

Wellhead Protection Plan Unit Well 30 City of Madison, Wisconsin



*City of Madison
Wisconsin*

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EXECUTIVE SUMMARY

This report is a Wellhead Protection Plan (WHPP) for City of Madison Unit Well 30. The purpose of this plan is to establish specific criteria for protection of the Well 30 recharge area. This WHPP was prepared for Unit Well 30 to conform to the requirements of the Wisconsin Administrative Code, Chapter NR 811, Section 16(5), for wellhead protection (WHP) planning.

Unit Well 30 is located at 1133 Moorland Road in the southeastern part of the City of Madison. Construction of Unit Well 30 was completed in the fall of 2002. Unit Well 30 is 800 feet deep, is open to the lower bedrock (sandstone) aquifer and has a design capacity of approximately 2,200 gallons per minute (gpm).

Land use in the vicinity of Unit Well 30 is residential, agricultural and manufacturing. Historically, the land in the vicinity of Unit Well 30 was zoned agricultural and was used for row crops, or grassland.

As part of the Dane County regional hydrologic study, a regional groundwater flow model was prepared for Dane County and was used to delineate time-related (5-, 50-, and 100-year time of travel (TOT)) zones of contribution (ZOCs) for municipal wells (Krohelski et. al., 2000) including Unit Well 30. ZOCs extend southwest of Unit Well 30 in the simulated upgradient groundwater flow direction.

Figure 3-5 shows the wellhead protection area (WHPA) for Unit Well 30. Two zones of protection are within the WHPA. Zone A is defined by the 5-year TOT ZOC. Zone B is defined by a 1,200-foot fixed radius around Unit Well 30. The WHPA will provide a conservative protection zone to account for changes in pumping rates, pumping duration, and interference drawdown from other existing and future wells.

A contaminant source inventory (CSI) was performed for the Unit Well 30 area during February 2005. Known potential and existing contaminant sources within the Unit Well 30 WHPA include sanitary sewer, spill sites, closed underground storage tank (UST) site, road salt application, and probable use of pesticide, herbicide, and nutrient loading on fields and residential lawns. Several other potential and existing contaminant sources were identified in other ZOCs.

Programs and activities to be used by the City of Madison and others for WHPA management at Unit Well 30 are grouped into five principal categories as follows:

1. Existing Programs
 - a. Clean Sweep Collection Program
 - b. On-site waste disposal system maintenance
 - c. Well abandonment
 - d. Land application of sludge and septage
 - e. Spill notification and awareness of remedial investigation and cleanup

2. Land Use Controls
 - a. Existing zoning/WHP overlay zoning and ordinance

3. Intergovernmental Cooperation
 - a. Land use planning and site plan review
4. Monitoring
 - a. CSI maintenance
 - b. Water quality monitoring
5. Public Education and Awareness
 - a. Availability of WHPP
 - b. Public informational meeting
 - c. News releases
 - d. Informational materials distributed to residents in WHPA
 - e. Land use and contamination source awareness
 - f. School programs

Some of these programs and activities are currently being performed, while others are new and will be implemented immediately to help protect Unit Well 30.

The Madison Water Utility has an existing water conservation program and encourages water conservation. The Utility has formulated a contingency plan for providing water in the event that Unit Well 30, or one or more of the City's other water supply wells became contaminated or removed from service.

The City of Madison has a WHP ordinance and overlay zoning district. The WHP ordinance helps ensure that other potential contaminant sources are not located in the Unit Well 30 WHPA.

1.0 INTRODUCTION AND BACKGROUND

1.1 INTRODUCTION

This report is a WHPP for City of Madison Unit Well 30. The purpose of this plan is to establish specific criteria for protection of the local recharge area in the vicinity of Unit Well 30 including, management strategies to maintain a high quality water supply free of contamination.

This WHPP was prepared for Unit Well 30 to conform to the requirements of the Wisconsin Administrative Code, Chapter NR 811, Section 16(5), for WHP planning. A copy of this section of the code is in Appendix A. The project scope included the following:

1. Research available information regarding the geology and hydrogeology of the well sites and aquifer parameters.
2. Research well construction and proposed operation of Unit Well 30.
3. Coordinate with Dane County Regional Planning Commission (DCRPC) for previously delineated 5-year TOT capture zones for Unit Well 30.
4. Perform a CSI to identify and characterize existing and potential contamination sources within the 5-year TOT capture zone and within a ½-mile radius of Unit Well 30.
5. Assist with the determination of a WHPA for Unit Well 30.
6. Assist with the development of WHP management strategies.

1.2 LOCATION AND BACKGROUND

Unit Well 30 is located at 1133 Moorland Road in the southeastern part of the City of Madison. The site is in the SE¼, SE¼ of the SE¼, of Section 36, Township 7 North, Range 9 East, Dane County, Wisconsin. Figure 1-1 shows the location of Unit Well 30 and other water system facilities in the City of Madison. A portion of the survey plat showing the well site is in Appendix B. Construction of Unit Well 30 was completed in the fall of 2002.

The City water system serves approximately 218,000 people and consists of 24 active wells, 28 booster pumping facilities, 24 ground storage reservoirs, 5 elevated water storage tanks, and approximately 840 miles of water transmission and distribution mains. Because of the varying topography in the Madison area, the water system is divided into 11 separate pressure zones. Unit Well 30 is located in the City's Southeast Pressure Zone. Unit Well 30 is located approximately 3.7 miles southwest of Unit Well 9 and 1.6 miles southeast of Unit Well 18. Unit Well 30 will replace Unit Well 5, which will be abandoned in 2006.

1.3 UNIT WELL 30

Unit Well 30 was constructed to a depth of 800 feet. The well is cased with 30-inch OD steel casing grouted to a depth of 312 feet below ground. A 29-inch diameter open borehole extends from 312 to 458 feet in depth. A 24-inch diameter open borehole extends from 458 to 800 feet

in depth. Unit Well 30 is a replacement well for Unit Well 5, and is located approximately 1,200 feet west-southwest of Unit Well 5. A construction report for Unit Well 30 is in Appendix C. At Unit Well 30, sandstone bedrock was encountered at a depth of 23 feet. Thin shale layers were encountered over the depth intervals of 40 to 65 feet, and 275 to 300 feet. Limestone occurs in the interval of 45 to 65 feet. The remainder of the bedrock formation to a depth of 798 feet is described as sandstone. Reddish-black granite was encountered at a depth of 798 feet. Unit Well 30 was test pumped for 24 hours at a rate of 2,200 gpm and had a specific capacity of 11.5 gpm/ft. At the time of construction, the static water level in Unit Well 30 was 101.5 feet below the ground surface.

2.0 HYDROGEOLOGIC CONDITIONS

2.1 LAND USE, TOPOGRAPHY, AND DRAINAGE

Land use in the vicinity of Unit Well 30 is residential, agricultural and manufacturing. Current zoning immediately around Unit Well 30 is Residential (R1, R2 and R3), Agricultural (A), and Manufacturing (M1). Historically, the land in the vicinity of Unit Well 30 was zoned agricultural and was used for grassland and row crops. A portion of the City of Madison zoning map for the Unit Well 30 area is in Appendix D.

Well 30 is located on the southeast edge of a mounded, drumlin-like structure. Clayton and Attig (1997) describe the topography as smooth and streamlined, with drumlins. The ground surface elevation at Unit Well 30 is approximately 900 feet above mean sea level (MSL). The elevation of the top of the drumlin-like structure is approximately 950 ft MSL. Locally, drainage from Well 30 is southward, toward Nine Springs Creek and the associated wetlands area.

2.2 GEOLOGY

The area was glaciated by the Green Bay Lobe during the Wisconsin Stage. The rocks and unlithified deposits in the area range from Precambrian basement rocks to recent soils. The bedrock from oldest to youngest includes Precambrian granite and Cambrian age bedrock consisting of sandstone, dolomite, and shale.

Figure 2-1 is a geologic cross-section through Unit Wells 9 and 30. A formation log for strata encountered at Unit Well 30 is in Appendix C. The stratigraphic sequence encountered in the wells is briefly described in the following:

2.2.1 Precambrian Basement Bedrock

Precambrian granite bedrock was encountered at a depth of approximately 798 feet below ground surface. The bedrock formation is described as reddish-black granite.

2.2.2 Cambrian Bedrock

Cambrian age rocks encountered in the vicinity of Unit Well 30 include in ascending order the Mount Simon Formation, the Eau Claire Formation, Wonewoc Formation, Tunnel City Group, and the Trempealeau Group.

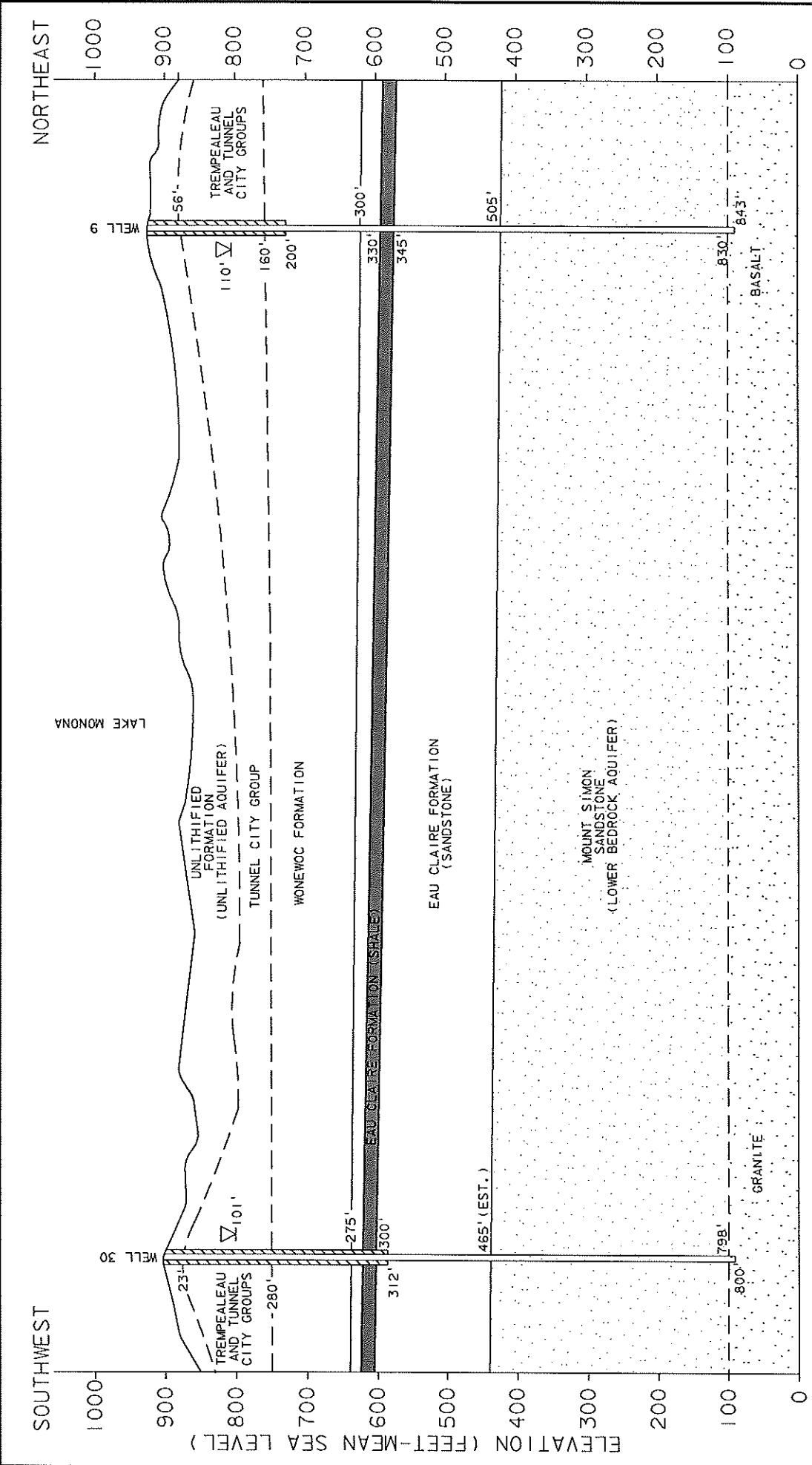
Cambrian age rocks are relatively flat lying in the Madison area. The cross-section shows a gentle dip toward the northeast, which is not consistent with the regional southward dip. The thickness of deep rock units appears to be relatively consistent in the Madison area, although there are textural and compositional changes, laterally. The occurrence and thickness of the Trempealeau and Tunnel City Groups bedrock units varies, because these units form the upper erosional bedrock surfaces. The boundary between the Wonewoc Formation and Tunnel City Group is not known with certainty. For this report, glauconitic sandstones (originally assigned to the Upper Franconia) are classified as part of the Tunnel City Group. The limestone (dolomite) unit encountered over the interval of 45 to 65 feet in depth and the overlying sandstone are assigned to the Trempealeau Group. Figure 2-1 shows the strata above the Tunnel City Group/

