10 and 14 μ g/l. This area is distinctive, differing from the surrounding regions predominantly along the northwest and southeast sides. The major differences relative to the adjoining areas are: the surficial geology is pitted outwash and other ice-contact deposits instead of ground or end moraine; the soils are sandier; the forest is a mixture of red, white, and jack pine, rather than aspen, birch, and maple; the PNV is a mixture of jack pine, scrub oak forests, and barrens, as compared to a more complex mixture of forest types; and the lake density is higher. Reliability: good

50-13

Although values in 50-13 are highly variable, lower total phosphorus values are found in this region than in the adjacent regions, with the exception of 50-12. The median value is between 20 and $24 \,\mu g/l$. 50-13 is characterized by pitted outwash and other ice-contact deposits, with some moraines along the eastern edge. The glacial processes that formed these features also account for a higher density of lakes and greater topographic relief than is found in most of the surrounding regions. The soils in this area are generally loamy, with some sandy areas along the northwestern boundary; more silts occur in the regions to the east and south, and more clays in the regions to the north. The vegetation in 50-13 is different from that found to the south. The dividing line between the units is the break between forested land to the north and predominantly agricultural land to the south. Reliability: good

50-14

Region 50-14 has predominantly high total phosphorus values, but also high variability. The median value is between 30 and 50 μ g/l. The area is a mosaic of ground moraine and outwash as compared to the areas to the west and east that are pitted outwash and end moraine and the area to the south, which has less outwash. The few natural lakes and extensive areas of wet soils are in keeping with this surficial geology. The land cover is mostly forest, in contrast to the region to the south, which is primarily agricultural. Reliability: fair

50-15

A wide range of summer total phosphorus values are found in region 50-15, and the values are generally higher than in region 50-16. The median value is between 15 and 19 μ g/l. Both 50-15 and 50-16 are similar in terms of surficial geology, relief, and lake density. Besides the difference in patterns of lake phosphorus values, the distinguishing characteristic between the regions is that 50-15 has wetter soils and the eastern part of the region is less sandy. The surficial geology in 50-15 is predominantly pitted outwash and ground and end moraines associated with greater relief and higher lake density than in regions to the west and south where the surficial geology is outwash with ground and end moraines. Reliability: good

50-16

Lower total phosphorus values are found in region 50-16 than in region 50-15, which surrounds it on three sides. The median value is between 10 and 14 μ g/l. Except for the drier soils in 50-16, the two regions are similar. Both are predominantly pitted outwash and ground and end moraines and have greater relief and higher lake density than in the areas to the south and west. Reliability: good

50-17

Fairly low total phosphorus values are found in region 50-17; the median value is between 10 and 14 μ g/l. Soils are dominated by loam with silt and some sand, as compared to 50-11, which is mostly clay, 50-19, which has more sand, and 50-20, which has more organic material. The land cover is almost all forest in contrast to 51-13, 51-14, and 51-15, which have more agriculture. Reliability: good

50-18

The total phosphorus values are very low in region 50-18; the median value is between 5 and 9 μ g/l. The low values are associated with an area dominated by loamy and sandy soils on bedrock-controlled uplands. Reliability: fair

50-19

Region 50-19 has generally low total phosphorus values; the median value is between 10 and 14 μ g/l. The total phosphorus values seem to be associated with soils, which are dominated by sand with loam. This is in contrast to 50-20, to the north, that is dominated by loamy and organic soils, and 50-17, which has more loamy and silty soils. Reliability: fair

50-20

Total phosphorus data are lacking for 50-20 because the region contains few lakes. The values are likely to be higher than in adjacent regions because of the differences in soils and land use. Higher phosphorus values are also indicated by the choices of lake names such as "Mud" and "Marsh." The median value is likely to be between 25 and 29 μ g/l. The area is dominated by loamy soils with organic soils and some areas have wet clayey and loamy soils. The surficial geology is distinctive, consisting of ground moraine of medium textured till. Agricultural land use is slightly more common than in the surrounding regions. Reliability: poor

