

Annual Dane County Yahara WINS Adaptive Management Report



Annual report on Dane County Land and Water Resources Department efforts assisting with the implementation of conservation practices that reduce phosphorus runoff for the Yahara WINS Adaptive Management project.

2017 Report Year



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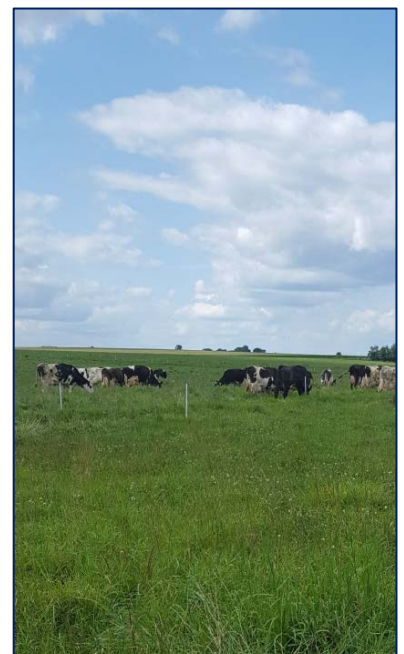
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Executive Summary

The Dane County Land and Water Resources Department (Dane County) has had an active role for decades in assisting the rural community with voluntary implementation of conservation practices to address non-point sources of pollution. Since 2012, Dane County has been assisting the Yahara Watershed Improvement Network (WINS) on furthering the adaptive management effort in the Yahara watershed. Yahara WINS concluded its Six Mile Creek Watershed pilot project, testing adaptive management as a regulatory and Total Maximum Daily Load (TMDL) compliance option as documented in 2015. Dane County and Yahara WINS are now embarking on the next phase: a 20-year effort encompassing the entire Yahara watershed. Marking the sixth year of collaboration, this 2017 annual report documents Dane County's efforts assisting landowners in the watershed with the implementation of conservation practices and calculated phosphorus reductions.

Key 2017 Accomplishments

- Aided 268 landowners/producers in the Yahara watershed with practice implementation, environmental compliance, and cost share assistance.
- Conducted planning activities for the implementation of more than 135 conservation practices for 2017 and beyond.
- Implemented and tracked over 450 conservation practices and systems that reduce phosphorus delivery to nearby surface waters.
- Tracked over 45,800 acres of nutrient management plans within the Yahara watershed.
- Developed the Dane County Grazer's Network to facilitate dialog and increase awareness amongst producers and landowners of the many benefits of managed grazing.
- Entered into 50 cost share agreements for conservation practices and systems within the Yahara watershed.
- Continued promotion of the Regional Conservation Partnership Program (RCPP) - Yahara Watershed Grant through the Natural Resource Conservation Service (NRCS), including a large scale aerial seeding of cover crops on corn silage, which enhanced the conversation on the benefits of improved soil health.
- Reduced and tracked a total (new + carryover) of 18,015 pounds of phosphorus from conservation practices implemented.
- Allocated over \$900,000 in cost share assistance within the Yahara watershed.

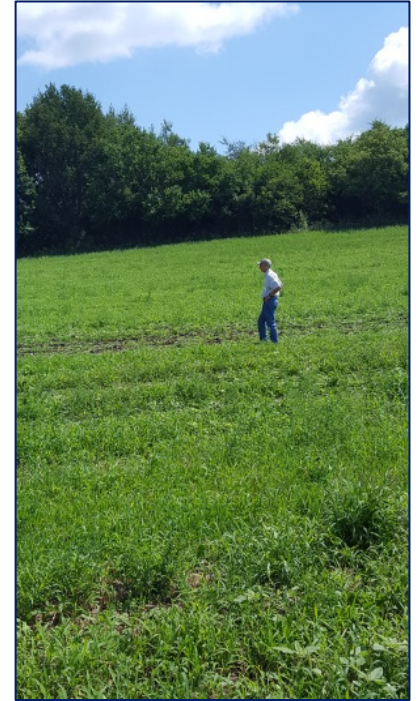


Planning Activities

Conservation planning is central to the services provided by Dane County and often accounts for more than half of the staff time in assisting landowners with implementing conservation practices and systems.

The planning process helps insure that the most effective practices are implemented in the right locations and in the right manner, giving greater confidence to the landowner/producer that the resource concern has been addressed. Completing the planning process also makes it easier for the landowner/producer to implement identified conservations practices or systems by providing them with a plan containing design and implementation specifications, required permits, and applicable information for them to be eligible for cost share assistance.

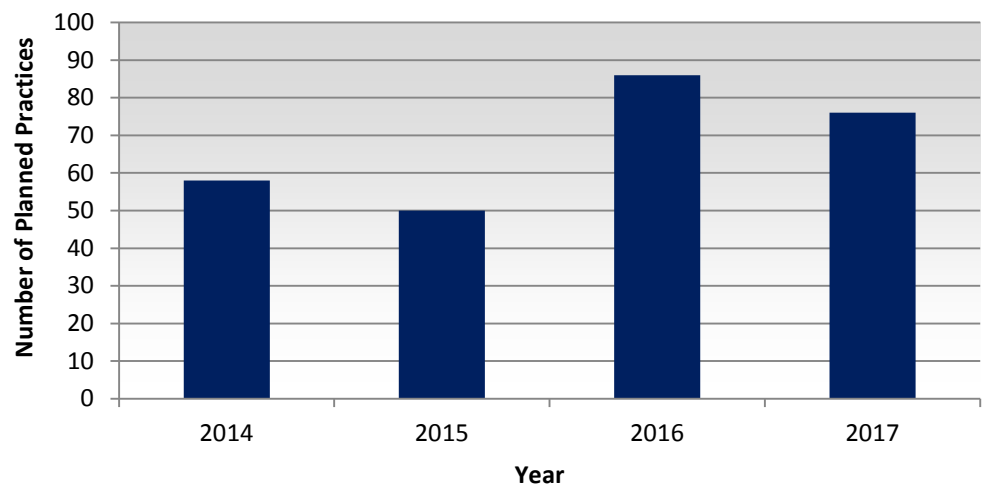
More than 75 conservation practices in the Yahara Watershed received planning assistance from Dane County in 2017 (Figure 1). Many of these planned practices were implemented in 2017 (see [Practices Implemented](#)). Those that were not, continue to receive Dane County planning assistance with the intention of being implemented in 2018 and beyond. A landowners/producers implementation of conservation practices is voluntary and the number of planned practices versus implemented practices varies each year.



Number of Planned Practices

FIGURE 1.

Number of planned conservation practices within the Yahara watershed identified in the Dane County annual work plans submitted to Yahara WINS.



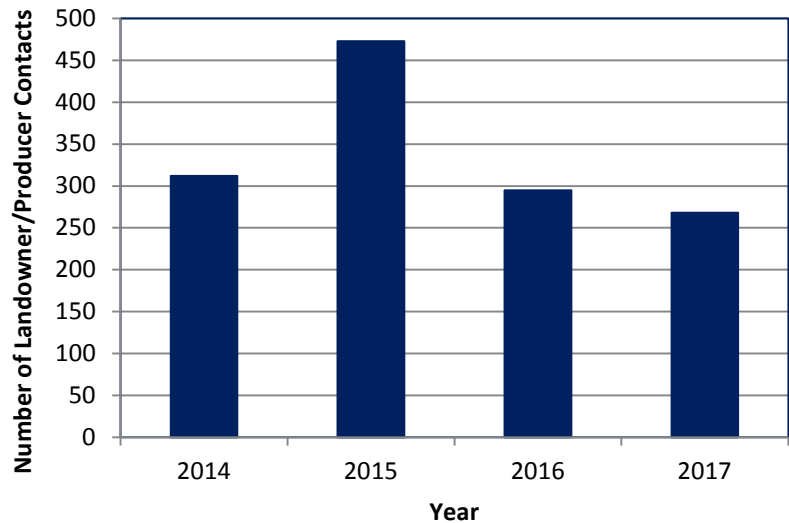
Contacted Landowners and Producers

Dane County works with landowners and producers on a regular basis. Services provided include planning assistance and technical services in identifying and addressing various resource concerns. These resource concerns can range from upland and instream habitat improvements to soil and phosphorus runoff into nearby streams. Other services may include cost share program administration, local ordinance and state performance standard implementation, and Farmland Preservation Program compliance certification.

In 2017, LWRD worked with 268 landowners/producers within the Yahara watershed (Figure 2). This is slightly lower than the number in 2014 and 2016. The 2015 reporting year had higher numbers because of a large number of landowners requesting Farmland Preservation Program certificates of compliance.

FIGURE 2.

Number of annual landowner/ producer contacted within the Yahara watershed since 2014.