\$\$\$LEVELS\$\$
 \$\$PRF\$\$
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\$\$\$RFO1\$\$
 \$\$\$RFO2\$\$
 \$\$\$RFO2\$\$

\$\$\$RFO3\$\$
 \$\$\$RFO4\$\$
 \$\$\$RFO4\$\$

\$\$DATE\$\$



LEGEND

- WELL
- WELL CASING
- POTENTIOMETRIC SURFACE
- DEPTH (FEET)
- OPEN BOREHOLE



FIGURE 2-1
 GEOLOGIC CROSS-SECTION THROUGH
 MADISON UNIT WELLS 9 & 30
 MADISON, WISCONSIN

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Trempealeau Group bedrock consists of unlithified deposits. A red, dolomitic shale layer approximately 15 feet thick appears to be laterally extensive through the upper part of the Eau Claire Formation.

2.2.3 Unlithified Deposits

Bedrock is mantled by unlithified glacial till and alluvial deposits. Clayton and Attig (1997) classify the local near surface unlithified deposits in the immediate vicinity of Unit Well 30 as uniform subglacial till. The deposit is part of the Horicon Member of the Holy Hill Formation.

At Unit Well 30, the unlithified formation is described from the top of the sandstone bedrock (encountered at a depth of 23 feet) to the ground surface as brown silt with sand and gravel (8 to 23 feet in depth), and brownish-yellow clay (0 to 8 feet in depth).

Soil in the immediate vicinity of Unit Well 30 is classified as the St. Charles silt loam (USDA, 1978). This soil has good contaminant attenuation potential. The DCRPC assigned a risk classification of low to moderate from surface activities in the Unit Well 30 area on the basis of several factors including soil properties (DCRPC, 1999).

2.3 HYDROGEOLOGY

In the study area, groundwater occurs within the lower bedrock aquifer, the upper bedrock aquifer, and the unlithified (sand and gravel) aquifer. Locally, the upper bedrock aquifer and sand and gravel aquifer are used for private domestic supplies. Municipal and industrial wells are constructed into the lower bedrock aquifer. Following is a brief discussion about the aquifers:

2.3.1 Lower Bedrock Aquifer

The lower bedrock aquifer occurs in the Mount Simon Formation, and lower part of the Eau Claire Formation. The Precambrian bedrock is the base of the lower bedrock aquifer, and the shale layer in the Eau Claire Formation is the upper confining unit. Water occurs within horizontal and vertical fractures, along bedding planes, and between sand grains in the aquifer. The saturated thickness of the lower bedrock aquifer appears to be approximately 498 feet thick at Unit Well 30. The hydraulic conductivity of the lower bedrock aquifer is estimated to be approximately 10 feet per day (ft/day) (Krohelski et. al., 2000). Well 30 is cased through the Eau Claire shale confining layer.

Water levels measured in Unit Well 30 are believed to be representative of the lower bedrock aquifer. It was reported by the Madison Water Utility that the static water level in Well 30 in 2004 was approximately 101 feet below ground level (approximately 799 ft MSL), which is approximately 199 feet above the top of the lower bedrock aquifer. Figure 4 in Appendix E shows the simulated potentiometric surface in the lower bedrock (Mt. Simon) aquifer and shows the groundwater flow direction toward Unit Well 30 is from the southwest (DCRPC, 2004). Figure 4 shows the potentiometric surface elevation in the vicinity of Unit Well 30 at less than 860 feet MSL. The storativity of the lower bedrock aquifer is estimated to be approximately 0.0003, and the porosity is estimated to be approximately 30 percent (Bradbury, 2001). The porosity of the Eau Claire Formation is estimated to be 5 percent (Bradbury, 2001).

2.3.2 Upper Bedrock Aquifer

The upper bedrock aquifer occurs in the upper part of the Eau Claire Formation above the shale and within the Wonewoc Formation and Tunnel City Group. Water occurs within fractures, along bedding planes, and between sand grains in the sandstone.

At Unit Well 30, the combined thickness of the upper bedrock formation is approximately 262 feet. The saturated thickness of the upper bedrock aquifer in the vicinity of Unit Well 30 appears to be approximately 184 feet. Figure 3 (DCRPC, 2004) in Appendix F shows the measured potentiometric (water table) surface in the upper bedrock aquifer and unlithified (sand and gravel) aquifer. The elevation of the water table surface at Unit Well 30 was not measured. Figure 3 in Appendix F shows the elevation of the simulated water table surface in the vicinity of Unit Well 30 at less than 860 ft above MSL.

The hydraulic conductivity of the upper bedrock aquifer is estimated to be approximately 5 ft/day (Krohelski et. al., 2000). The porosity of the formations is estimated to be approximately 5 percent (Bradbury, 2001).

2.3.3 Sand and Gravel Aquifer

The sand and gravel aquifer occurs in the near surface sand and gravel deposits. The unlithified materials are thin (23 feet thick) in the vicinity of Unit Well 30. The driller did not report whether saturated formation was encountered in the unlithified materials. Where present, the hydraulic conductivity of the sand and gravel aquifer varies. For modeling purposes, Krohelski et. al., 2000, assumed a hydraulic conductivity of 7 ft/day and a porosity of 20 percent for the sand and gravel aquifer.

2.3.4 Groundwater Flow System

Average annual precipitation in the City of Madison area is reported to be approximately 30 to 30.5 inches per year (Cline, 1965; Cotter et. al., 1969). Cline (1965) estimated that the amount of recharge to the groundwater reservoir in the Upper Yahara River basin was approximately 6 in/yr. Swanson (1996) estimated that the recharge rate in Dane County ranges from 0.3 to 6.7 inches per year (in/yr) and has an average value of 2.6 in/yr. Precipitation infiltrates through the till layer and recharges the unlithified and shallow bedrock aquifers. In some areas, a small percentage of water moves downward from the upper bedrock aquifer through the Eau Claire confining layer and into the lower bedrock aquifer. Map 7 in Appendix E shows areas of recharge to, and discharge from the lower bedrock (Mount Simon) aquifer (Bradbury et. al, 1999; DCRPC 1999). Map 7 in Appendix E shows that Unit Well 30 is located in a recharge area for the lower bedrock aquifer. Discharge from the unlithified and shallow bedrock aquifers is to pumping wells and/or to surface waters (lakes, streams and wetlands) in the area. Locally, discharge from the lower bedrock aquifer is primarily to pumping wells.

3.0 WELLHEAD PROTECTION AREA DELINEATION

This chapter describes methodologies used to define the Zone of Influence (ZOI) and Zone of Contribution (ZOC) for Unit Well 30.

3.1 ZOI

The ZOI for Unit Well 30 was estimated in accordance with Wisconsin Department of Natural Resources (DNR) requirements based on 30 days of continuous pumping at the rated design capacity, assuming no aquifer recharge. The ZOI was determined using the Theis Equation. The estimated ZOI for Unit Well 30 to a radius where there is 1 foot of drawdown is approximately 9.4 miles. The estimated ZOI to a radius of zero drawdown is approximately 19.6 miles. These estimated ZOI are believed to be conservatively large, because the Theis Equation does not incorporate aquifer recharge or the effects of potential hydraulic boundaries. Also, it is unlikely that the well will ever be pumped continuously for 30 days at maximum capacity. For the calculation, it was assumed that the entire open borehole supplies water to Unit Well 30. Distance–drawdown calculations are in Appendix G.

3.2 GROUNDWATER MODEL DEVELOPMENT AND ZOC DELINEATION

As part of the Dane County regional hydrologic study, a regional groundwater flow model was prepared for Dane County and was used to delineate time-related ZOCs for municipal wells (Krohelski et. al., 2000) including Unit Well 30. The Dane County regional hydrologic study was conducted cooperatively by the WGNHS, DCRPC, and the United States Geological Survey (USGS). The USGS modular groundwater modeling code (MODFLOW (McDonald & Harbaugh, 1988)) was used to simulate groundwater flow. After the calibrated groundwater flow model was prepared, PATH3D (Zheng, 1991) was used to determine time-related ZOCs.

The model domain covers an area of 50 by 60 miles and is divided into 144,000 nodes. Each node has regular spacing of 1,312.4 feet (400 meters) on a side. The grid has 200 rows and 240 columns (Krohelski et. al., 2000).

In 2002, the original groundwater flow model was converted from a three-layer model to a four-layer model. The sand and gravel aquifer is Layer 1. The upper bedrock aquifer is Layer 2. The Eau Claire Formation is layer 3, and the lower bedrock aquifer is Layer 4. The model was recalibrated and various boundary conditions were modified (DCRPC, 2001). Other aquifer parameters input into the model were as previously described in Chapter 2 and in Krohelski et. al., 2000.

Four groundwater flow simulations were performed using the calibrated model and different pumping rates for existing and known future municipal supply wells in Dane County (Bradbury, 1998). Simulation No. 1 was performed using the projected pumping rates from municipal wells for the year 2030. Total City of Madison 2030 pumping is projected to be 44.328 million gallons per day (MGD). For Simulation No. 1 projected 2030 pumping was distributed evenly among the City's existing and planned wells for an average rate of 1.4413 MGD. Pumping at a rate of 1.4413 MGD is equivalent to pumping continuously at a rate of approximately 1,000 gallons per minute (gpm).

Simulation No. 2 was performed using the “maximum sustained pumping rate” or “one-half design capacity” (Bradbury, 1998). It was assumed that the design capacity of Unit Well 30 was 2,100 gpm. The maximum sustained pumping rate (one-half design capacity) for Unit Well 30 was assumed to be 1.512 MGD. Pumping at a rate of 1.512 MGD is equivalent to pumping continuously at a rate of 1,050 gpm.

Simulation No. 3 was performed using the assumed full design capacity. Full capacity for Unit Well 30 is 3.024 MGD. Pumping at a rate of 3.024 MGD is equivalent to pumping continuously at a rate of 2,100 gpm.

Simulation No. 4 was performed using an assumed average pumping rate for Well 30 for the maximum year. Unit Well 30 is a new well and is not on-line yet. An average pumping rate for a maximum year was assumed to be 2.25 MGD. Pumping at a rate of 2.25 MGD is equivalent to pumping continuously at a rate of 1,563 gpm.