50-21

Region 50-21 is a broad area of fairly low total phosphorus values, although there are many data gaps. The median value is between 10 and $14 \mu g/l$. There is a mixture of areas dominated by sandy soils and by wet sandy and organic soils. 50-11, to the east, has clayey soils and 50-20, to the west, is dominated by loamy soils with organic soils. This region contains large areas of nonforested wetlands not found in the surrounding regions; there are also quite a few forested wetlands. Reliability: fair

50-2

The total phosphorus values in 50-22 are predominantly very low, although there are a few lakes with high values. The median value is between 5 and 9 μ g/l. More agricultural land is found in this region than in the area to the south, but the agricultural areas have relatively few lakes. The forests are a mixture of aspen-birch, maple-birch, with some white, red, and jack pine; in contrast, the area to the south has more oak-hickory and less maple-birch. Reliability: good

50.22

The total phosphorus values in 50-23 are slightly higher than in the area to the north, and lower than in areas to the south. The median value is between 10 and 14 μ g/l. The density and area in lakes are slightly less than in the area to the north. Soils are a mixture of sandy and loamy soils interspersed with sandy soils; to the south, region 50-24 has sandy soils, but with a warmer temperature regime, and region 56-3 has more clay and organic soils. The surficial geologic deposits are glacial outwash sand and gravel, postglacial alluvium, and ice-contact outwash sand and gravel. There is less agriculture here than in most of the surrounding areas. Forest types are a mixture of aspen-birch, oak-hickory, and white, red, and jack pine; the region to the north has more maple-birch and less oak-hickory, and regions to the south are less forested. Reliability: fair

50-24

The total phosphorus values are moderately low in region 50-24; the median value is between 10 and 14 μ g/l. The area is dominated by sandy soils, in contrast to the areas to the east where the soils are more loamy, and the areas to the north where soils are sandy but with a colder temperature regime. Surficial geology deposits are a mixture of glacial outwash sand and gravel and postglacial alluvium with end moraines of coarse textured till. The glacial deposits of the areas to the south, east, and west have fewer areas of outwash. The area is predominantly forested, more so than in the areas to the east and west; the forest types are a mixture of white, red, and jack pine and oak-hickory. Reliability: good

51-1

There are large variations in lake total phosphorus in region 51-1, although values are generally moderate. The median value is between 25 and 29 μ g/l. The region is characterized by a high density of lakes and surficial geology of a combination of Des Moines Lobe stagnation moraine and outwash and Rainy Lobe stagnation moraine. PNV undergoes a transition in this region from prairie vegetation in the west to forest vegetation in the northeast. Reliability: good

51-2

There are few phosphorus data for region 51-2. The land characteristics and the lake names (e.g., Mud, Rice, and Dead) indicate poor quality and bog-stained lakes. The median value is likely to be between 30 and $50 \mu g/l$. The surficial geology is comprised of ground and stagnation moraines from the Alexandria Moraine Association along with outwash from the Wadena Lobe (gray, calcareous drift). The land-surface form is flatter than in the adjacent areas. Given the land-surface form and calcareous drift, it is not surprising that the area is mostly cultivated, contrasting it from the forested lands to the north and east. The PNV undergoes a transition in this region from prairie brushland types in the south and west to mixed coniferous-deciduous forest types in the north and east. Reliability:

51-3

There is a high degree of variation in total phosphorus values in region 51-3. The median value is between 25 and 29 μ g/l. A high percentage of the lakes are deep. Glacial deposits are mostly associated with end moraine of the St. Croix Moraine Association (generally sandy and stony till) and some outwash from the Rainy Lobe. Land cover is a mixture of forest and agricultural land, although the region is more forested than most adjacent regions. The unit to the north, however, has greater forest cover. Reliability: good

51-4

The total phosphorus values are moderately high in 51-4, but generally lower than in most of the surrounding areas. The median value is between 30 and 50 μ g/l. The surficial geology is distinctive. The glacial deposits are primarily the Alexandria Stagnation Moraine Association and, to a lesser extent, the Altamont Stagnation Moraine Association and some areas of outwash from the Des Moines Lobe; generally the lakes with lower phosphorus are found in these outwash areas. The land-surface form is also obviously different, having more surface irregularity than that of surrounding areas. Reliability: good