2017 Implementation Priorities

The 2017 Annual Work Plan for Yahara WINS identified targeted priorities as implementation of: the Door Creek Watershed Action Plan, the NRCS Regional Conservation Partnership Program (RCPP) - Yahara Watershed Grant, cover crops for their benefits in soil health and reducing phosphorus runoff, and conservation practices that reduce phosphorus runoff. These priorities are all focused on continuing to build relationships with landowners and producers while providing assistance for the implementation of phosphorus reducing conservation practices.

Door Creek Watershed Action Plan

Fish Camp County Park's 76,000 annual visitors can learn about Door Creek and its management plan through an interpretive kiosk installed at the boat launch. Dane County worked with designer Lauren Brown to highlight





interesting environmental and historical facts about the watershed and creek, importance of a management plan to reduce phosphorus runoff, and recreational opportunities.

The Friends of Lake Kegonsa hosted an aquatic tour of Door Creek, which included 41 local residents. This event provided local residents the chance to meet Dane County staff, learn about the management plan, hear about other projects that the Friends of Lake Kegonsa have underway, and get out on the water to see and experience the beautiful scenery of Door Creek.

Regional Conservation Partnership Program - Yahara Watershed Grant

In 2017, Dane County, in partnership with Yahara Pride Farms, University of Wisconsin-Extension and NRCS, promoted a cover crop initiative through the NRCS-Regional Conservation Partnership Program. Approximately 1,860 acres of cover crops were planted through a combination of drilling and aerial seeding as part of the project. The intent of aerial applying cover crop seed was to address one of the limiting factors to implementing cover crops, time. By aurally applying the seed, it was on the field quicker (before corn silage was taken of) allowing for a longer period for germination to occur before colder weather and an end to the growing season.



Cover Crops and Soil Health



Dane County, Dane County University of Wisconsin-Extension and Yahara Pride Farms hosted a Cover Crops and Manure Management Field Day with 48 attendees. Partners from the NRCS used a rainfall simulator to demonstrate how differences in residue management and cover crops impact soil erosion and water infiltration rates.

Conservation Practices

Conservation practices are implemented to address a wide variety of resource concerns. In 2017, landowners and producers in the watershed implemented a variety of phosphorus reducing practices including cover crops, conservation cover, waste storage structures, grassed waterways, sediment basins, and harvestable buffers (Table 1). In total, 135 conservation practices and systems that reduce phosphorus, were implemented in 2017 bringing the total number of tracked practices, since 2008, up to 450.



Practices Implemented

TABLE 1.

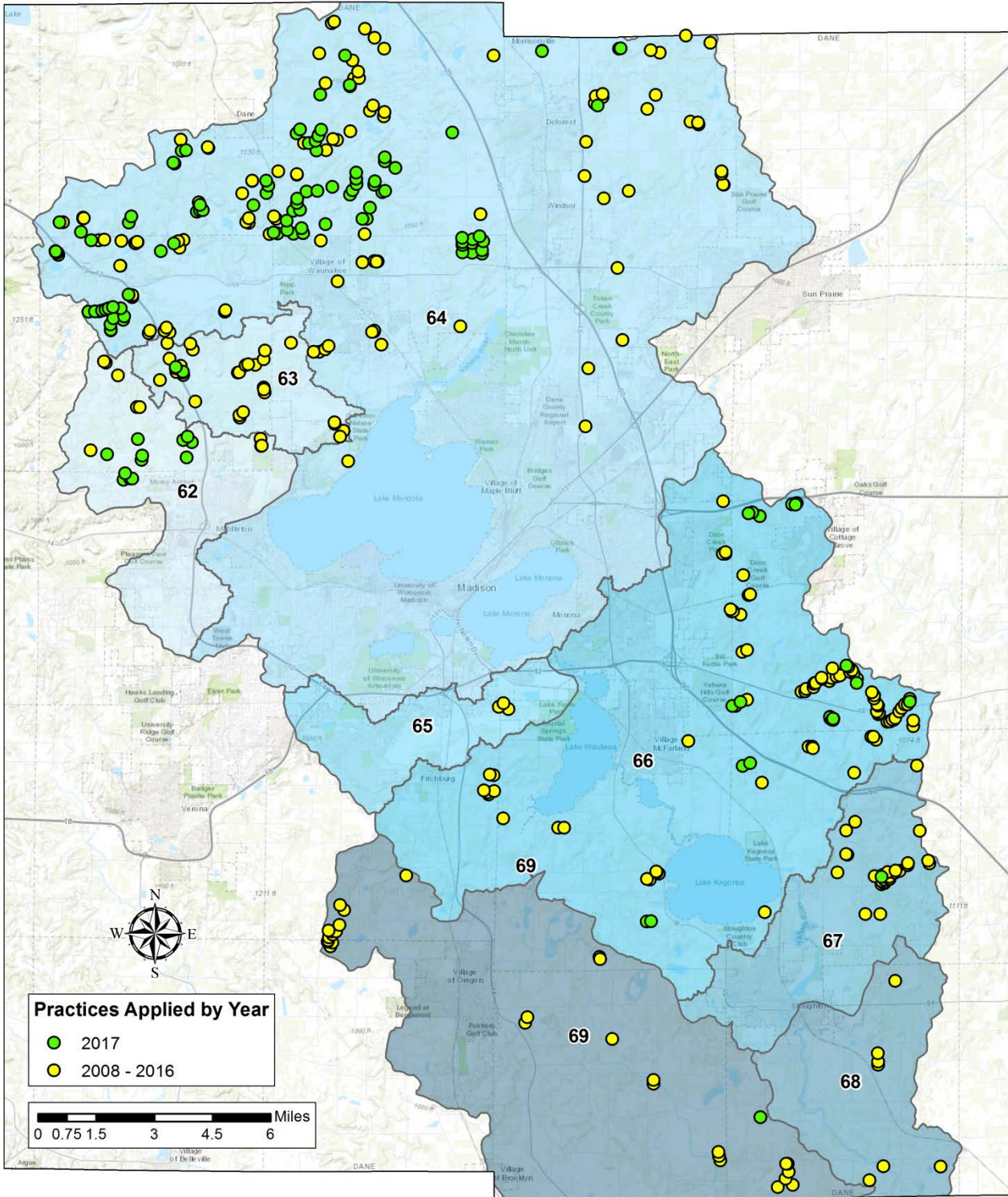
Amount of calculated phosphorus reducing conservation practices implemented in the Yahara watershed by TMDL Reach and year since 2008.

TMDL Reach	Practice	Unit	2008 To 2012	2013	2014	2015	2016	2017	Total Amount
62	Cover Crop	Ac	0	0	0	25	0	277.7	302.7
	Grade Stabilization Structure	No	1	0	0	0	0	0	1
	Grassed Waterway	Ac	2.7	0	0	0	0	1.0	3.7
	Pasture and Hay Planting	Ac	5.5	0	0	0	0	0	5.5
	Roof Runoff Structure	No	0	0	1	0	0	0	1
63	Waste Storage Facility	No	1	0	0	0	0	0	1
	Cover Crop	Ac	0	0	0	146.8	126.5	0	273.3
	Closure of Waste Impound	No	0	0	2	0	0	0	2
	Filter Strip	Ac	0	0	7.3	0	0	2.3	9.6
	Grassed Waterway	Ac	3.8	0	0	1	0	0	4.8
	Roof Runoff Structure	No	2	0	0	0	0	0	2
	Heavy Use Area Protection	Ac	4	0.2	0	0	0	0	4.2
	Water and Sediment Control Structure	No	0	0	1	0	0	0	1
	Dane County Perpetual Easement	Ac	3	0	0	0	0	0	3
64	Waste Storage Facility	No	2	1	0	2	2	0	7
	Conservation Cover	Ac	0	0	0	0	2	0	2
	Cover Crop	Ac	0	0	0	256.2	167.9	1672.0	2096.05
	Critical Area Planting	Ac	3.1	0	4.5	0	0.5	0	8.1
	Diversion	Ft	900	250	0	1350	290	0	2790
	Filter Strip	Ac	0	1.5	3.46	7.3	6.2	0	18.46
	Grade Stabilization Structure	No	2	1	1	1	0	0	5
	Grassed Waterway	Ac	14.5	0.5	1.6	4.05	0.25	0.5	21.4
	Lined Waterway or Outlet	Ft	0	0	0	0	606	0	606
	Access Control	Ac	0	0	0	0	2.9	0	2.9
	Pasture and Hay Planting	Ac	32.8	1.7	0	0	0	0	34.5
	Prescribed Grazing	Ac	32.8	0	0	0	0	0	32.8
	Roof Runoff Structure	No	3	0	0	1	0	2	6
	Heavy Use Area Protection	Ac	3.2	0	0	0.1	0	0	3.3
	Animal Trails and Walkways	Ft	147	0	0	0	331	0	478
	Stream Crossing	No	0	0	0	0	1	0	1
	Streambank and Shoreline	Ft	1310	0	0	0	0	215	1525
	Manure Transfer	No	3	1	0	0	0	0	4
	Wastewater Treatment Strip	Ac	0.6	0	0	0	0	0	0.6
	Water and Sediment Control Structure	No	1	0	0	1	0	0	2
Wetland Restoration	Ac	0	78	0	0	0	0	78	
Well Decommissioning	No	0	0	0	0	0	1	1	
Obstruction Removal	Ac	0	0	0	0	0	0.1	0.1	