PATH3D (Zheng, 1991) was used to determine the time-related ZOCs for Unit Well 30. Particles were input in the model around Well 30 and then tracked backward from the well to points where they enter the groundwater flow system.

3.3 ZOC

The area that recharges or contributes water to Unit Well 30 is defined as the ZOC. The areal extent of the ZOC (capture zone) depends on the pumping rate, amount of horizontal and vertical recharge, aquifer characteristics, pumping duration, and other stresses such as other pumping wells. It is beneficial to know the well capture zone, because contaminants introduced within the zone could reach Unit Well 30.

Figure 3-1 shows the 5-, 50-, and 100-year TOT ZOCs for Unit Well 30 based on the projected 2030 pumping rates (Simulation No. 1). Figure 3-2 shows the 5-, 50-, and 100-year TOT ZOCs for Unit Well 30 based on the one-half design capacity pumping rate (Simulation No. 2). Figure 3-3 shows the 5-, 50-, and 100-year TOT ZOCs for Unit Well 30 based on the full design capacity pumping rate (Simulation No. 3). Figure 3-4 shows the 5-, 50-, and 100-year TOT ZOCs for Unit Well 30 based on an assumed average pumping rate for Well 30 for a maximum year (Simulation No. 4).

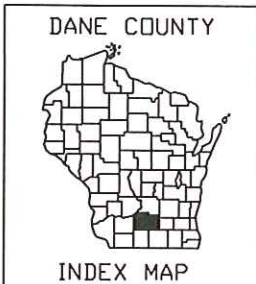
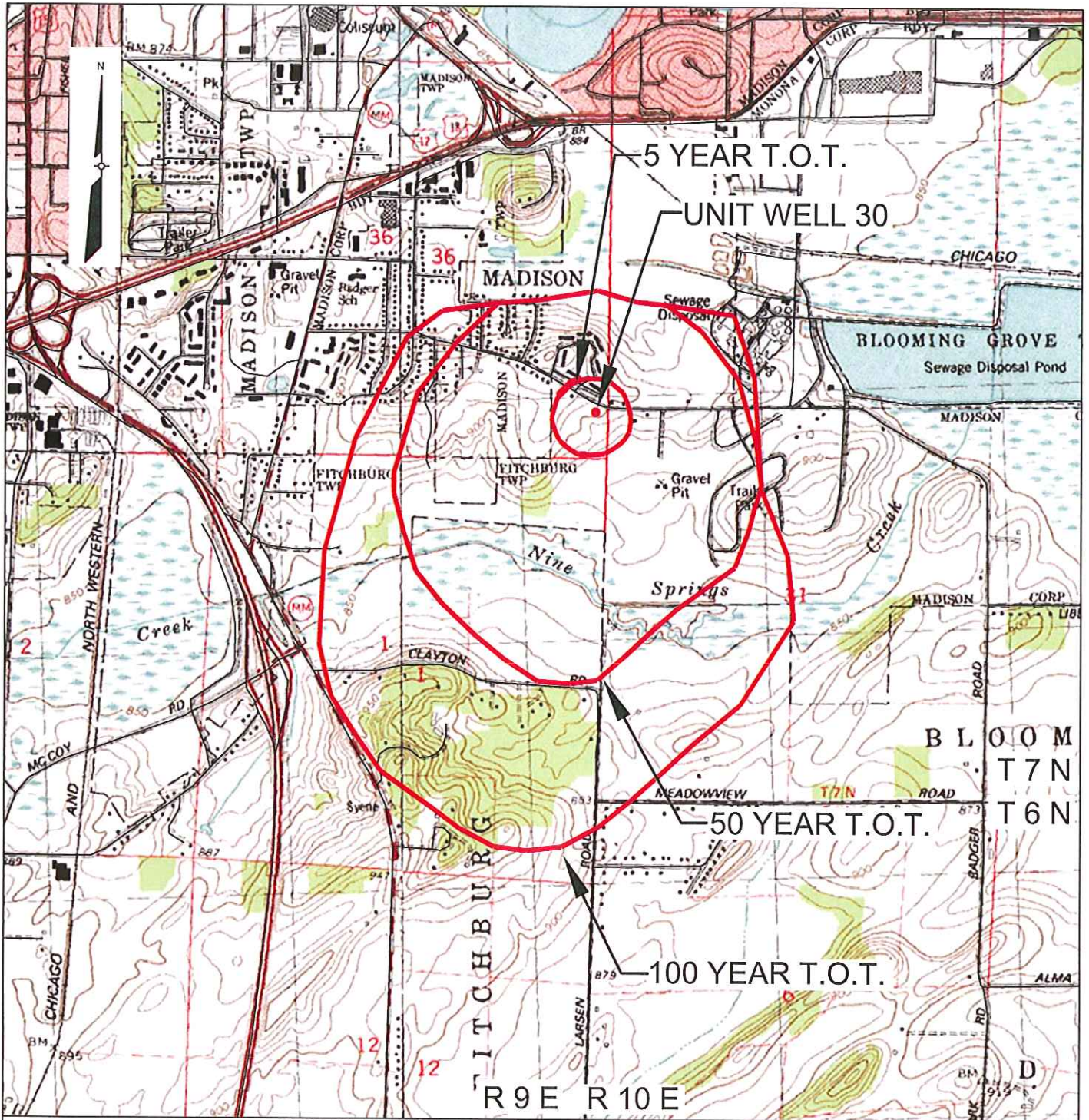
The capture zones shown in Figures 3-1 and 3-2 extend toward the south. The capture zones shown in Figures 3-3 and 3-4 trend toward the southwest in the simulated upgradient groundwater flow direction. Table 3-1 summarizes the upgradient and downgradient extent of capture zones for the various pumping simulations. The ZOCs delineated using the Simulation No. 3 pumping rates are the most conservative in length.

Figure 2 in Appendix H shows ultimate regional ZOCs for Unit Well 30 and for other wells in Dane County. The ZOCs for Unit Well 30 are located entirely within Dane County.

3.4 WELLHEAD PROTECTION AREA

The Wisconsin Administrative Code (Chapter NR811.16(5)(e)) requires that a WHPA for municipal water supply wells “encompass, at a minimum, that portion of the recharge area equivalent to a 5-year time of travel to the well.” Any of the four simulations described above

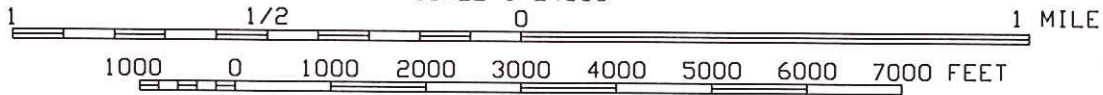
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 Ltscale: 1
 File: L:\work\Projects\82359\gra\FIG3-1_wells.dwg
 Time: Mar 10, 2005 7:09pm
 PSLtscale:



SOURCE: USGS 7.5 MINUTE QUADRANGLE, MADISON WEST & MADISON EAST WISCONSIN, 1983

T.O.T. = TIME OF TRAVEL
 Z.O.C.s = ZONES OF CONTRIBUTION

SCALE 1: 24000



CONTOUR INTERVAL 10 FEET
 DATUM IS MEAN SEA LEVEL

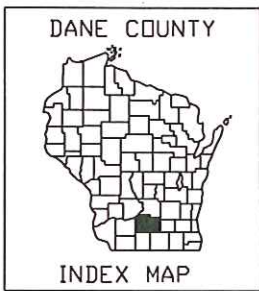
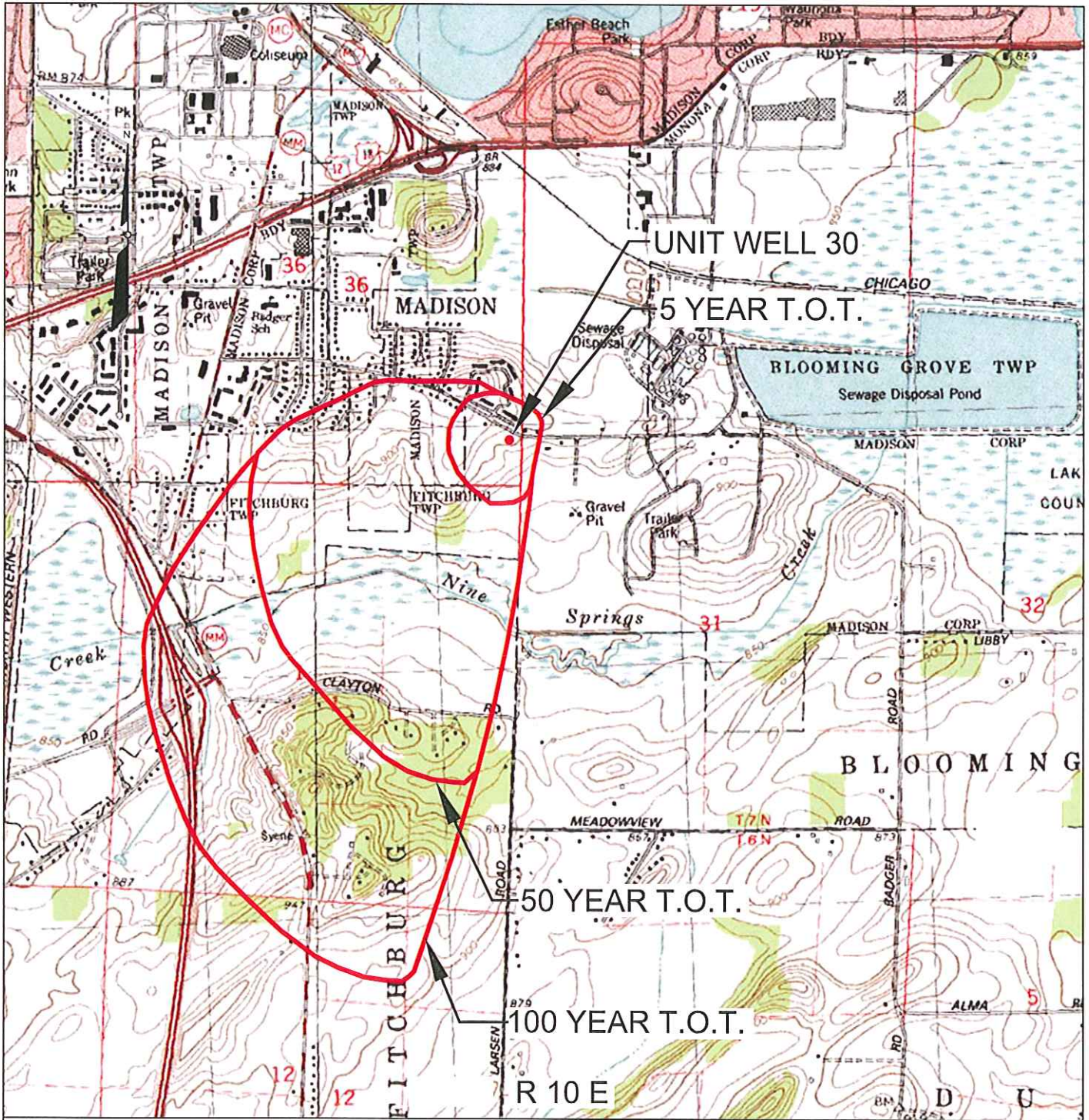


FIGURE 3-1
 5, 50 & 100 YEAR T.O.T. Z.O.C.s ASSUMING
 PROJECTED 2030 PUMPING RATE
 MADISON, WISCONSIN

MARCH 2005

82359

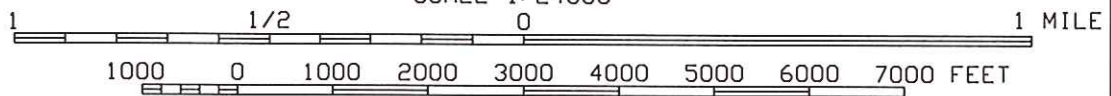
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SOURCE: USGS 7.5 MINUTE QUADRANGLE, MADISON WEST & MADISON EAST WISCONSIN, 1983