51-5

The total phosphorus values are lower in region 51-4 than in the surrounding regions, although there is considerable variability. The median value is between 15 and 19 μ g/l. Some very deep lakes are included in the region, which may account for some of the variability. The surficial geologic deposits are from the St. Croix Moraine Association (sandy and stony till) of the Superior Lobe and the surrounding outwash areas from the Des Moines Lobe. Reliability: good

51-6

Region 51-6 is an area of variability in total phosphorus values; the median value is between 30 and 50 μ g/l. The differences, associated with lake depth, indicate variability in attainable quality. The lakes in this area are heavily impacted by urban and industrial sources, and storm water routing may affect the quality of lakes. Reliability: fair

51-

The distinguishing feature of region 51-7 is that it has more agricultural land than in the adjacent regions. Pasture and open land are common because there are many abandoned farms in the northern part of this region. The regions to the north (50-4) and south (51-9) are more forested, particularly the region to the north. The large amount of agriculture, the high number of shallow lakes, and the extensive area of bogs in 51-7 are associated with very high total phosphorus values, generally greater than $50 \mu g/l$. Lake density is lower in this region than in the adjacent areas, although the density is heterogenous. Reliability: good

51-8

The total phosphorus values in region 51-8 are high, but generally not as high as in region 47-1 to the south. The median value is greater than 50 μ g/l. This pattern of phosphorus is associated with lake depth and the percentage of forested land. Although the area is mostly nonforested, it contains more forest and woodlots and deeper lakes than 47-1. Reliability: good

51_9

There is generally less variability in total phosphorus values in region 51-9 than in the area to the south, and considerably lower values than in the area to the north. The median value is between 30 and 50 μ g/l. The pattern of total phosphorus values seems to be associated with a region of Gray Brown Podzolic and Humic-Gley soils (Anoka Sandplain), where soils were formed in outwash sediments or in glacial drift over outwash, accounting for shallow lakes and a high groundwater table. The region is slightly more forested than the regions to the north and south. Reliability: fair

51-10

In region 51-10, the total phosphorus values are lower and more variable than in adjacent areas. The median value is between 30 and 50 μ g/l. The surficial geology in 51-10 is a mixture of end morain association and outwash; the outwash is associated with shallow lakes, while lakes in the moraine are generally deeper. Reliability: fair

51-11

The total phosphorus values in region 51-11 are very high; most are greater than 50 μ g/l. These values are associated with ground moraine. The adjacent regions, with lower total phosphorus values, have somewhat different surficial geologic characteristics, such as pitted outwash plains and other ice-contact deposits, outwash, and glaciolacustrine deposits. The density of natural lakes in this region is low. This area is heavily used for agriculture and grazing, whereas the adjacent areas, with the exception of the "driftless area" to the southwest, are generally more forested. Reliability: good

51-12

The total phosphorus values in region 51-12 are mixed, but generally lower than in adjacent areas, except for 51-13. The median value is between 25 and 29 μ g/l. Phosphorus values in this heterogenous unit vary, but their patchy distribution prevents further division. Although there are relatively few lakes, and these are mainly cranberry bogs in wetland areas or reservoirs on large river systems, the regions to the north, west, and south have even fewer lakes. The surficial geology in 51-12 is predominantly glaciolacustrine deposits, with outwash in the western part of the unit and an absence of glacial deposits in the east. The vegetation is primarily forest, in contrast to the more extensive agricultural and open land of the surrounding areas. Forests of red, white, and jack pine are more common in this region than in the surrounding regions. The PNV is primarily jack pine, scrub oak forest and barren, swamp conifer, marsh and sedge meadow, wet prairie, and lowland shrub, whereas more oak is found to the south and east. There are large tracts of wet soils and also some sandy areas. Reliability: good