65	Grassed Waterway	Ac	0	0	0	0	3.3	0	3.3
66	Conservation Cover	Ac	6.3	0	3.6	1	0	7.6	18.5
	Sediment Basin	No	0	0	0	0	0	1	1
	Diversion	Ft	2050	0	0	300	0	1250	3600
	Filter Strip	Ac	4.1	0	0	41.2	11.3	7.4	64
	Grassed Waterway	Ac	8.4	9.9	2.98	4.95	0	6.3	32.53
	Lined Waterway or Outlet	Ft	0	0	0	0	0	249	249
	Forage Harvest Management	Ac	0	45.1	0	0	0	0	45.1
	Pasture and Hay Planting	Ac	8.8	0	0	0	0	25	33.8
	Roof Runoff Structure	No	0	0	0	0	0	1	1
	Access Road	Ft	0	0	0	0	0	785	785
	Heavy Use Area Protection	Ac	0	0	0	0	0	0.1	0.1
	Stream Crossing	No	0	0	0	0	0	2	2
	Terrace	Ft	0	0	0	0	0	558	558
	Underground Outlet	Ft	0	0	0	0	0	250	250
	Wastewater Treatment Strip	Ac	0	0	0	0	0	0.17	0.17
	Tree/Shrub Establishment	Ac	0	0	8.2	10.6	0	0	18.8
	Water and Sediment Control Structure	No	1	0	0	0	0	0	1
	Shallow Water Development	Ac	0	0	1.7	0	0	0	1.7
	Wetland Restoration	Ac	3.2	0	0	6	0	0	9.2
67	Filter Strip	Ac	5.2	0	0	23.2	3.7	2.2	34.3
	Grassed Waterway	Ac	1	0	0.8	0	0	0	1.8
	Pasture and Hay Planting	Ac	4.2	0	0	0	0	0	4.2
	Tree/Shrub Establishment	Ac	0	0	4.7	0	0	0	4.7
68	Grade Stabilization Structure	No	1	0	0	0	0	0	1
	Grassed Waterway	Ac	3.8	0	0	0	0	0	3.8
	Tree/Shrub Establishment	Ac	0	1	0	0	0	0	1
	Wetland Restoration	Ac	10	0	0	0	0	0	10
69	Conservation Cover	Ac	60.5	0	0	0	24.8	0	85.3
	Filter Strip	Ac	12.8	3	4.4	0	0	2.2	22.4
	Grassed Waterway	Ac	5.8	0	0.4	1.4	1.2	0	8.8
	Water and Sediment Control Structure	No	0	0	0	1	0	0	1
	Wetland Wildlife Habitat	Ac	0	9.6	0	0	0	0	9.6
	Shallow Water Development	Ac	0	0	0	0	3.51	0	3.51

FIGURE 3.

General location of conservation practices implemented in the Yahara watershed since 2008.



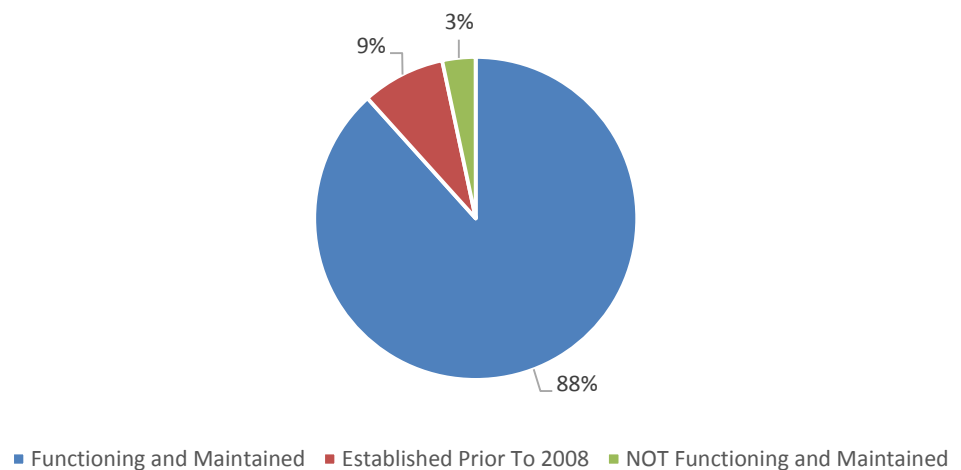
Verification Checks

In total, 120 previously implemented conservation practices were checked in 2017 to verify their continued function, maintenance, and associated phosphorus reductions. Practices in TMDL reaches 64, 65, 66, 68, and 69 were selected as part of a larger, countywide, practice and compliance review process outlined in *Madison Metropolitan Sewerage District Adaptive Management Plan* under Agricultural Implementation Strategy. All remaining practices will be included in this review process within the next three years, and continue through the life of the project on a four year rotation. Of the 120 conservation practices checked, 106 were found to be functioning and maintained, 10 were found to be practices established prior to 2008 and were removed from the carryover pounds phosphorus calculations, four were identified as not functioning and maintained (Figure 4). Staff are currently working with the landowners of the four practices that were not functioning and maintained on reestablishing the practices in 2018.

In addition to verification checks of conservation practices, Dane County staff are also audited annually by both the Natural Resources Conservation Service and Department of Agriculture Trade and Consumer Protection. This auditing process consists of spot checking individual conservation practices to ensure that staff designed and implemented each practice according to standards/specifications and cost share program rules. Staff must also prove that they are competent and knowledgeable in each practices standards/specifications before authorization and approval to design and implement a conservation practice is given to them by the State of Wisconsin. This auditing and authorization process ensures that each conservation practice implemented by staff is done so using the best available scientific information for proper function and maintenance over the design life expectancy of the practice. This adds additional certainty in calculating phosphorus reductions.



FIGURE 4. Field verification and review of conservation practices.