T.O.T. = TIME OF TRAVEL
Z.O.C.s = ZONES OF CONTRIBUTION

SCALE 1: 24000



CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL



FIGURE 3-4
 5, 50 & 100 YEAR T.O.T. Z.O.C.s ASSUMING PUMPING AT AVERAGE RATE DURING THE MAXIMUM YEAR

**TABLE 3-1
SUMMARY OF EXTENT OF ZOCs (CAPTURE ZONE)
WELLHEAD PROTECTION UNIT WELL 30
MADISON, WISCONSIN**

Item	Simulation No. 1 (projected 2030 pumping rates)	Simulation No. 2 (one-half design capacity pumping rates)	Simulation No. 3 (continuous pumping at full capacity)	Simulation No. 4 Average Pumping Rate During Maximum Pumpage Year
Simulated Pumping Rate (MGD)	1.4413 (1,000 GPM)	1.512 (1,050 GPM)	3.024 (2,100 GPM)	2.25 (1,563 GPM)
Upgradient Extent of ZOC (feet)				
5-year TOT	750	550	1,050	900
50-year TOT	3,850	3,650	5,200	4,700
100-year TOT	6,150	5,800	8,000	7,500
Downgradient Extent of ZOC (feet)				
5-year TOT	350	500	450	400

Notes:

MGD = Million Gallons per Day
ZOC = Zone of Contribution
TOT = Time of Travel

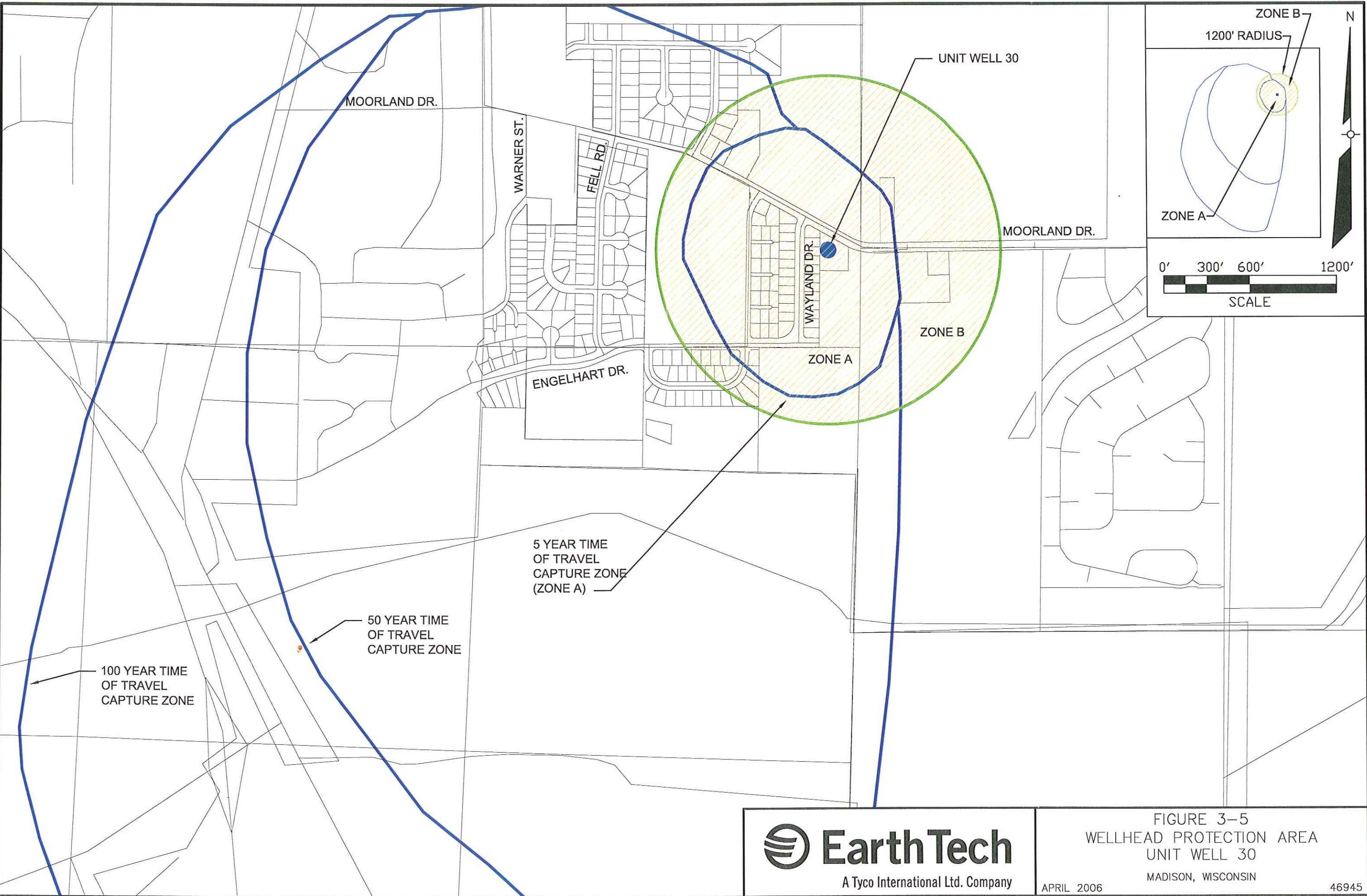
could be used to model the 5-year TOT ZOC for Unit Well 30. It is possible that Unit Well 30 could be pumped at maximum capacity without interruption. Therefore, it is believed that Simulation No. 3 provides a realistic, but very conservative model of well capture zones for Unit Well 30. Simulation No. 3 was used to generate the long-term capture zones and WHPA for Unit Well 30.

The 5-year TOT ZOC for Unit Well 30 extends approximately 1,050 feet upgradient of the well, and approximately 450 feet downgradient from the well. The 100-year TOT ZOC extends approximately 8,000 feet upgradient from the Unit Well 30. Protecting the entire 100-year TOT ZOC from Unit Well 30 to the upgradient boundary at the same level of protection, as the area within the 5-year TOT ZOC is likely too severe.

Figure 3-5 shows the WHPA for Unit Well 30. Two zones of protection are within the WHPA. Zone A is the area around Unit Well 30 that is defined by the 5-year TOT ZOC delineated for Simulation No. 3 (full design capacity pumping rate). Zone B is the area around Unit Well 30, beyond Zone A, that is defined by a 1,200-foot fixed radius around Unit Well 30. This radius is selected because the Wisconsin Administrative Code Chapter NR 811.16(4) requires a 1,200-foot separation distance between a municipal water supply well and certain contamination sources.

The boundary of Zone B is larger than the 5-year TOT ZOC delineated for Unit Well 30 in all directions. The WHPA will provide a conservative protection zone to account for changes in pumping rates, pumping duration, and interference drawdown from other existing and future wells. The WHPA is located within the City of Madison and the City of Fitchburg.

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4.0 POTENTIAL CONTAMINANT SOURCES

4.1 CONTAMINANT SOURCE INVENTORY

A CSI was performed for the Unit Well 30 area during February 2005. The CSI consisted of a search of government records, interviews, and a reconnaissance survey of the area within a ½-mile radius and the recharge area equivalent to the delineated 100-year TOT of Unit Well 30. General land use observations and reconnaissance were made on February 2, 2005.

Figure 4-1 shows the location of potential, existing, and former contaminant sources in the WHPA within a ½-mile radius and the recharge area equivalent to the delineated 100-year TOT of Unit Well 30. Table 4-1 summarizes potential contaminant sources that were identified and/or reported to be within the WHPA and review area.

Potential, existing, and former contaminant sources within the WHPA and ZOCs for Unit Well 30 include potential spills along roads and main transportation corridors, an aboveground storage tank (AST) site, active and closed UST sites, active and closed LUST sites, municipal wastewater treatment plant, land application of sludge and septage, agricultural farming, fertilizer spreading, possible manure spreading on agricultural fields, active and closed private sewage disposal systems, active and abandoned private water supply wells, road salt use, and pesticide, herbicide, and nutrient loading on commercial and residential lawns.

Based on the available information, the following are descriptions of known potential, existing, and former contaminant sources in the WHPA within a ½-mile radius and within the recharge area equivalent to the delineated 100-year TOT of Unit Well 30:

Storm sewer extends from the Unit Well 30 building to Moorland Road. The nearest sanitary sewer main is 6-inch diameter and is located in an easement extending from the south to the Unit Well 30 building.

The residences located southwest of Unit Well 30 along Oregon, Herman, and East and West Clayton Roads, south of Unit Well 30 along Larsen Road, and southeast of Unit Well 30 along Meadowview Road have private sewage disposals systems and water supply wells. The nearest residences with private wells are located along East Clayton Road, approximately 3,800 feet south and southwest of Unit Well 30.

The private wells are likely terminated in the upper bedrock aquifer or sand and gravel aquifer. The DNR and Dane County Human Services Department were contacted regarding private wells. These departments are not aware of any water quality issues with private wells in the vicinity of Unit Well 30.

Based on the site reconnaissance and a review of the Wisconsin registered storage tank list, there are no active UST sites within 1,200 feet of Unit Well 30. The nearest active UST site is located approximately 5,700 feet southwest of Unit Well 30. Two LUST sites are reported in the vicinity of Unit Well 30. One LUST site is located at 2642 Rimrock Road, approximately 4,100 feet west of Unit Well 30. This site has been closed since June 1997. The second LUST site is located 3045 Oregon Road, approximately 4,900 feet west-southwest of Unit Well 30. This site has been open since September 1992.