51-13

The total phosphorus values for lakes in region 51-13 are relatively low; the median is between 10 and 14 μ g/l. There are more clusters of small and medium-size lakes than in the surrounding regions and many of the lakes are deep. The soils are sandier than in the north, south, and east. The sandy soils correspond to a surficial geology of predominantly pitted outwash and other ice-contact deposits, interspersed with ground and end moraines and some glaciolacustrine deposits along the southeast border. Reliability: good

51-14

Region 51-14 is unlike adjacent areas in the pattern of total phosphorus values and associated geographic characteristics. The total phosphorus values are relatively high and the lake density is fairly low. The median value is between 30 and 50 μ g/l. The region is transitional between the agriculture lands to the south and the forests to the north. The PNV is predominantly swamp conifers and mixed coniferous-deciduous forests; to the south are more deciduous forests. Reliability: fair

51-15

Total phosphorus values are relatively high in region 51-15, although much higher values are found in the more agricultural areas to the south and the southwest; lower values are found in the more forested north and northwest. The median value is between 30 and 50 μ g/l. This is an area of ground moraine and glaciolacustrine deposits; more pitted outwash and other ice-contact deposits are found in the west where the total phosphorus values are lower. The soils are sandy and loamy; to the south they are more clayey, and to the west they are more sandy. The PNV is mixed coniferous-deciduous and swamp conifers, in contrast to that of regions to the south, where there is more deciduous vegetation. Reliability: fair

52-1

Region 52-1 generally consists of the distinctive hilly "driftless area"—an area that was surrounded, but unaffected, by continental glaciation. Because glaciation, a major lake-forming process, did not affect this region, the few lakes are predominantly reservoirs. Most of the lakes have summer total phosphorus values greater than 50 μ g/l; a few lakes having lower total phosphorus values (30-50 μ g/l) are locally clustered. Reliability: good

53-1

Few lakes are located in region 53-1 and they have very high total phosphorus, mostly greater than 50 μ g/l. The high values are strongly associated with clayey and loamy soils. Although data were unavailable for the western part of this region, the extensive areas of wet soils suggest higher values would be expected. These soils are related to the glaciolacustrine deposits which, along with some ground and end moraines in the eastern part of this region, comprise the surficial geology. The region is dominated by agriculture. Reliability: good

53-2

There is a wide range of total phosphorus values in region 53-2, but most are greater than 50 μ g/l. Fewer lakes are located in this region than in the regions to the east and northwest. This difference is caused by the surficial geology. More lakes were created in adjacent pitted outwash areas than in the ground and end moraine characterizing this predominantly agricultural region. Reliability: fair

53-3

Region 53-3 extends into Illinois. There is a paucity of glacial lakes in this region. Although data on total phosphorus are lacking, values for reservoirs would probably be greater than 50 μ g/l because of the nutrient-rich soils and extensive cropland use. Reliability: poor

53-4

Total phosphorus values are lower in region 53-4 than in the adjacent regions, and are mostly associated with areas of pitted outwash. The median value is between 25 and 29 μ g/l. The pitted outwash helps account for the higher lake density and the high percentage of deep lakes. Reliability: fair

56-1 Regio

Region 56-1 has relatively high total phosphorus values; the median value is between 25 and 29 μ g/l. The region is dominated by sandy and clayey soils. In some cases, especially in the northern portion of the region, there is more surface irregularity than in the surrounding areas. Land use is a mixture of agriculture and forest, with more agriculture than in 50-24. Reliability: fair

56.2

There is a mixture of total phosphorus values, including some high values, in region 56-2; the median value is between 15 and 19 μ g/l. The density of lakes is higher than in 56-5 to the east and 56-1 to the west. There is a mixture of soil types that is different from the surrounding areas. In 56-2, there are areas dominated by sandy soils, areas dominated by loamy soils underlain by sand and gravel (both of warmer temperature regime), and areas dominated by loamy soils interspersed with sandy soils (colder temperature regime). The surficial geologic deposits are comprised mainly of glacial outwash sand and gravel, postglacial alluvium, and end moraine of coarse textured till. There is a mixture of agricultural and forested land use, with less forest than in the regions to the north, northeast, and west, and more forest than in the regions to the east and southwest. Reliability: fair