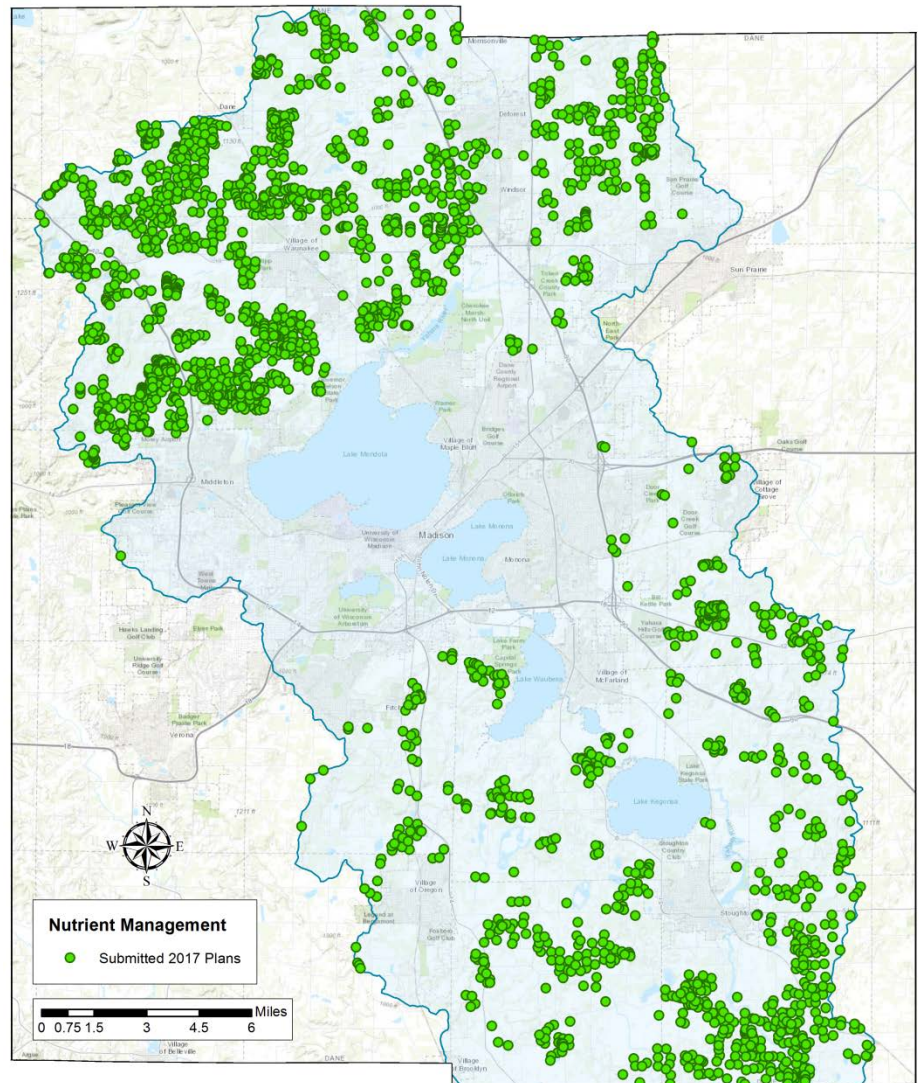
Nutrient Management

Landowners and producers submit Nutrient Management Plans (NMP) to the County for a number of different reasons including; a condition of receiving cost share, participation in Farmland Preservation Program, a condition of a permit, or voluntary submittal from a landowner or producer. Since 2014, Dane County has been spatially tracking submitted NMP data. The total number of acres mapped on an annual basis is increasing with over 45,800 acres currently documented within the Yahara watershed. Approximately 41,800 acres are located in areas that are not internally drained which is 5,800 more acres than in 2016 (Table 2 and Figure 7). Internally drained areas are those areas within the Yahara watershed that are not hydrologically connected to the outlet of the Yahara watershed (Figure 6) due to impeding landscape features. These areas are important to identify since any phosphorus reducing practices implemented within them will not be counted in the overall phosphorus reductions reported to Yahara WINS. The general location of fields with NMP's are documented in Figure 5 and the total number of acres for each TMDL are recorded in Table 2.

Mapped NMP Acres

FIGURE 5.

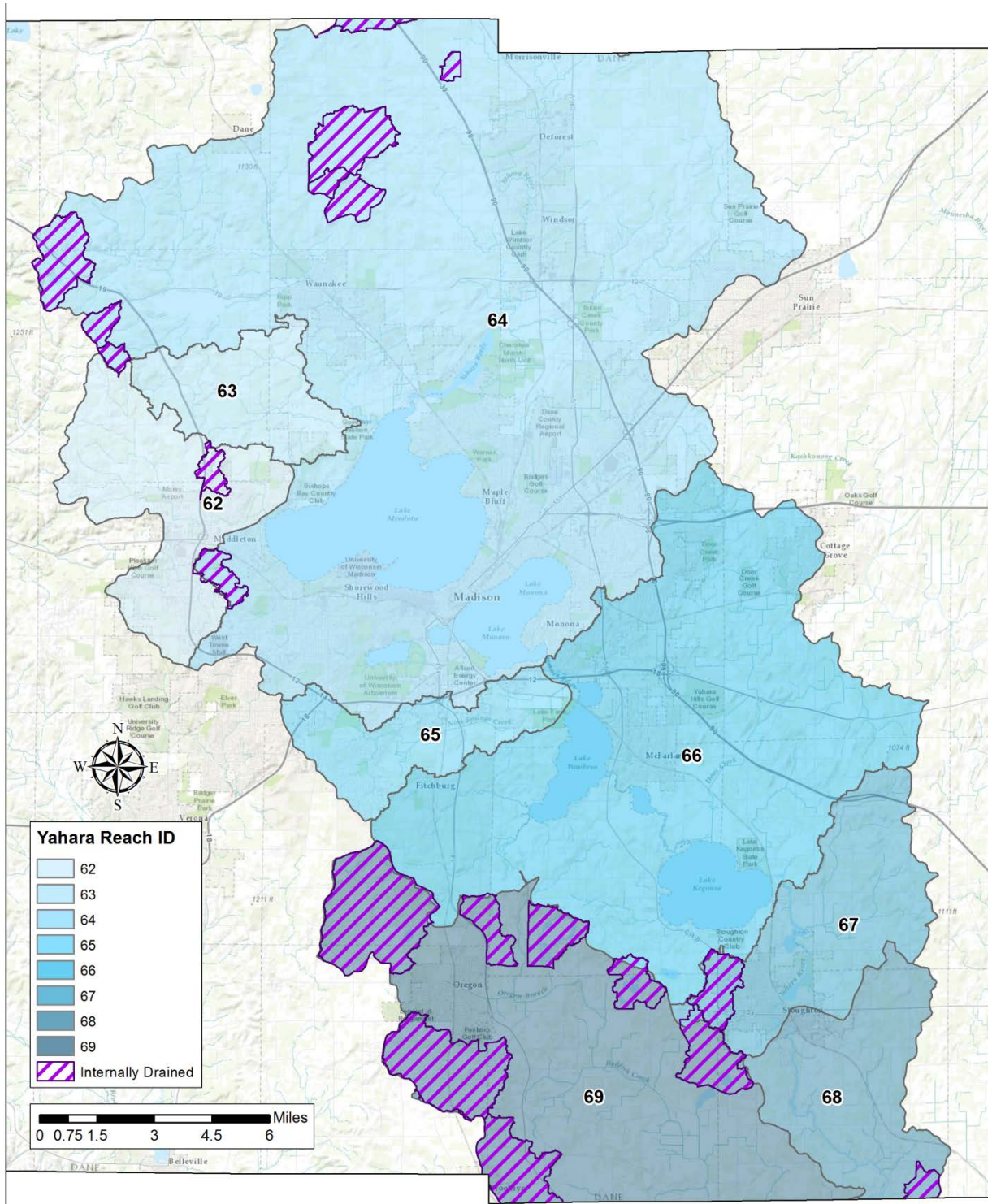
Map of 2017 submitted nutrient management plans within the Yahara watershed. Fields located in internally drained areas are removed.



Internally Drained Areas

FIGURE 6.

Map of TMDL Reaches and internally drained areas within the Yahara watershed.



Acres of NMP's

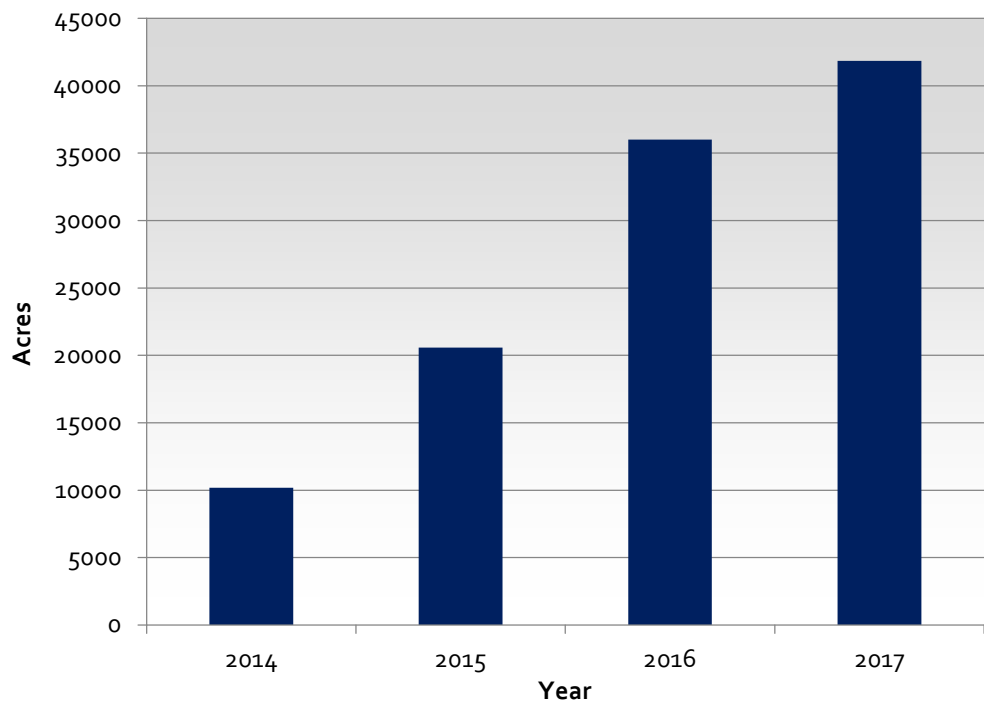
TABLE 2.

Acres of nutrient management plans mapped within the Yahara watershed since 2014. Acres located within internally drained areas are removed.

TMDL REACH	2014	2015	2016	2017
62	505	2,077	2,794	2,355
63	1,779	3,757	2,112	2,855
64	7,833	14,574	23,015	20,696
65	0	0	0	203
66	0	104	2,213	4,453
67	37	37	915	1,699
68	26	26	2,348	4,299
69	0	0	2,606	5,278
TOTAL	10,180	20,574	36,003	41,838

FIGURE 7.

Total acres of nutrient management plans mapped within the Yahara watershed since 2014. Internally drained areas are removed.



Innovative Conservation Practices

Dane County and its partners are continually exploring new and innovative solution related to phosphorus reducing conservation practices and systems as well as strategies to promote and encourage their adoption. In 2017, staff partnered with the Dane County University of Wisconsin-Extension (UWEX) to develop the Dane County Grazer’s Network, which facilitates an opportunity for producers to share their experiences pertaining to managed rotational grazing. Managed grazing uses portable fences to rotate livestock regularly to new fields, allowing grazed areas to regrow. This leads to healthier pastures with diverse plant communities, continuous cover that reduces runoff and erosion, increased livestock performance, and lower cost to producers.