TABLE 4-1
CONTAMINANT SOURCE INVENTORY SUMMARY
WELLHEAD PROTECTION UNIT WELL 30
MADISON, WISCONSIN
MARCH 2005

Map Site No.	Owner/Location	Database or Reference Source	Existing, Potential, or Former Contaminant Sources	Reported Status	Approximate Distance to Unit Well 30	Location within Capture Zone	Estimated Threat to Supply Wells
2	Nob Hill Apartments 1042 Moorland Road Madison, WI	EDR Report- WI - SPILLS (DNR Activity No. 04-13-484018)	SPILL: 30 gallons of mineral slowly leaked from a pad-mounted transformer, spill closed on 8/4/03 (soil contamination).	Closed	500 ft. northwest	Zone A	Low
3	Tom Soldberg 1001 Moorland Road Madison, WI	EDR Report- WI - Registered UST (Facility ID 137793)	Closed/Removed UST: 1,000-gallon fuel oil (Tank ID No. 273821).	Closed/Removed	500 ft. west/northwest	Zone A	Low
4	Hunt Club Apartments 1002 Sunnyvale Madison, WI	EDR Report- WI - SPILLS (DNR Activity No. 04-13-279073)	SPILL: Unknown amount of raw sewage was spilled due to a break in a sewage line, closed on 6/25/01 (soil, groundwater, and storm sewer contamination).	Closed	900 ft. west/southwest	Zone A	Low
5	Baxter Trust (Cliff Baxter) 817 Moorland Road Madison, WI	EDR Report- RCRA-Small Quantity Generator & FINDS - RCRAIS WI - Registered UST (Facility ID 63837)	Closed/Removed UST: 560-gallon leaded gasoline used for residential purposes (Tank ID No. 275602)	Closed/Removed	1,700 ft. west/northwest	Upgradient ½ mile radius	Low
6	Madison Metropolitan Sewerage District, Nine Springs Wastewater Treatment Plant, & Madison Gas & Electric Company Nine Springs Substation 7300 Raywood Road Madison, WI	EDR Report- EPA ID No. WID078934403 - NPL, CERCLIS, RCRA-Small Quantity Generator, FINDS- Comprehensive Environmental Response, CERCLIS, Permit Compliance System, RCRAIS, and WI Environmental Site Registry WI - SPILLS (DNR Activity No. 04-13-045043), ERP (DNR Activity No. 02-13-167659) Visual Inspection	Release of PCB laden sludge to wetlands, river, subsurface, and groundwater in the 1970's. Cleanup in final NPL status. Conditionally exempt small quantity generator. SPILLS: Unknown amount from transformer oil containing PCBs due to transformer failure on 8/28/90, case open - historical spill, further action may not be necessary. ERP: Case closed on 2/13/04, no further action letter sent (soil and groundwater contamination).	Active	2,000 ft. east/northeast	Sidegradient ½ mile radius	Moderate
7	Madison Metropolitan Sewerage District Corner of E. Clayton Road & Larsen Road Madison, WI	Visual Inspection	Electrical Substation: Potential historical use of PCBs in transformers.	Active	2,800 ft. south	Upgradient 50 year TOT	Low
8	Katherine Anderson 342 Kent Lane Madison, WI	EDR Report- WI - SPILLS (DNR Activity No. 04-13-483916)	SPILL: 20 gallons of mineral oil leaked from the bottom of a rusted out transformer, spill closed on 5/8/03 (soil contamination).	Closed	4,000 ft. west	Upgradient 100 year TOT	Low
9	ICKE Construction Co. Inc. (John and Philip Walcko) 2642 Rimrock Road Madison, WI	EDR Report- RCRA-Small Quantity Generator, FINDS - RCRAIS WI - WF/LF, LUST (DNR Activity No. 03-13-000583), Registered UST (Facility ID 89538), ERP (DNR Activity No. 02-13-526415)	Conditionally exempt small quantity generator. Landfill ID 1713900 - inactive ash site. LUST case closed on 6/19/97 (soil contamination). Closed/Removed USTs: 10,000-gallon leaded gasoline (Tank ID No. 273192); 10,000-gallon unleaded gasoline (Tank ID No. 273191); 1,000-gallon leaded gasoline (Tank ID No. 275558); 10,000-gallon unleaded gasoline (Tank ID No. 275559). ERP: Site since 1/1/04.	Active	4,100 ft. west	Upgradient 100 year TOT	Low
10	ICKE Mall and Landfill Redevelopment 2524 Rimrock Road Madison, WI	EDR Report- WI - ERP (DNR Activity No. 02-13-001572 and 02-13-262318).	ICKE Mall - Case open since 12/15/93 (soil and groundwater contamination). ICKE Landfill Redevelopment case open since 11/24/00.	Active	4,000 ft. west	Upgradient 100 year TOT	Low-Moderate

TABLE 4-1 (cont.)

Map Site No.	Owner/Location	Database or Reference Source	Existing, Potential, or Former Contaminant Sources	Reported Status	Approximate Distance to Unit Well 28	Location within Capture Zone	Estimated Threat to Supply Wells
11	Luis Barroilhet 4793 E Clayton Road Fitchburg, WI	EDR Report- WI - Registered UST (Facility ID 106087)	Closed/Removed UST: 500-gallon fuel oil (Tank ID No. 274257).	Closed/Removed	3,900 ft. south/southwest	Upgradient 50 year TOT	Low
12	2901-2975 Rimrock Road Fitchburg, WI	EDR Report- WI - ERP (DNR Activity No. 02-13-001572)	Case open since 1/17/95 (chlorinated solvents contamination to soil, groundwater, private wells, and fractured bedrock).	Active	4,600 ft. west/southwest	Upgradient 100 year TOT	Moderate
13	55-gallon drums in undeveloped area to the north of E. Clayton Road Fitchburg, WI	Visual Inspection	Possible storage of unknown contaminants.	Unknown	4,600 ft. southwest	Upgradient 100 year TOT	Low
14	John Werth 2976 County Road MM Fitchburg, WI	EDR Report- WI - Registered UST (Facility ID 143855)	Closed/Removed UST: 300-gallon leaded gasoline used for agriculture purposes (Tank ID No. 274351).	Closed/Removed	4,800 ft. west/southwest	Upgradient 50 year TOT	Low
15	Gervasi Oil Company (Car Connection) 3045 Oregon Road (Joe D. Gervasi Sr.) Fitchburg, WI	EDR Report- FINDS - Aerometric Information Retrieval System/Facility Subsystem. WI - LUST (DNR Activity No. 03-13-000583), Registered UST (Facility ID 83099) Visual Inspection	LUST case open since 9/11/92 (soil contamination/co-contamination). Closed/Removed USTs: 4,000-gallon unleaded gasoline (Tank ID No. 274258); 500-gallon fuel oil (Tank ID No. 274259); 1,000-gallon diesel (Tank ID No. 274260); 4,000-gallon leaded gasoline (Tank ID No. 274261); 500-gallon used motor oil (Tank ID No. 463203). Used Automobile Lot.	Active	4,900 ft. west/southwest	Upgradient 100 year TOT	Low
16	Dane County, Highway Department County Road MM and Rimrock Road Fitchburg, WI	EDR Report - WI - Registered UST (Facility ID 159578)	Closed/Removed UST: 500-gallon fuel oil (Tank ID No. 422844)	Closed/Removed	5,000 ft west/southwest	Upgradient 100 year TOT	Low-Moderate
17	Carl Strobel 3022 County Road MM Fitchburg, WI	EDR Report- WI - Registered UST (Facility ID 60239)	Active UST: 1,000-gallon fuel oil (Tank ID No. 274296).	Active	5,700 ft. southwest	Upgradient 100 year TOT	Moderate
18	Browning Ferris Industries (Mike's Towing) 3083 Oregon Road Fitchburg, WI	EDR Report- EPA ID No. WID114115850 - RCRA-Small Quantity Generator, FINDS- RCRAIS, WI - Registered UST & AST Visual Inspection	Conditionally exempt small quantity generator. Auto Salvage Yard - no information available on UST or AST.	Active	5,900 ft. southwest	Upgradient 100 year TOT	Low
19	Mid-Wisconsin Inc. Dumpsite Oregon Road Fitchburg, WI	Visual Inspection	Allowed Materials Include: Sand, gravel, dirt, clay, brick, block, rock, concrete, and black top.	Active	6,100 ft. southwest	Upgradient 100 year TOT	Low
20	Northern Turf (Sod Farm) 5027 W. Clayton Road, Fitchburg, WI	Visual Inspection	Grass Areas: Nutrient, pesticide, and herbicide loading.	Active	7,200 ft. southwest	Upgradient 100 year TOT	Low
21	Metrogro (Madison Metropolitan Sewerage District) 1610 Moorland Road Madison, WI	EDR Report- RCRA-Small Quantity Generator, RODS, FINDS-Comprehensive Environmental Response, CERCLIS, Permit Compliance System, RCRAIS, and WI Environmental Site Registry; and MLTS; WI - Hazardous Waste Site (SHWS), LUST, Registered UST & AST (Facility ID 106789), WDS, BRRTS, ERP, and WRRSER; Visual Inspection	Conditionally exempt small quantity generator. Closed/Removed USTs: 1,000-gallon unleaded gasoline (Tank ID 275491). Sewage Spreading, Diesel AST	Active	2,800 ft. east	Sidegradient beyond ½ mile radius	Moderate

TABLE 4-1 (cont.)							
Map Site No.	Owner/Location	Database or Reference Source	Existing, Potential, or Former Contaminant Sources	Reported Status	Approximate Distance to Unit Well 28	Location within Capture Zone	Estimated Threat to Supply Wells
22	Numerous properties throughout area.	Visual Inspection	Parking Surfaces: Runoff to drainage ways and detention areas.	Active	Variable	All Zones	Low-Moderate
23	Numerous properties throughout area.	Visual Inspection	Grass Areas: Potential nutrient loading.	Active	Variable	All Zones	Low-Moderate
24	Oregon Road (south of Nine Springs Creek), Herman Road, W & E Clayton Roads, Larsen Road, and Meadowview Road Fitchburg, WI	Visual Inspection	Private water supply wells. Private sewage disposal systems.	Active	Variable	Upgradient 100 year TOT	Low-Moderate
25	Numerous Parcels	Visual Inspection	Agricultural Fields: Row crops. Nutrient loading.	Active	3,700 ft. + south/southwest	100 year TOT- All Zones	Low
26	Highway 14, County Road MM, and Moorland Road	Visual Inspection	Salt application. Potential spills.	Active	<50 ft	½ mile radius and 100 year TOT - All Zones	Low-Moderate

Notes:

1. Map Site No. 1 removed from Table 4-1 summary. Not located within the Well 30 WHPA or review area.
2. Zone A = Within 5 year TOT ZOC
3. Zone B = Beyond Zone A, but within 1200-ft. radius.
4. Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS)
5. National Priorities List (NPL)
6. Resource Conservation and Recovery Act- Large Quantity Generator (RCRA-LQG)
7. Resource Conservation and Recover Act- Small Quantity Generator (RCRA - SQG)
8. The Facility Index System (FINDS)
9. Wisconsin DNR Spills Database (SPILLS)
10. Wisconsin Leaking Underground Storage Tank List (LUST)
11. Wisconsin Environmental Repair Program Sites (ERP)
12. Underground Storage Tank (UST)
13. Aboveground Storage Tank (AST)
14. Bureau (of Commerce) Remediation and Redevelopment Tracking System (BRRTS)
15. Wisconsin (WI)
16. Resource Conservation and Recovery Information System - Treatment, Storage, and Disposal Facilities (RCRAIS)
17. Wisconsin Department of Natural Resources (DNR)
18. Environmental Protection Agency (EPA)
19. Time of Travel (TOT)
20. List of Licensed Landfills (WF/LF)

According to the Wisconsin registered storage tank list, the nearest AST is believed to be located approximately 5,900 feet southwest of Unit Well 3083 on Oregon Road.

According to the Wisconsin spills database, two spills have occurred within 1,200 feet of Unit Well 30. One of these spills was located approximately 500 feet northwest of Unit Well 30, at 1042 Moorland Road, and was closed in August 2003. The other spill was located approximately 900 feet west-southwest of Unit Well 30, at 1002 Sunnyvale, and was closed in June 2001.

There are no apparent solid waste storage sites in the Unit Well 30 WHPA. A solid waste storage site is located along Oregon Road (approximately 6,100 feet southwest of Unit Well 30). The site is located beyond the 50-year TOT ZOC. Signs at the site indicate materials allowed include sand, gravel, dirt, clay, brick, block, rock, concrete, and blacktop. Government records indicate an inactive landfill is located along Rimrock Road (approximately 4,100 feet west of Unit Well 30). The landfill was reported to have been an ash dumpsite. Other solid waste sites are demolition debris sites located approximately 4,000 feet and 5,000 feet southwest of Unit Well 30 (DCRPC, 1999).

There are no cemeteries located in the vicinity of Unit Well 30.

Based on the site reconnaissance and review of the government records, the Madison Metropolitan Sewerage Districts (MMSD) Nine Springs Wastewater Treatment Plant is located at 7300 Raywood Road, approximately 2,000 feet east of Unit Well 30. In the 1970s PCB laden sludge from the site was released into the subsurface, groundwater, and nearby wetlands and surface water. The site was placed on the EPA's National Priority List. Cleanup at the site is reported to be in the final stages. According to the DNR, the site is considered of low concern.