56-3

There are higher total phosphorus values for lakes in region 56-3 than in the region to the north. The median value is between 15 and 19 μ g/l. The surficial geologic deposits are predominantly lacustrine sand and gravel and some lacustrine clay and silt in contrast to the area to the north, which has predominantly glacial outwash deposits. The mixture of soils in the region is generally more clayey than in the regions to the north and south. The land use is a mixture of agriculture and forest and the region includes a large distinctive area of forested wetlands. There are more agricultural areas in regions bordering on the south, and fewer in the region to the north. Reliability: fair

56-4

Region 56-4 has lower total phosphorus values than the region to the north and higher values than the region to the east. The median value is between 15 and 19 μ g/l. The density of lakes is higher than in region 56-1 to the north. There is a mixture of agriculture and forest. Reliability: good

6-5

Region 56-5 has a lower density of lakes than the adjacent areas, except for the region to the north. Although total phosphorus data are lacking, most lakes are likely to have values between 30 and 50 μ g/l because of the land use and soil type. A few lakes in the local sandy, less agricultural areas may have lower total phosphorus values. The area is dominated by loamy soils. Surficial geologic deposits are medium textured glacial till and end moraine, some outwash sand and gravel, and postglacial alluvium; the area to the north has predominantly lacustrine deposits and areas to south and east have more glacial outwash deposits. Land use in the region is mostly agricultural, with fewer patches of forest than in the surrounding regions, except to the north. Reliability: poor

6-6

Low total phosphorus values are found in region 56-6; most of the few high values are from lakes that are affected by point sources. The median value is between 10 and 14 μ g/l. There is a relatively high density of lakes, higher than in regions to the north and east. The area is dominated by loamy soils underlain with sand and gravel, as compared with the regions to the north (56-5 and 56-7) that are dominated by loamy soils. The surficial geologic deposits consist of glacial outwash sand and gravel, postglacial alluvium interspersed with coarse textured glacial till, and end moraines of coarse textured till. The regions to the north and east have less outwash. There is a mixture of agriculture and forest, with more forest occurring in 56-6 than in regions to the north and east. Reliability: good

56-7

Region 56-7 has slightly higher total phosphorus values than 56-6, a similar moraine area, and lower phosphorus values than in the other surrounding regions. The median value is between 15 and 19 μ g/l. There is a higher density of lakes and more surface irregularity than in the areas to the east, west, and north. The surficial geologic deposits are composed of glacial outwash sand and gravel, postglacial alluvium, and end moraines; the region to the north and east is predominantly lacustrine and the region to the west has less glacial outwash and postglacial alluvium. Similar to 56-6, region 56-7 is predominantly agricultural with patches of forest; in contrast, the adjacent regions have fewer forested areas. Reliability: good

57-1

There are no glacial lakes in region 57-1. Although total phosphorus data are lacking for this area, the indication from extrapolations using nutrient values from nearby Ohio streams is that potential reservoirs would have values greater than 50 μ g/l. This conclusion is supported by the soil, surficial geology, and land use types. The area is dominated by wet loamy soils with some wet clayey soils. The surficial geologic deposits are lacustrine clay and silt and lacustrine sand and gravel. The area is almost totally agricultural, with the exception of the large urban area in the north. Reliability: fair

7-2

There is a paucity of glacial lakes in region 57-2. Because of the nutrient rich soils and intensity of agriculture, existing reservoirs, or ones that may be constructed in the region, are likely to have values between 30 and 50 μ g/l. The few lakes in sandy soils along the shore of Lake Huron may have moderate total phosphorus values. The area is dominated by wet loamy soils with some wet clayey soils, and a smaller amount of wet sandy soils and wet loamy soils underlain by sand and gravel. The surficial geologic deposits are predominantly lacustrine clay and silt, and lacustrine sand and gravel; in contrast, regions 56-7 and 56-5 to the south have predominantly glacial deposits. Land use is mostly agriculture, with patches of forest and large urban areas; the region to the northwest has much more forest, and the region to the south (56-7) has only slightly more forest. Reliability: poor