A County cost share program to promote the implementation of Low Disturbance Manure Injection (LDMI) was developed in 2016. This practice is designed to allow for the injection of manure into the soil while providing minimal soil disturbance and subsequent reductions in soil and nutrient loss during runoff events. Two agreements were entered into in 2017. Phosphorus reductions associated with these agreements are still being calculated.

In 2017, the County continued assisting landowners with implementing Harvestable Buffers, which has been one of the more popular innovative practices to date. Since 2014, more than 100 acres of harvestable buffers have been installed in the Yahara watershed with the addition of 14.1 acres added in 2017. (Table 3) In total, these buffers are preventing more than 2,160 pounds of phosphorus from reaching nearby surface waters annually.

Harvestable Buffers

TABLE 3.

Annual amount of harvestable buffers implemented within the Yahara watershed by TMDL Reach since 2014.

TMDL REACH	PRACTICE	UNIT	2014	2015	2016	2017	TOTAL AMOUNT
63	HARVESTABLE BUFFER	AC	7.3	0	0	2.3	9.6
64	HARVESTABLE BUFFER	AC	3.5	0	6.2	0	9.7
66	HARVESTABLE BUFFER	AC	0	28.9	11.3	7.4	47.6
67	HARVESTABLE BUFFER	AC	0	23.2	1.9*	2.2	29.1
69	HARVESTABLE BUFFER	AC	4.4	0	0	2.2	6.6
TOTAL		AC	15.2	52.1	19.4	14.1	100.8

* notes that the value has changed from previous reporting as a result of updated calculations.

Cost Share

Cost share is provided to producers using a number of different funding sources including *Federal, State, County,* and *Other* (i.e. Yahara WINS, CLA, etc.). Available funds and conditions vary based on the source of funds. The County strives to utilize and leverage all funding sources available to landowners and producers.

The number of cost share agreements executed each year varies and is often limited by available annual funding and interest from producers. In 2017, there were 50 new cost share agreements with landowners that utilized *Federal, State, and County,* funding sources (Figure 8) within the Yahara. *Other* funding sources were not available nor utilized in 2017. This was the highest number of contracts executed within the Yahara since 2013. The total cost share funding allocated in 2017 was over \$900,000 (Figure 9).

Funding Sources and Amounts

FIGURE 8.

Number of cost share agreements by funding source entered into each year within the Yahara watershed since 2014.

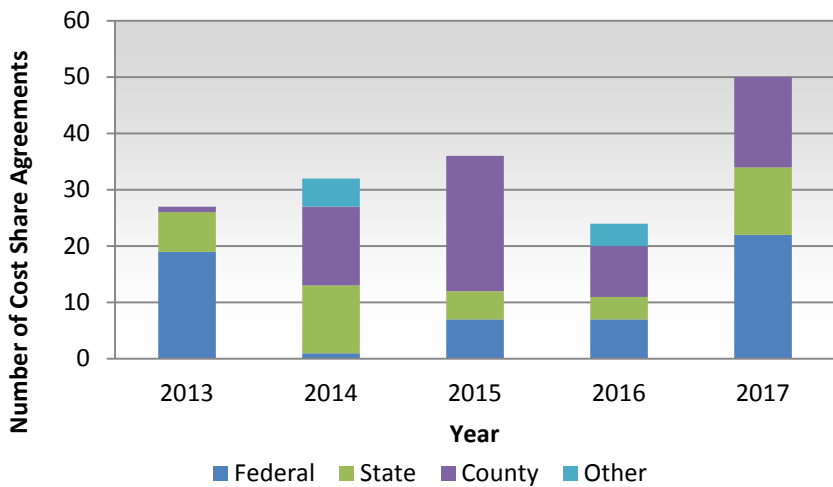
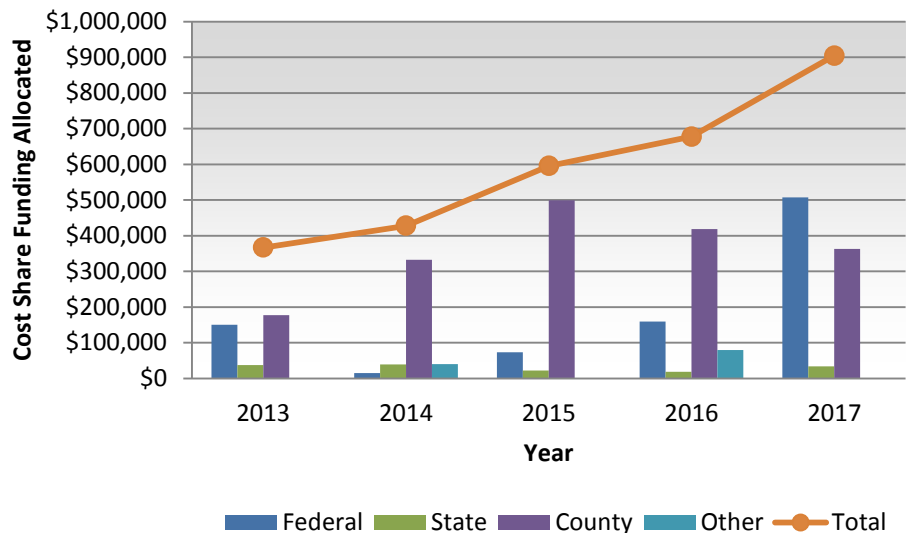


FIGURE 9.

Number of cost share agreements by funding source entered into each year within the Yahara watershed since 2014.



Phosphorus Reductions

Total calculated phosphorus reduction for the Yahara watershed in 2017 was 18,015 pounds. This included 10,765 pounds from carryover practices and 7,250 pounds from new practices. Carryover pounds are generated from conservation practices implemented from 2008 to 2017 that are still functioning and reducing phosphorus. New pounds are from practices implemented in the 2017 calendar year. Phosphorus reductions for the Yahara watershed and subsequent TMDL reaches over time are presented in figures below. Table 4 also has both new and carryover pounds of phosphorus reduced over time.

Each conservation practice has its own identified model that is used to calculate associated phosphorus reductions as outlined in the *Madison Metropolitan Sewerage District Adaptive Management Plan* and Appendix A. Currently the models that are being used include; SNAP Plus, NRCS Gully and Streambank Erosion Calculator combined with Soil Test Phosphorus Concentrations (SL x PC), Barnyard Runoff model (BARNY), and P8 Urban Catchment model. When available site specific data, such as phosphorus concentrations and erosions measurements, are used to populate model parameters and quantify phosphorus reductions. If site specific data is not available book values and or Dane County average values are used.

Average values are currently used in calculating phosphorus reductions for management type conservation practices including nutrient management plans and cover crops. Average phosphorus reductions for nutrient management plans is 0.1 pound/acre/year and for cover crops 1.0 pound/acre/year. These average values were derived from field samples and model runs conducted during the Six Mile Creek Pilot project using SNAP Plus.

New and Carryover Phosphorus Reductions

TABLE 4.

Reduction of new and carryover pounds of phosphorus by TMDL Reach and year.

TMDL Reach	2008 – 2012		2013		2014		2015		2016		2017	
	New	Carryover	New	Carryover	New	Carryover	New	Carryover	New	Carryover	New	Carryover
62	402.9	390.2	0	390.2	118.7	390.2	440.4	407.9	558.8	407.9	525.5	438.5
63	1272.8	1219.3	26.6	1272.8	1503	1299.4	957.7	2446.6	548.9	2506.1	341.2	2558.6
64	1653.9	1450	301.2	1578.5	1934.2	1875.8	3568	2243.4	5355.4	2712.9	3559.5	3348.0
65	0	0	0	0	0	0	0	0	182.2	0	20.3	0
66	494.6	448.1	432.6	474.3	812.7	906.9	1408.7	1719	733.5	3106.9	1650.5	3381.7

TMDL Reach	2008 – 2012		2013		2014		2015		2016		2017	
	New	Carryover	New	Carryover	New	Carryover	New	Carryover	New	Carryover	New	Carryover
67	65.5	55.8	0	55.8	205.5	55.8	277.1	253.9	206.9	523.6	171.2	546.2
68	189.1	141	2.3	189.1	5.2	191.4	5.2	191.4	469.6	191.4	429.9	191.4
69	95.2	95.2	29.1	95.2	136.1	124.3	41.1	260.4	586.3	301.5	551.7	300.8

Phosphorus Reductions by Reach

FIGURE 10.1.

TMDL Reach 62 new and carryover pounds of phosphorus reductions by year.