There are no sludge or septage spreading areas in the Unit Well 30 WHPA. MMSD has a sludge and septage disposal site, Metrogro, located at 1610 Moorland Road, approximately 3,100 feet east of Unit Well 30. The MMSD site is located outside the ½-mile radius and the recharge area equivalent to the delineated 100-year TOT of Unit Well 30, however, should be given consideration in WHP planning. The nearest approved septage application sites are located approximately 7 miles southeast and northeast of Unit Well 30 (DCRPC, 1999).

According to the DNR BRRTS website, there are no properties with residual groundwater contamination exceeding Ch. NR 140 enforcement standards as recorded on the GIS registry in the vicinity of Unit Well 30.

No bulk salt storage sheds, or bulk pesticide, fertilizer storage, and/or mix-load sites were identified within the ½-mile radius or the recharge area equivalent to the delineated 100-year TOT of Unit Well 30, or within the upgradient recharge area.

The separation distances between Unit Well 30 and potential contaminant sources identified in Wisconsin Administrative Code NR 811.16 are summarized in Table 4-2. It appears that required separation distances from Unit Well 30 and potential contaminant sources, identified in the code, are currently being met.

**TABLE 4-2
 MINIMUM SEPARATION REQUIREMENTS
 BETWEEN PUBLIC WELLS AND
 POTENTIAL CONTAMINANT SOURCES
 WELLHEAD PROTECTION PLAN, UNIT WELL 30
 MADISON, WISCONSIN
 EARTH TECH PROJECT NO. 82359**

Potential Contamination Source	Minimum Separation Distance
Storm Sewer	50 feet
Sanitary Sewer	200 feet ¹
Sanitary Lift Station	200 feet
Single Family Residential Fuel Oil Tank	200 feet
Septic Tank Receiving Less than 8,000 gpd	400 feet
Cemetery	400 feet
Stormwater Drainage Pond	400 feet
Gasoline or Fuel Oil Tank Approved by Comm 10.10	600 feet
Land Application of Municipal, Commercial, or Industrial Waste	1,000 feet
Boundaries of Land Spreading Facility Regulated Under Chapter NR 718	1,000 feet
Industrial, Commercial, or Municipal Wastewater Lagoons or Storage Structures	1,000 feet
Manure Stacks or Storage Structures	1,000 feet
Septic Tanks or Soil Absorptive Units Receiving Greater than 8,000 gpd	1,000 feet
Solid Waste Storage, Transportation, Transfer, Incineration, Air Curtain Destructor, Processing, Wood Burning, or One-Time Disposal or Small Demolition Facility	1,200 feet
Sanitary Landfill	1,200 feet
Property with Residual Groundwater Contamination Exceeding Chapter NR 140 Enforcement Standards as Recorded on the DNR GIS Registry	1,200 feet
Coal Storage Area	1,200 feet
Salt or Deicing Material Storage	1,200 feet
Gasoline or Fuel Oil Storage Tanks not Approved by Comm 10.10	1,200 feet
Bulk Fuel Storage Facilities	1,200 feet
Pesticide or Fertilizer Handling or Storage Facilities	1,200 feet

Reference: Wisconsin Administrative Code, NR 811, June 2003.

Footnote:

¹ Lesser separation for sanitary sewer may be allowed if the sewer is constructed of water main materials and pressure tested. Less than 50 feet separation is not allowed.

4.2 LAND USES AND WELLHEAD PROTECTION PLANNING

Existing land uses in the vicinity of Unit Well 30 are generally compatible with WHP planning. Land uses summarized in Table 4-2 should be prohibited in the vicinity of Unit Well 30, within the respective minimum separation distances shown. It is not desirable to have commercial, manufacturing, or industrial districts located in WHPAs. Land uses summarized in Table I-1 in Appendix I should be prohibited from WHPA Zones A and B. Where any of the uses listed in Table I-1 currently exist within Zones A and B, owners should be allowed to upgrade the facilities to facilitate or enhance groundwater protection.

Tables 4-4 and 4-5 in Appendix I summarize several potential sources of groundwater contamination and land uses and their relative risk to groundwater, respectively.

5.0 MANAGEMENT STRATEGIES

5.1 ALTERNATIVE MANAGEMENT STRATEGIES

Table 5-1 summarizes key elements of a management plan developed for the City of Madison. Activities were identified for resource management within the delineated WHPA and within far upgradient ZOCs.

The various activities can be grouped into five principal categories as follows:

1. Existing programs
2. Land use controls
3. Intergovernmental cooperation
4. Monitoring
5. Public education and awareness

Because all landowners within the WHPA rely on groundwater resources for water supply, and a few maintain private water supply wells, emphasis should be placed on management activities that will provide a mutual benefit to the City of Madison residents and other property owners located within the WHPA and other ZOCs.

5.1.1 Category 1 - Existing Programs

5.1.1.1 Hazardous Waste Collection/Disposal Program (Clean Sweep)

The Dane County Department of Public Works and the City of Madison Department of Public Health co-sponsor the Clean Sweep Collection Program. The Clean Sweep program involves collection and disposal of residential, agricultural, and small business hazardous chemicals and wastes. Disposal of household residential hazardous wastes is free. Small quantities of hazardous materials and wastes from small businesses are accepted by appointment, and there is a per-pound charge for materials. There is no charge for disposal of hazardous materials disposed of by producers of agricultural crops and commodities. Collections are held between 7:30 a.m. and 2:00 p.m. on Tuesdays, Wednesdays, Fridays, and Saturdays, May 1 through October 31. The Clean Sweep site is located at the Dane County Highway Garage, 2302 Fish Hatchery Road, Madison, Wisconsin. The phone number at the Clean Sweep site is (608) 267-3105.

Information about the Clean Sweep Collection Program can be obtained by calling (608) 294-5366 or (608) 294-5358. Clean Sweep Collection Program web sites are at:

www.danecountycleansweep.com

and

www.cityofmadison.com/health/envhealth/clnswp.html

The Clean Sweep Collection Program is advertised using public service announcements and materials distributed by municipalities. Funding for the program is provided by a percentage of

**TABLE 5-1
SUMMARY OF MANAGEMENT STRATEGIES
WELLHEAD PROTECTION AREA PLAN - UNIT WELL 30
MADISON, WISCONSIN**

Program Category	Activity	Description	Responsible Unit(s) of Government	Implementation Schedule	
				Date	Action Item
1. Existing Programs	a. Hazardous Waste Collection (CLEAN SWEEP)	<ul style="list-style-type: none"> Hazardous waste collection and disposal. Residential, agricultural, and small business hazardous waste. Commercial with small fee. May through October collections in Madison. Target local property owners and residents to participate. 	<ul style="list-style-type: none"> Dane County Department of Public Works City of Madison Department of Public Health 	1. 2006.	1. Madison Water Utility send information about the Clean Sweep Collection Program to property owners in the WHPA, to encourage participation in the program.
				2. As needed.	2. Dane County sponsors advertising and feature articles.
	b. On Site Waste Disposal System (Septic) Maintenance	<ul style="list-style-type: none"> Maintenance/servicing contract currently required for system owners on record. Orders issued to confirmed failing system owners. Include all property/septic system owners in WHPA in notification database. Conduct Public Education. 	<ul style="list-style-type: none"> Dane County Environmental Health Department 	1. 2006, then annually	1. Madison Water Utility request that the Dane County Environmental Health Department provide the names and addresses of owners of private sewage disposal systems located in the Unit Well 30 WHPA.
				2. 2006	2. Madison Water Utility provide information to owners of private sewage disposal systems about sewage system maintenance, and the types of waste that should not be disposed of in a septic system.
				3. 2006	3. Madison Water Utility prepare an article for newspaper release about septic system dos and don'ts.
				4. Every 3 years	4. Dane County Environmental Health Department ensure that system maintenance and pumping are performed.

TABLE 5-1 (cont.)

Program Category	Activity	Description	Responsible Unit(s) of Government	Implementation Schedule	
				Date	Action Item
1. Existing Programs (cont.)	c. Private Well Abandonment	<ul style="list-style-type: none"> Enforce well abandonment ordinance(s) (Dane County Chapter 45, and City of Madison General Ordinance Sec. 13.21) and review new well construction. Require proper abandonment of unused and unsafe wells. Update well inventory in WHPA once every 5 years. Familiarize with WI Admin. Codes, Chapters NR 141, 811, and 812. 	<ul style="list-style-type: none"> Wisconsin DNR Dane County Environmental Health Department City of Madison 	<ol style="list-style-type: none"> 2006, then annually 2006, then every five years (2011) 2006 2006, then every five years Ongoing 2006 As needed 	<ol style="list-style-type: none"> Madison Water Utility request that the Dane County Environmental Health Department provide them the names and addresses of owners of private wells located in the Unit Well 30 WHPA. Madison Water Utility determine the location of other private water supply wells that may be located within the WHPA and which are not recorded in the County database. Madison Water Utility send private well owners within the WHPA, DNR pamphlets about well upkeep and proper abandonment procedures in the event the owners abandon their existing wells. Madison Water Utility update the private well inventory for wells located in the WHPA. City of Madison and Dane County enforce existing well abandonment ordinances, to ensure that all private wells are permitted, or properly abandoned if unused. Madison Water Utility request that Dane County consider proximity and depth of proposed private wells relative to Unit Well 30 prior to issuing permits for construction of new private water supply wells. Madison Water Utility direct residents to the DNR private well code (Chapter NR 812) or to the Wisconsin DNR private well section (608-266-0821) when questions arise about private water supply wells.

TABLE 5-1 (cont.)

Program Category	Activity	Description	Responsible Unit(s) of Government	Implementation Schedule	
				Date	Action Item
1. Existing Programs (cont.)	d. Land Application of Sludge and Septage	<ul style="list-style-type: none"> Enforce existing rules. 	<ul style="list-style-type: none"> Wisconsin DNR Dane County Madison Metropolitan Sewerage District (MMSD) 	1. 2006	1. Madison Water Utility provide a copy of the WHPA and recharge area maps to the MMSD and request that sludge not be spread in the Unit Well 30 recharge area equivalent to the 50-year TOT capture zone.
				2. 2006	2. Madison Water Utility provide a copy of the WHPA and recharge area maps to the DNR Watershed Management office (608-267-7694 (central office) 608-275-3325 (Fitchburg office)) and request that new permits for sludge and septage spreading not be issued for properties located in the Unit Well 30 recharge area equivalent to the 50-year TOT capture zone.
				3. Ongoing	3. Madison Water Utility encourage development of additional authorized septage discharge points in the City of Madison wastewater treatment system.
				4. Ongoing	4. DNR enforce rules, particularly in WHPAs.
				5. 2006-2007	5. Dane County develop regulatory program including ordinance.
	e. Spill Notification and Awareness of Remedial Investigation and Cleanup	<ul style="list-style-type: none"> Monitor and keep informed of potential contamination sources in the WHPA and recharge areas. Work with DNR to achieve investigation and cleanup of known contamination sources. 	<ul style="list-style-type: none"> Wisconsin DNR Dane County Emergency Management Wisconsin DATCP and COMM City of Madison Fire Department 	1. 2006	1. Madison Water Utility request that DNR, City Police, and the Dane County Emergency Management Office inform the City about future events (spills, leaks, investigations, etc.) that occur in the Unit Well 30 WHPA or in upgradient recharge areas.
				2. 2006 - ongoing	2. Madison Water Utility monitor the status of existing and potential contamination sources in the WHPA, investigations regarding nature and extent of releases, and the status of cleanup activities, then determine if Utility action is needed.
2. Land Use Controls	a. Existing Zoning/Wellhead Protection Overlay Zoning and Ordinance	<ul style="list-style-type: none"> Enforce existing zoning. Discourage conditional uses or zoning changes that increase risk to groundwater. 	<ul style="list-style-type: none"> City of Madison Dane County Planning and Development City of Fitchburg Town of Blooming Grove Town of Dunn 	1. 2006 - Ongoing	1. City of Madison amend WHP ordinance and add WP-30 Wellhead Protection District No. 30.
				2. 2006	2. City of Madison provide Dane County, City of Fitchburg, Towns of Blooming Grove and Dunn with a copy of the WHP ordinance and WHPA map.
				3. 2006-2007	3. Dane County consider developing WHP Overlay District ordinance.

TABLE 5-1 (cont.)

Program Category	Activity	Description	Responsible Unit(s) of Government	Implementation Schedule	
				Date	Action Item
3. Intergovernmental Cooperation	a. Land Use Planning and Site Plan Review	<ul style="list-style-type: none"> Cooperate in land use planning to protect groundwater resources and WHPAs. Keep apprised of development in WHPA. Ensure development complies with separation distances between the well and potential contamination sources as required by WI Admin. Code, Chapter NR 811.16. 	<ul style="list-style-type: none"> City of Madison Planning and Development Department Dane County Planning and Development Department City of Fitchburg Town of Blooming Grove Town of Dunn 	1. 2006	<ol style="list-style-type: none"> City of Madison provide Dane County, City of Fitchburg, and the Towns of Blooming Grove and Dunn with a copy of: <ol style="list-style-type: none"> The WHPP and maps showing the Unit Well 30 WHPA and ZOCs. A summary of separation distances required between municipal water supply wells and potential contamination sources (Wisconsin Administrative Code, Chapter NR 811.16(4)(d)). A list of potential contamination sources that can threaten groundwater. A list of high risk land uses that should be prohibited from WHPAs.
				2. 2006 - Ongoing	<ol style="list-style-type: none"> City of Madison Planning and Development Department ensure that development complies with separation distances required between municipal water supply wells and potential contamination sources.
				3. 2006 - Ongoing	<ol style="list-style-type: none"> City of Madison encourage the Towns of Blooming Grove and Dunn, City of Fitchburg, and Dane County Boards to review proposed development in the WHPA in their jurisdiction, before construction approval, to ensure compliance with separation distances between Unit Well 30 and potential contamination sources.
				4. 2006	<ol style="list-style-type: none"> City of Madison Planning and Development Department develop an Environmental Permits Checklist for site plan review. The checklist will help ensure compliance with local, County, and State permits and will raise awareness about groundwater protection.
				5. 2006 - Ongoing	<ol style="list-style-type: none"> City of Madison Planning and Development Department provide a copy of the WHPA map and Site Plan Review Environmental Permits Checklist to developers and property owners and require that the developer indicate on the environmental permits checklist and hazardous substances reporting form whether the proposed development is in a WHPA.
4. Monitoring	a. Contaminant Source Inventory (CSI) Maintenance	<ul style="list-style-type: none"> Update CSI and conduct windshield survey 	<ul style="list-style-type: none"> Madison Water Utility 	1. January 2005, then every 5 years (January 2010)	<ol style="list-style-type: none"> Madison Water Utility update the CSI by conducting a windshield survey of properties located in the WHPA and by performing State and Federal database checks.
	b. Water Quality Monitoring	<ul style="list-style-type: none"> Conduct sampling of supply wells. 	<ul style="list-style-type: none"> Madison Water Utility 	1. As required - Ongoing	<ol style="list-style-type: none"> Madison Water Utility perform water quality monitoring as required by DNR and as otherwise needed.

TABLE 5-1 (cont.)

Program Category	Activity	Description	Responsible Unit(s) of Government	Implementation Schedule	
				Date	Action Item
5. Public Education and Awareness (cont.)	e. Land Use and Contaminant Source Awareness	<ul style="list-style-type: none"> Notify and offer guidance to owners of potential high risk land uses in WHPA. 	<ul style="list-style-type: none"> City of Madison 	1. 2006	<p>1. Madison Water Utility provide information to owners of property with existing or potential contamination sources located within the WHPA to emphasize the importance of awareness of the WHPA, the owner's location with respect to the WHPA, and potential contamination source(s) of concern. Specific information to be provided includes:</p> <ul style="list-style-type: none"> a. Septic systems do's and don'ts. b. Leaking underground and above ground storage tanks. c. Materials describing the proper use and application of lawn fertilizers and pesticides.
	f. School Programs	<ul style="list-style-type: none"> Participate in school programs. 	<ul style="list-style-type: none"> City of Madison University Extension Office Madison Public Schools 	<p>1. 2006</p> <p>2. 2006</p>	<p>1. Madison Water Utility inform schools about the availability of tours at water supply facilities.</p> <p>2. Madison Water Utility prepare a water/groundwater fact sheet for school education.</p>

tipping fees collected at local landfills and support from the Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP). Additional information about the Clean Sweep Collection Program is in Appendix J.

The Clean Sweep Collection Program will be coupled with the City of Madison's WHP planning efforts. The following will be completed for this management activity:

1. Madison Water Utility will send information about the Clean Sweep Collection Program to property owners in the WHPA, to encourage participation in the program.

5.1.1.2 On-Site Waste Disposal System Maintenance

The nearest private sewage disposal systems are located approximately 1 mile south of Unit Well 30 in the City of Fitchburg, and the Town of Dunn. The disposal systems are located between the 50-year and 100-year TOT capture zones and beyond. The Dane County Human Services Department, Environmental Health Services has an existing program for maintenance/servicing of private on-site waste disposal (septic) systems. Data for private waste disposal systems are recorded in a central database. All owners of septic systems are required every three years to have their septic tanks pumped and inspected and any required maintenance performed. The County charges the owners of septic systems a \$26 filing fee at the time the maintenance/servicing is performed.

The Dane County Environmental Health Services investigates complaints about non-complying sewage disposal systems and issues replacement orders to owners of failing systems.

The following will be completed for this management activity:

1. Madison Water Utility will request that the Dane County Environmental Health Services provide them the names and addresses of owners of private sewage systems located in the Unit Well 30 WHPA.
2. Madison Water Utility will send a mailing to owners of private sewage disposal systems located within the WHPAs, about sewage system maintenance, and the types of waste that should not be disposed of in a septic system.

5.1.1.3 Well Abandonment

The proposed strategies under this category for WHP include public education and private well inventory maintenance. Education will improve awareness on the part of private well owners of the importance of proper well abandonment. There are several private wells located within the WHPA in the City of Fitchburg and Town of Dunn, south of Nine Springs Creek. The wells are owned by private residents and appear to be terminated primarily in the upper bedrock aquifer.

The City of Madison (General Ordinance Section 13.21) and Dane County (Chapter 45) have well abandonment ordinances for non-complying, unsafe, and unused wells. A copy of the City of Madison Well Abandonment Ordinance and the Dane County ordinance "Relating to Private Water Systems" are in Appendix K. Other information about wells and well abandonment is in Appendix L.

Dane County and the Wisconsin DNR have regulatory authority for proper construction and abandonment of unused wells (Wisconsin Administrative Code, Chapters NR 811 and 812). Dane County sanitarians review well siting permit applications, issue permits, inspect wells after construction and oversee the abandonment of unsafe, unused, or non-complying wells. The Dane County Health Services Division administers a county reimbursement program for abandoning these categories of wells.

The following will be completed for this management activity:

1. Madison Water Utility will request that the Dane County Environmental Health Services provide them the names and addresses of owners of private wells located in the Unit Well 30 WHPA.
2. Madison Water Utility will determine the location of other private water supply wells that may be located within the WHPA and which are not recorded in the County database.
3. Madison Water Utility will send private well owners within the WHPA, DNR pamphlets about well upkeep and proper abandonment procedures in the event the owners abandon their existing wells.
4. Every five years, Madison Water Utility will update the private well inventory for wells located in the WHPA.
5. The City of Madison and Dane County will enforce the existing City and Dane County well abandonment ordinances, to ensure that all private wells are permitted, or properly abandoned if unused.
6. Madison Water Utility will request that Dane County consider proximity and depth of proposed private wells relative to Unit Well 30 prior to issuing permits for construction of new private water supply wells.
7. Madison Water Utility will direct residents to the DNR private well code (Chapter NR 812) or to the Wisconsin DNR private well section (608-266-0821) when questions arise about private water supply wells.

5.1.1.4 Land Application of Sludge and Septage

There appears to be no permitted septage application sites within the Unit Well 30 ZOC. It is reported that some manure spreading occurs in the vicinity of the Oregon-Clayton Roads area. Metrogro (Madison Metropolitan Sewerage District) spreads sludge in areas east of Unit Well 30, beyond the Unit Well 30 ZOCs. The Wisconsin DNR issues permits for septage and sludge disposal sites in Wisconsin.

The following will be completed for this management activity:

1. Madison Water Utility will provide a copy of the WHPA and recharge area maps to the MMSD and request that sludge and septage not be spread in the Unit Well 30 recharge area equivalent to the 50-year TOT capture zone.

2. Madison Water Utility will provide a copy of the WHPA and recharge area maps to the DNR Watershed Management office (608-267-7694 (central office) 608-275-3325 (Fitchburg office)) and request that new permits for sludge and septage spreading not be issued for properties located in the Unit Well 30 recharge area equivalent to the 50-year TOT capture zone.
3. Madison Water Utility will encourage development of additional authorized septage discharge points in the City of Madison wastewater treatment system.

5.1.1.5 Spill Notification and Awareness of Remedial Investigation and Cleanup

There are two closed spill sites within the Unit Well 30 WHPA. The following will be completed for this management activity:

1. Madison Water Utility will request that the City Police, DNR and the Dane County Emergency Management Office inform the Utility about future events (spills, leaks, investigations, etc.) that occur in the Unit Well 30 WHPA or in upgradient recharge areas.
2. Madison Water Utility will monitor the status of existing and potential contamination sources in the WHPA and upgradient recharge areas, investigations regarding nature and extent of releases, and the status of cleanup activities.

5.1.2 Category 2 - Land Use Controls

5.1.2.1 Existing Zoning/Wellhead Protection Overlay Zoning and Ordinance

The City of Madison, Dane County, and other local Cities and Townships have land subdivision and zoning ordinances to control and direct development. Land subdivision and zoning ordinances are used to safeguard flood plains, wetlands, shore lands, highway access, air quality, surface water, and other concerns. Existing zoning regulations will be enforced to help protect municipal well recharge areas and groundwater.

The City of Madison has a WHP ordinance. The ordinance prohibits incompatible development with the establishment of an overlay district for the 5-year TOT ZOC (Zone A) and the 1,200-foot radius ZOC (Zone B). The WHP ordinance helps ensure that future potential contamination sources are not located in the Unit Well 30 WHPA. A copy of the WHP ordinance is in Appendix M.

The following will be completed for this management activity:

1. The City of Madison will amend Section 28.06 of the Madison General Ordinances and add Wellhead Protection District No. 30.
2. The City of Madison will provide Dane County, City of Fitchburg, and Dunn Township with a copy of the WHP ordinance and Unit Well 30 WHPA map.