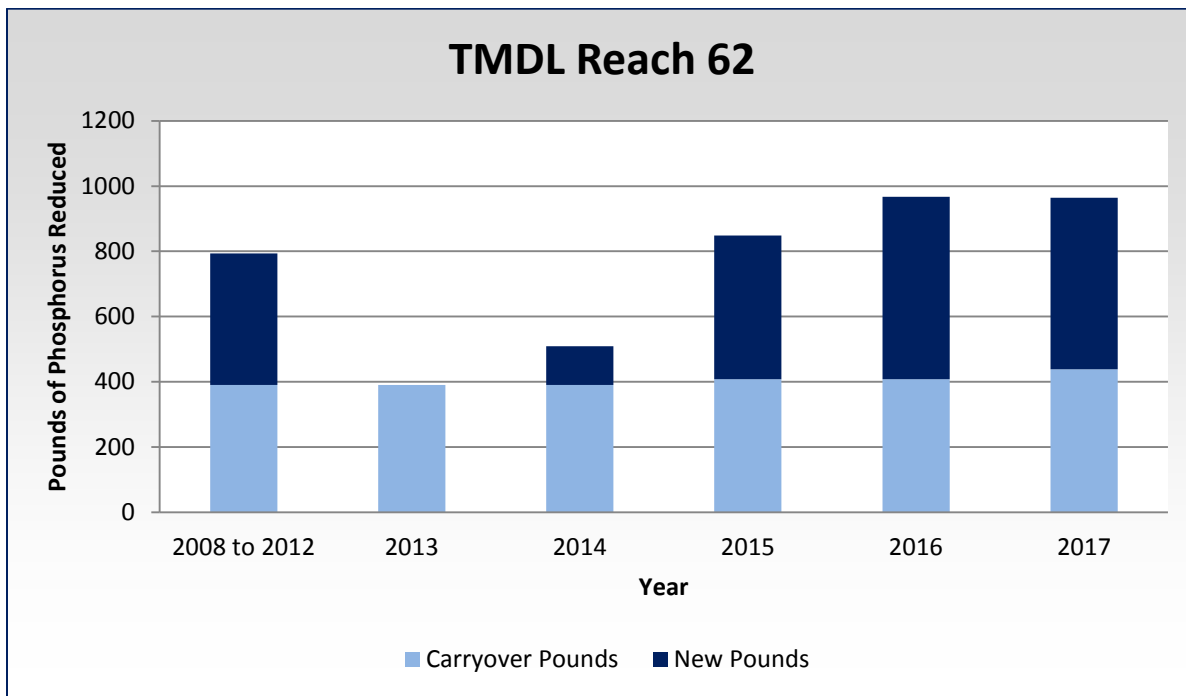


FIGURE 10.2.

TMDL Reach 63 new and carryover pounds of phosphorus reductions by year.

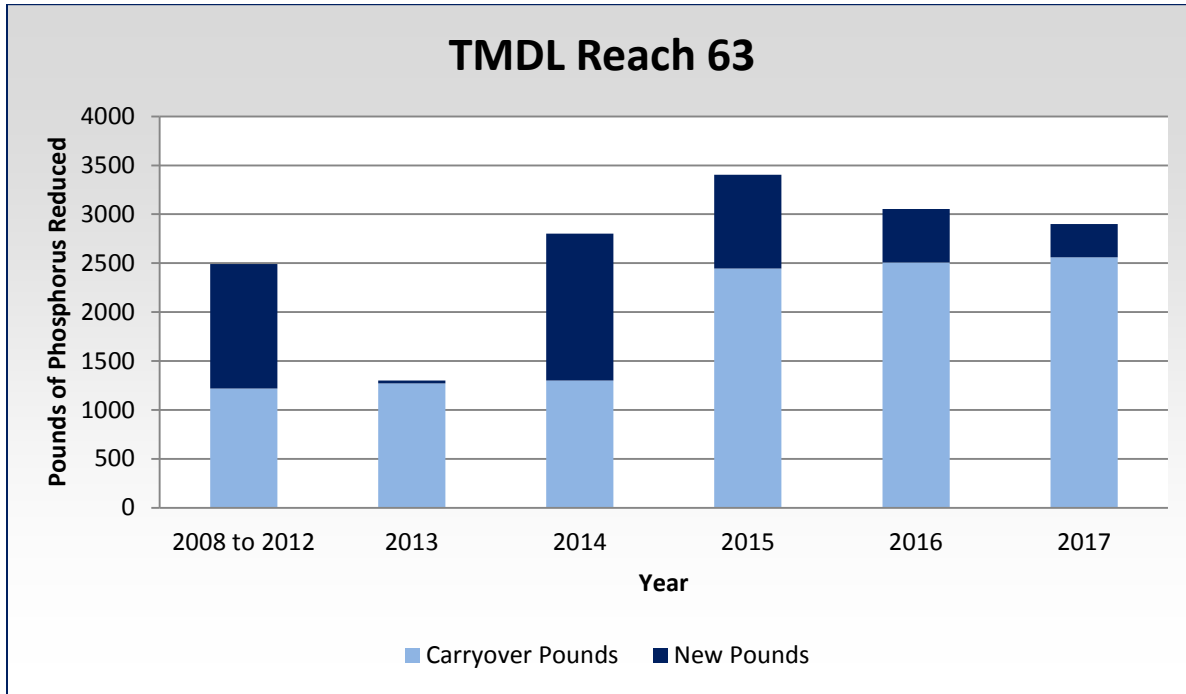


FIGURE 10.3.

TMDL Reach 64 new and carryover pounds of phosphorus reductions by year.

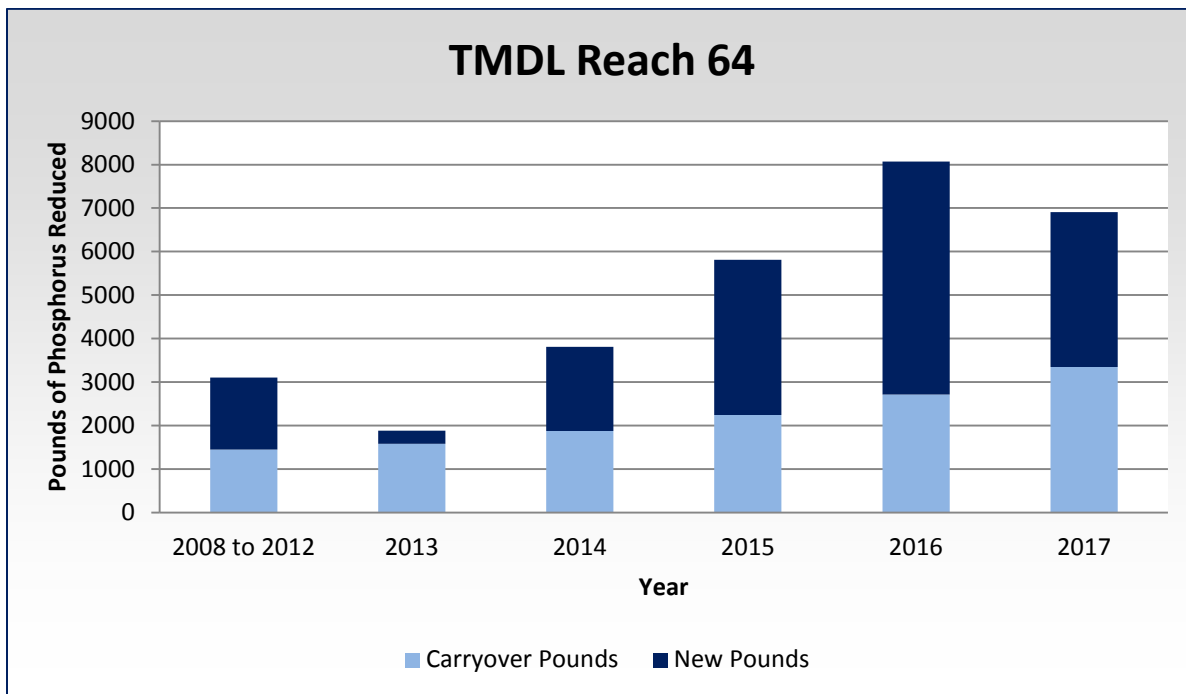


FIGURE 10.4.

TMDL Reach 65 new and carryover pounds of phosphorus reductions by year.

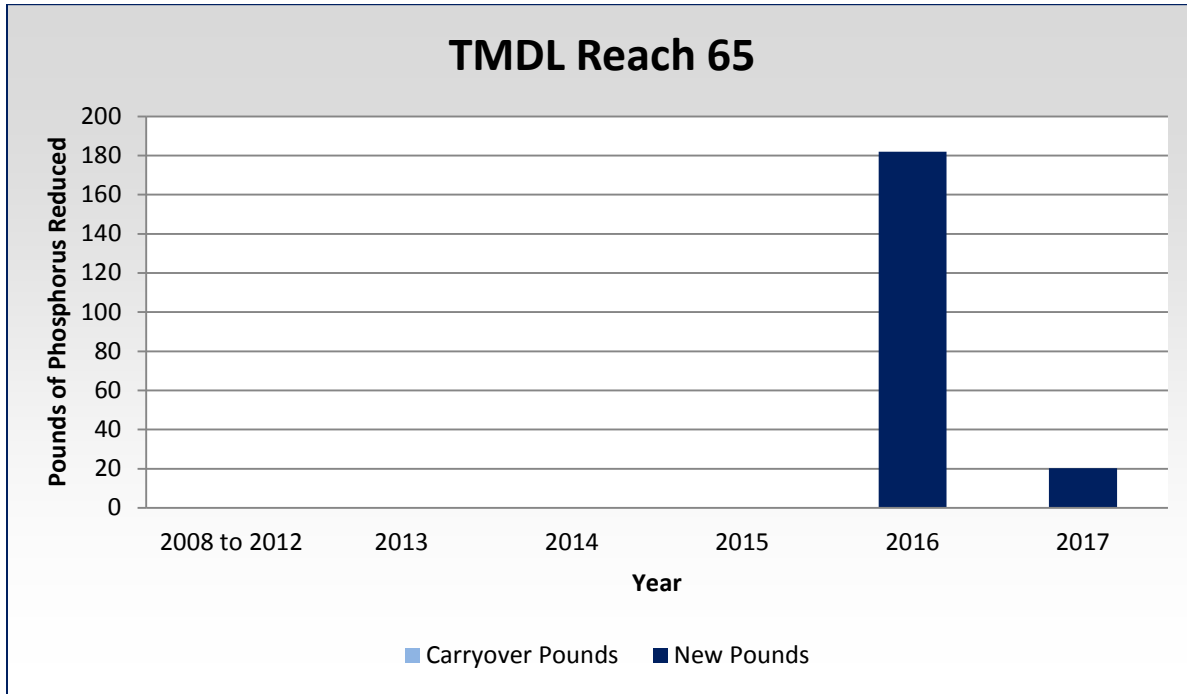


FIGURE 10.5.

TMDL Reach 66 new and carryover pounds of phosphorus reductions by year.

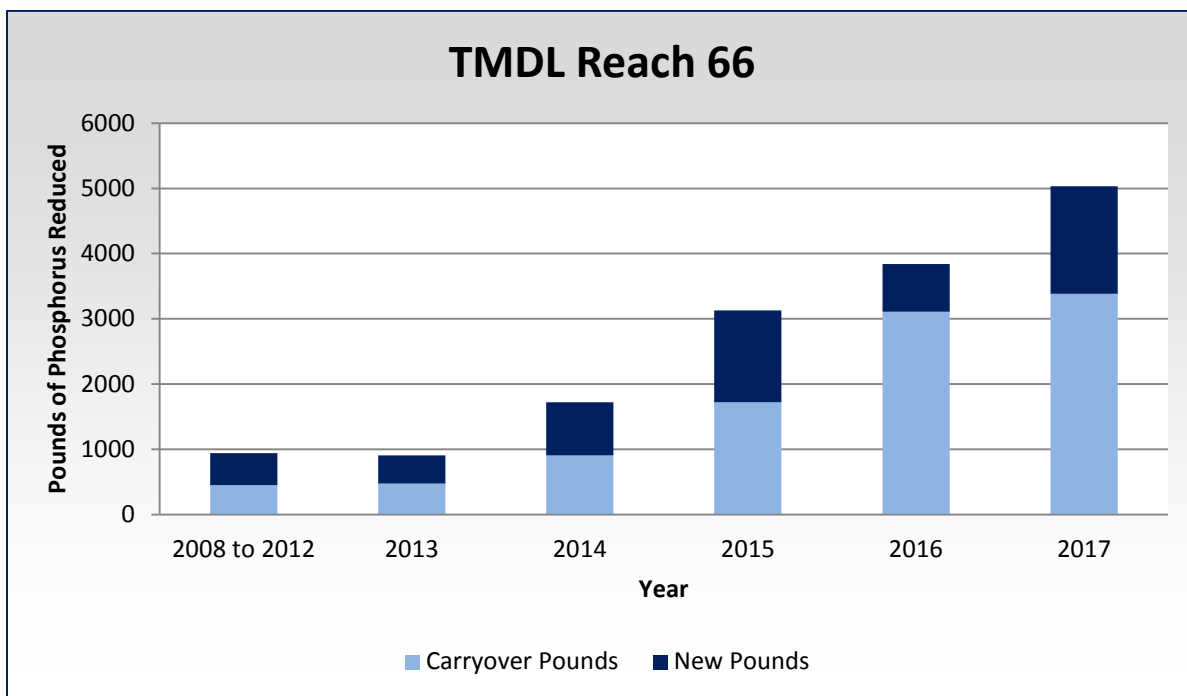


FIGURE 10.6.

TMDL Reach 67 new and carryover pounds of phosphorus reductions by year.

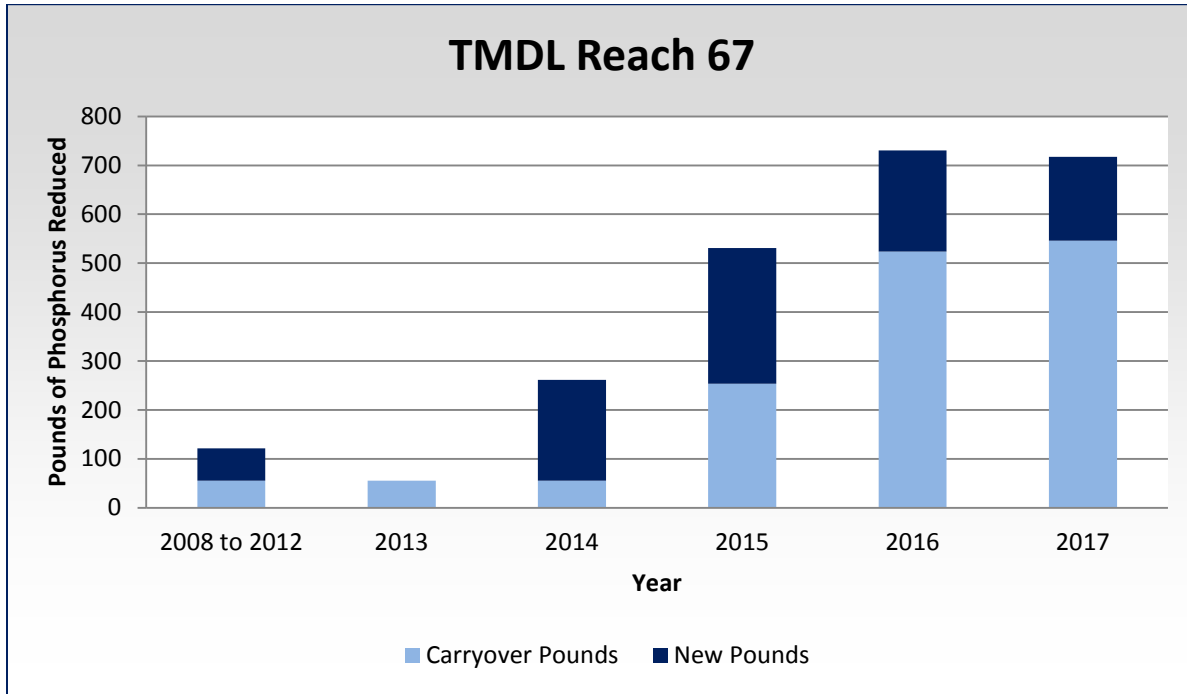


FIGURE 10.7.

TMDL Reach 68 new and carryover pounds of phosphorus reductions by year.