5.1.3 Category 3 - Intergovernmental Cooperation

5.1.3.1 Land Use Planning and Site Plan Review

Land use planning is performed to control and direct development. Land use planning and site plan review should also be used to help protect WHPAs. The following will be completed for this management activity:

1. The City of Madison will provide Dane County, the City of Fitchburg, and the Townships of Blooming Grove and Dunn with a copy of:
 - a. The WHPP and maps showing the Unit Well 30 WHPA and recharge areas.
 - b. A summary of separation distances required between municipal water supply wells and potential contamination sources (Wisconsin Administrative Code, Chapter NR 811.16(4)(d)).
 - c. A list of potential contamination sources that can threaten groundwater.
 - d. A list of high-risk land uses that should be prohibited from WHPAs.
2. The City of Madison Planning and Development Department will ensure that development complies with separation distances required between municipal water supply wells and potential contamination sources.
3. The City of Madison will encourage the Town of Blooming Grove, Dunn Township, the City of Fitchburg, and Dane County Boards to review proposed development in the WHPA and ZOCs in their jurisdiction, before construction approval, to ensure compliance with separation distances between Unit Well 30 and potential contamination sources.
4. The City of Madison Planning and Development Department will develop an Environmental Permits Checklist for site plan review. The checklist will help ensure compliance with local, County, and State permits and will raise awareness about groundwater protection.
5. The City of Madison Planning and Development Department will provide a copy of the WHPA map and Site Plan Review Environmental Permits Checklist to developers and property owners and require that the developer indicate on the environmental permits checklist and hazardous substances reporting form whether the proposed development is in a WHPA.

5.1.4 Category 4 - Monitoring

5.1.4.1 CSI Maintenance

As part of this study, a CSI was conducted within the delineated WHPA. It will be important to maintain current knowledge of land use, potential contamination sources, and development within the WHPA. The following will be completed for this management activity:

1. Madison Water Utility will update the CSI by conducting a windshield survey of properties located in the WHPA and by performing State and Federal database checks on an interval of once every five years.

5.1.4.2 Water Quality Monitoring

Currently, each of the City of Madison's supply wells are tested annually, some are tested more often depending on the analytes, and the detected level. Volatile organic compounds (VOCs) are tested annually and quarterly for several wells. Synthetic organic compounds (SOCs) are tested every three years. Inorganic testing is done every three years. Microbiological testing, total coliform bacteria are tested for weekly. Results are summarized and reviewed for conformance with regulatory drinking water standards, for comparison with current water quality results, and to identify any potential trends in contaminant concentrations.

The following will be completed for this management activity:

1. Madison Water Utility will perform water quality monitoring as required by DNR and as otherwise needed.

5.1.5 Category 5 - Public Education and Awareness

The City of Madison will implement an education program to inform area residents of the need to protect the public water supply. Education is the best way to help people understand that what they apply on or dispose in their land today may be what they or their neighbors drink tomorrow. The public education program will consist of the following:

1. Make available copies of the WHPP
2. Public Informational Meeting
3. News releases
4. Make available and distribute information materials
5. Land Use and Contaminant Source Awareness
6. School programs

5.1.5.1 Availability of WHPP

The following will be completed for this management activity:

1. The City of Madison will provide copies of the WHPP for review by the public at the Water Utility Office, Madison Public Library, and City Hall.
2. The City of Madison will provide copies of the WHPP to the Town of Blooming Grove, Dunn Township, the City of Fitchburg, and Dane County.
3. Madison Water Utility will communicate the availability of the plan through a newspaper article.

5.1.5.2 Public Informational Meeting

The purpose of a public informational meeting will be to inform residents of the WHPP, and provide an opportunity for public education and awareness.

The following will be completed for this management activity:

1. The City of Madison will conduct a public informational meeting as part of a City committee meeting or the Common Council meeting during the review phase of the WHPP.
2. The City of Madison will provide WHPA maps available for public review and an information sheet or brochure available for public use.

5.1.5.3 News Releases

The purposes of news releases are to elevate public awareness, educate the public on the need for WHP, and provide examples of prudent WHP measures. Initially, a news release will inform the public that a WHPP has been developed for Unit Well 30, and will indicate the locations where the WHPP will be available for review.

The following will be completed for this management activity:

1. Madison Water Utility will provide a news release to the local newspaper, at the beginning of the WHP project for Unit Well 30, then annually.

5.1.5.4 Informational Materials Distributed to Residents in WHPA

Informational materials will be prepared and distributed to residents living within the WHPA to educate and inform property owners about various topics such as WHP planning activities, and best waste management procedures.

The following will be completed for this management activity:

1. Madison Water Utility will prepare informational materials and/or obtain from the Wisconsin DNR Bureau of Drinking Water and Groundwater, Dane County or UW Extension fliers, brochures, and pamphlets, including:
 - a. Information about hazardous waste collection/disposal program (Clean Sweep) activities
 - b. Materials describing the proper use and application of agricultural and lawn fertilizers and pesticides
 - c. WHP planning
 - d. Annual Consumer Confidence Report (CCR) containing information about WHP planning.
2. Madison Water Utility will add information to its website homepage (<http://www.madisonwater.org>) about WHP planning.

5.1.5.5 Land Use and Contaminant Source Awareness

During the CSI, properties were identified with land uses and existing or potential contaminant sources that pose, or may pose, a risk to groundwater. To increase awareness and minimize risk to groundwater and Unit Well 30, it is important to inform property owners about existing and potential contaminant sources on their properties. An initial mailing will be made at the beginning of the WHP program. In this mailing, property owners will be advised to contact the City if they have questions, or require additional information.

The following will be completed for this management activity:

1. Madison Water Utility will provide information to owners of property with existing or potential contaminant sources located within the WHPA to emphasize the importance of awareness of the WHPA, the owner's location with respect to the WHPA, and potential contaminant source(s) of concern. Specific information to be provided includes:
 - a. Septic system do's and don'ts
 - b. Leaking underground and aboveground storage tanks
 - c. Materials describing the proper use and application of lawn fertilizers and pesticides

5.1.5.6 School Programs

The City of Madison will participate in school education programs. The following will be completed for this management activity:

1. Madison Water Utility will inform schools about the availability of tours at water supply facilities. During tours, students will be exposed to important concepts related to groundwater and WHP.
2. Madison Water Utility will prepare a water/groundwater fact sheet for school education programs.

5.2 WATER CONSERVATION PROGRAM

The Madison Water Utility has an existing water conservation program that includes addressing the needs for both water accountability in the distribution system and water conservation by the public.

During 2005, the Utility maintained water accountability in the distribution system of 89 percent. The Utility maintains this high level of water accountability by regularly servicing water meters, reviewing water accountability records, and conducting water leak detection surveys when needed.

The Utility currently has brochures available free to the public describing useful water conservation measures. The brochures are also distributed to the public and discussed in speaking engagements with local organizations and schools by Water Utility staff.

The Madison Water Utility also has information about water conservation at its website (<http://www.madisonwater.org>). Water conservation information is in Appendix N.

The Utility has the authority to impose water use restrictions when necessary.

5.3 CONTINGENCY PLAN

The Utility has formulated a contingency plan for providing water in the event that Unit Well 30 or one or more of the City's other water supply wells became contaminated or removed from service. The plan primarily relies on the capacity of the system without the capacity of any given well or wells to meet the supply needs of the City of Madison.

The City's water system was designed to supply the maximum water demand for an indefinite period with the largest well out of service. As a result, if Unit Well 30, or any other supply well of the water system, is out of service for a short period of time, the reliable water supply capacity is sufficient to meet demands. Well 30 provides reliable supply to the water system and fire protection for the southeastern part of the City. By utilizing the existing water system currently in place, the City is prepared to meet short-term water supply needs if Unit Well 30 were contaminated or removed from service.

Additionally, the City's wells and wellfields are widely spaced and generally have different recharge areas, thereby making them less vulnerable to potential localized contamination. Unit Well 30 is equipped with a permanent standby generator in the event of a power failure. Several other supply well pumping stations are equipped with standby generators, or power plugs for connecting portable generators.

The contingency plan also relies on communication with first responders and a plan of action in the event of a water system emergency. Dane County Emergency Management Office will be requested to notify the Water Utility if there is an occurrence in the vicinity of the Unit Well 30 WHPA.

A list of emergency contact numbers was compiled to provide Utility staff immediate access to the appropriate agencies in the event of an emergency. This list is provided in Table 5-2.

5.4 MANAGEMENT PLAN

A management plan was formulated to help protect the Unit Well 30 WHPA from existing and potential future sources of contamination. Table 5-1 summarizes major elements of the management plan.

Public education is an important element in the management plan, particularly because the Unit Well 30 ZOCs include property in the City of Madison, City of Fitchburg, Town of Blooming Grove and Town of Dunn. Educational activities will provide a mutual benefit to the City of Madison and other property owners located within the ZOCs.

The hazardous waste collection/disposal program (Clean Sweep) will also be an important part of the management plan. The program provides a means for residents and businesses in the WHPA and throughout the area to properly dispose of hazardous chemicals. Residents and producers of agricultural crops and commodities can dispose of hazardous materials and

**TABLE 5-2
EMERGENCY CONTACT NUMBERS
WELLHEAD PROTECTION PLAN, UNIT WELL 30
MADISON, WISCONSIN**

	Name	Phone No.
Water Utility Emergency Service	On-call	Office: 608-266-4665
General Manager	David Denig-Chakroff	Office: 608-266-4651
Principal Engineer	Alan Larson	Office: 608-266-4653
Civil Engineer	Dennis Cawley	Office: 608-261-9243
Police Department	Emergency Dispatch Non-Emergency Dispatch	911 608-255-2345
Fire Department	Emergency Dispatch Administration	911 608-266-4420
Dane County Emergency Response	On-Call	911
Dane County Emergency Management Office	Hazardous Materials Planning Office (General)	608-266-4330
Local - DNR Water Supply Contact Person	Tom Stunkard Fitchburg	608-275-3300
Central Office - DNR Water Supply	Norman Hahn Madison	608-267-7661
Well Driller	Municipal Well & Pump Tracy Greenfield	Office: 920-324-3400 Cellular: 262-424-2328
Well Driller	Layne Northwest Jeff Gibson	Office: 262-246-4646 After Hours: 262-246-4646 (menu)
Pump Installer	Municipal Well & Pump Tracy Greenfield	Office: 920-324-3400 Cellular: 262-424-2328
Pump Installer	Layne Northwest Jeff Gibson	Office: 262-246-4646 After Hours: 262-246-4646 (menu)
Town of Dunn, Clerk	Rosalind Gausman	608-255-4219
Blooming Grove Town Clerk/Administrator	Audrey Rue	608-223-1104
City of Fitchburg, Clerk	Ruth Becker	608-270-4213
State Patrol	Emergency Administration	911 608-266-3212
Hazardous Material Response Team (DNR) Wisconsin Division of Emergency Mgt.	Leroy Conner	1-800-943-0003 (Menu)
Electric Utility	Madison Gas & Electric Emergency Service	608-252-1111

wastes free of charge. Small quantities of commercial wastes from small businesses can be disposed of for a nominal fee. The City will promote the Clean Sweep programs using the public education activities summarized in this plan.

Local governmental agencies (City, Township, and County) recognize the need for planning to protect WHPAs. Intergovernmental cooperation is an important part of the plan as agencies work together to consider the needs for WHP during planning and permitting processes. The City will provide Dane County, the Town of Dunn, the Town of Blooming Grove, and the City of Fitchburg with a copy of the WHPP and maps showing the Unit Well 30 WHPA, the separation distances required between municipal water supply wells and potential contamination sources (Wisconsin Administrative Code, Chapter NR 811.16(4)(d)), and a list of potential contamination sources that can threaten groundwater. The City will encourage City, County and the Town Board to help protect the WHPA and upgradient recharge areas when evaluating proposed development.

The City of Madison has a WHP ordinance and overlay zoning district. The WHP ordinance helps ensure that future potential contamination sources located within the City of Madison are not located in the Unit Well 30 WHPA.