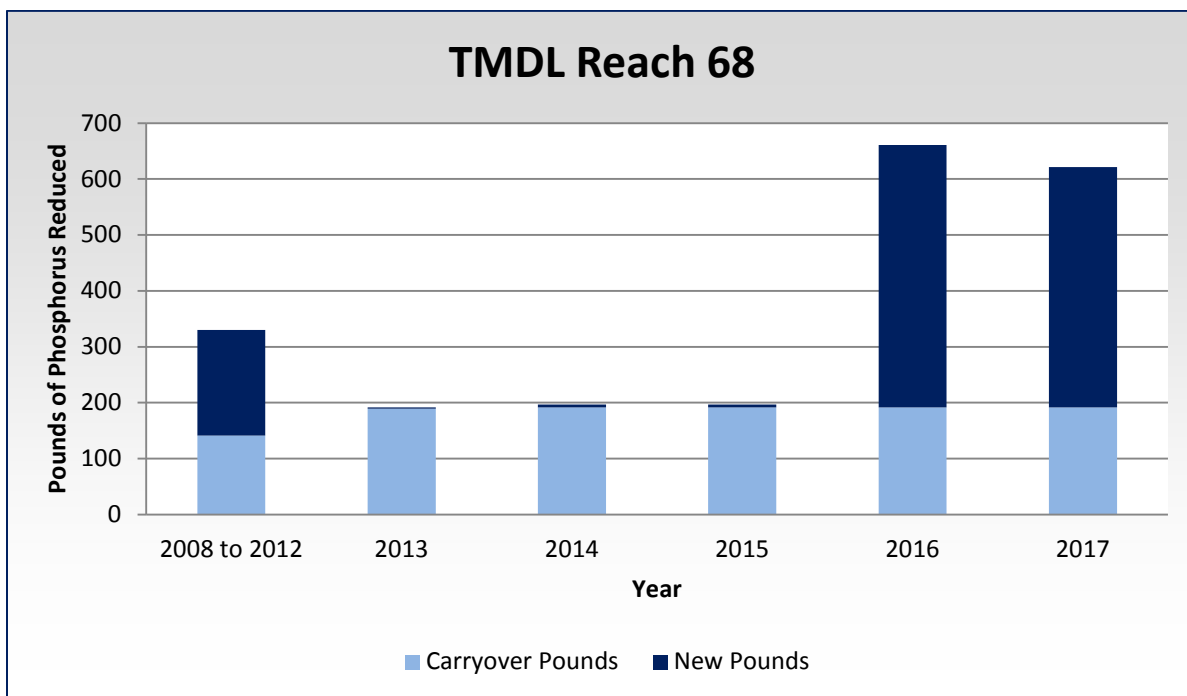
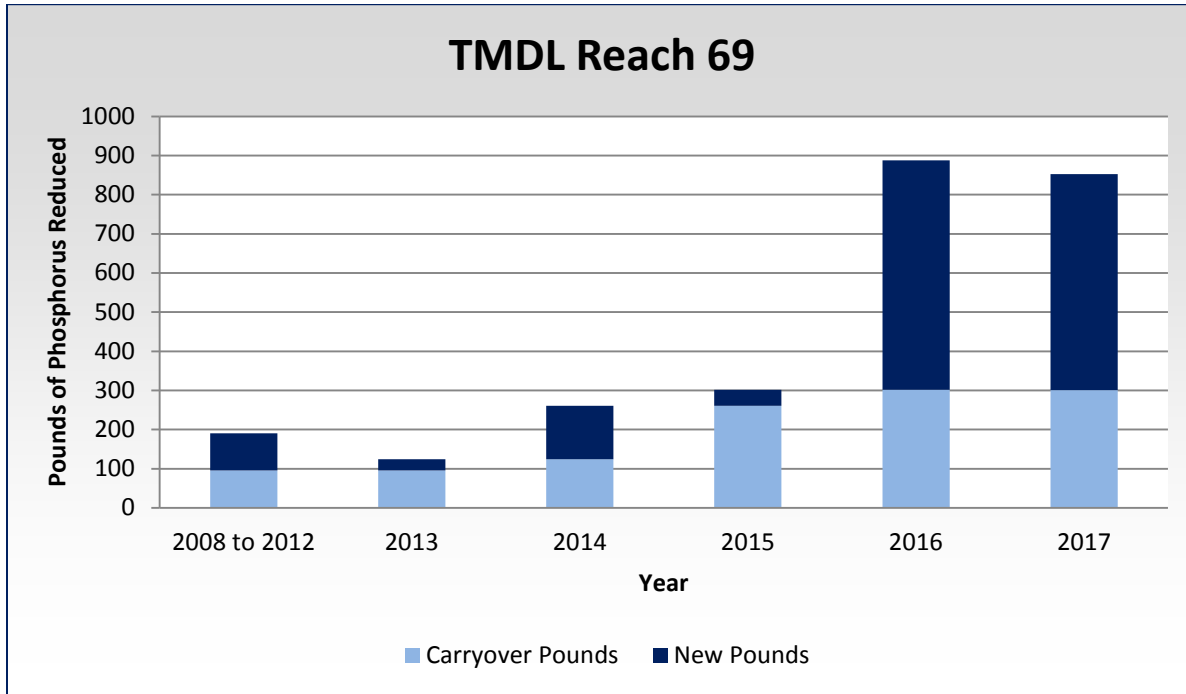


FIGURE 10.8.

TMDL Reach 69 new and carryover pounds of phosphorus reductions by year.



Notable Accomplishments

In addition to conservation practice assistance to landowners, other notable 2017 accomplishments focused on improving water quality within the Yahara watershed include:

URBAN WATER QUALITY GRANT

Since 2005, Dane County has made cost-share funding available to municipalities to help them improve the quality of urban stormwater runoff, increase public awareness of urban water quality issues, and provide public education for urban stormwater quality improvement practices. In 2017, two municipalities were approved to receive funding for six different projects that once constructed, will result in the removal of an estimated 82,176 pounds of sediment and 329 pounds of phosphorus annually.

CLEAN BEACH INITIATIVE



In 2017, Dane County installed a Clean Beach Treatment System at Goodland County Park beach. The system uses a flexible curtain and chemical-free water treatment system to create a safe swimming area that is free of algae and bacteria that might be present in the rest of the lake. This is the second Clean Beach Treatment System installed in Dane County; the other is at Mendota County Park beach.

LEGACY SEDIMENT REMOVAL

Legacy sediments are upland sediments that have accumulated in local waterways over decades due to erosion from human uses and impacts on the landscape. These sediments usually consist of large amounts of silt and are capable of transporting significant amounts of phosphorus and other nutrients, which contribute to algae blooms in the lakes. One study found that phosphorus concentrations in the stream sediments of Dorn Creek (northeast of Lake Mendota) were seven times greater than in nearby crop fields.



In 2017, in order to improve water quality, Dane County began an innovative project to assess 33 miles of streambeds in six streams in the Yahara Watershed for the potential removal of phosphorus-laden sediment. The goals of the project are:

- rehabilitation of water quality,
- restoration of streambank habitat,
- realignment of stream channel to historical location, and
- reclamation of a former gravel pit to prairie / wildlife habitat.

In 2018, approximately 2.3 miles of Dorn Creek will be dredged, resulting in an estimated removal of 16,000 cubic yards, of legacy sediment. The removal of this phosphorus laden sediment will stabilize the stream channel so that it doesn't contribute to additional water quality issues.

LAND ACQUISITION

The County acquired three properties in 2017; lands protected by the County are available for public use and enjoyment and create opportunities for habitat improvement projects. Token Creek is the sole cold-water trout fishery in northeastern Dane County. The 27 square mile watershed provides nearly half of the base flow of water for Lake Mendota. The County, along with other partners has actively worked on water quality and habitat improvement measures to protect and enhance this resource. In 2017, Dane County purchased approximately 54 acres through which Token Creek meanders approximately $\frac{3}{4}$ of a mile.

Dane County negotiated the purchase of approximately 53 acres (with an additional 77 acres protected through a conservation easement) within the Cherokee Marsh Natural Resources Area, along the Yahara River. The acquisition of this property will increase public access to the Yahara River and connect to public lands owned by the WI Department of Natural Resources that have previously been inaccessible. Significant restoration activities have occurred within the Cherokee Marsh Wildlife Area, 14 acres of cropland were planted to a cool season pasture mix creating grassland habitat, 12 acres were planted to a native prairie pollinator mix and drainage ditches were filled and reshaped to restore and create shallow water wetlands.

The Capital Springs State Recreation Area (CSSRA) is a joint project of Dane County and the WI DNR that encompasses an area of 2,519 acres south of the City of Madison. Dane County purchased 15 acres of vacant land within the E-way Unit for the strategic importance of realigning the Capital City Trail to improve safety and user experience. The property is

adjacent to other County owned lands and is in a highly visible location. This provides an opportunity to highlight the beauty of natural spaces in a highly urbanizing location.

Conclusion

The Yahara Watershed covers 359 square miles, more than a quarter of Dane County, and includes Lake Mendota, Lake Monona, Lake Waubesa and Lake Kegonsa. The land use within the watershed offers a unique microcosm, many acres of productive rural farmland as well as the urban land of the Madison Metropolitan area. Population growth is increasing rapidly, generating new construction while local farms support greater numbers of livestock. Recognizing these trends, county and state officials have been collaborating with other local units of government, farmers, developers, and citizens to reduce non-point pollution. Holistic thinking with multiple interested parties and adaptive management are essential in the implementation of agricultural conservation practices.

The Yahara WINS agreement provided staff support for the delivery of conservation planning and technical services focused on the Yahara Watershed and helped landowners and producers finance the installation of phosphorus reducing practices that improve water quality and soil health. Through the unique agreement with Yahara WINS total phosphorus reductions in 2017 for the Yahara watershed were 18,015 pounds. This included 10,765 pounds from carryover practices and 7,250 pounds from new practices. For 2018, Dane County anticipates leading a number of activities to continue to increase awareness and educate targeted audiences on the role of conservation for soil and water quality improvements.

APPENDIX A.

