

Wisconsin Department of Natural Resources
SWIMS Project Summary

General Project Information

Project ID: LPT56417

Name: CITY OF EAU CLAIRE: LMI-Alum Treatment Half Moon Lake

Type: Lakes Grant

Subtype: Lake Protection Grant

Status: COMPLETE

Start Date: 4/15/2017

End Date: 12/31/2019

Purpose: The City of Eau Claire is sponsoring a Lake Management Planning Implementation project aimed to control internal sediment phosphorus loading in Halfmoon Lake by applying alum. The lake received an initial AL treatment in 2011 and was effective at maintaining TP WQ goals for three years, however after five years the effects have diminished. The initial alum treatment dosage was adequate however the floc did not sink into the upper sediment due to higher bulk density characteristics allowing upward P diffusion and decreasing binding efficiency of phosphorus. The second treatment is needed to bind available TP limiting the amount available to algae uptake. The City continues to address other sources of TP including stormwater management, rain gardens etc.

Project activities include: Apply a buffered AL dose to the western arm of Half Moon Lake that is encompassed by the 10 foot contour in late May or early June 2017. Dosage is based on sequestering the annual sediment P flux rate of 0.4g/m2 for 2 to 3 years and factors in an Al binding efficiency of 60% (James 2016 and 2017).

Project deliverables: The outcome of AL treatment to the western arm will be control of internal P loading and reduction of cyanobacterial biomass and chlorophyll to target levels. Limnological monitoring will be conducted to verify outcomes.

Special conditions:

1. The Half moon lake Team consisting of DNR, UW Stout, City of EC and Friends of Halfmoon Lake meet quarterly to assess current lake management actions. There continues to be open and ongoing communication with the group to inform residents on current lake conditions and management decisions.
2. All necessary permits must be issued prior to the project being implemented.

Objective:

Comments: Grantee is CITY OF EAU CLAIRE

Outcome:

Study Design:

QA Measures:

| People | | | | | | |
|--------|------|--------|------------|----------|--------------|----------|
| Name | Role | Status | Start Date | End Date | Organization | Comments |

| Project Statuses | | | |
|------------------|-------------|--------|----------|
| Date | Reported By | Status | Comments |

Actions

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| Action | Detailed Description | Start Date | End Date | Status |
|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------|----------|
| Lake Management Plan Implementation | The City of Eau Claire is sponsoring a Lake Management Planning Implementation project aimed to control internal sediment phosphorus loading in Halfmoon Lake by applying alum. The lake received an initial AL treatment in 2011 and was effective at maintaining TP WQ goals for three years, however after five years the effects have diminished. The initial alum treatment dosage was adequate however the floc did not sink into the upper sediment due to higher bulk density characteristics allowing upward P diffusion and decreasing binding efficiency of phosphorus. | 4/15/2017 | 4/15/2018 | COMPLETE |
| Grant Awarded | The City of Eau Claire is sponsoring a Lake Management Planning Implementation project aimed to control internal sediment phosphorus loading in Halfmoon Lake by applying alum. The lake received an initial AL treatment in 2011 and was effective at maintaining TP WQ goals for three years, however after five years the effects have diminished. The initial alum treatment dosage was adequate however the floc did not sink into the upper sediment due to higher bulk density characteristics allowing upward P diffusion and decreasing binding efficiency of phosphorus. The second treatment is needed to bind available TP limiting the amount available to algae uptake. The City continues to address other sources of TP including stormwater management, rain gardens etc. | 4/25/2017 | 12/31/2017 | COMPLETE |

Monitoring Stations

| Station ID | Name | Comments |
|------------|------|----------|
|------------|------|----------|

Assessment Units

| WBIC | Segment | Local Name | Official Name |
|---------|---------|--------------------------|----------------------|
| 1807700 | 1 | Un Lake | Unnamed |
| 1807800 | 1 | Un Lake | Unnamed |
| 1820700 | 2 | Hoyts Creek | Peeso Creek |
| 1821600 | 1 | Unnamed Trib to Peeso Cr | Unnamed |
| 1822600 | 1 | Session Valley Creek | Session Valley Creek |
| 1823000 | 2 | Lindsay Creek | Lindsay Creek |
| 1823300 | 2 | Big Creek | Big Creek |
| 1823600 | 1 | Adams Creek | Adams Creek |
| 1825900 | 2 | Pine Creek (T25N, R8W) | Pine Creek |
| 1889900 | 1 | Un Lake | Unnamed |
| 1890000 | 1 | Un Lake | Unnamed |
| 1890600 | 1 | Un Lake | Unnamed |

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| | | | |
|---------|---|--------------------------|----------------------|
| 1890700 | 1 | Un Lake | Unnamed |
| 1890720 | 1 | Local Water | Unnamed |
| 2050000 | 3 | Chippewa River | Chippewa River |
| 2050000 | 4 | Chippewa R At Eau Claire | Chippewa River |
| 2050000 | 5 | Chippewa River | Chippewa River |
| 2119000 | 3 | Rock Creek | Rock Creek |
| 2119000 | 4 | Rock Creek | Rock Creek |
| 2120300 | 2 | Coon Creek | Coon Creek |
| 2120700 | 1 | Powell Lake | Powell Lake |
| 2120800 | 3 | Elk Creek | Elk Creek |
| 2120800 | 4 | Elk Creek | Elk Creek |
| 2120800 | 5 | Elk Creek | Elk Creek |
| 2121000 | 1 | Elk Creek Lake | Elk Creek Lake* |
| 2122500 | 1 | West Creek | West Creek |
| 2122800 | 1 | Local Water | Unnamed |
| 2123500 | 1 | Cooley Lake | Cooley Lake |
| 2123600 | 1 | Taylor Creek | Taylor Creek |
| 2123700 | 1 | Gravel Pit Pond | Gravel Pit Pond |
| 2123800 | 1 | Un Lake | Unnamed |
| 2123900 | 1 | Lowes Creek | Lowes Creek |
| 2123900 | 2 | Lowes Creek | Lowes Creek |
| 2123900 | 3 | Lowes Creek | Lowes Creek |
| 2124000 | 1 | Willow Creek | Willow Creek |
| 2124300 | 1 | Pine Creek | Pine Creek |
| 2124400 | 1 | Clear Creek | Clear Creek |
| 2124500 | 1 | Creek 12-12 (T25n, R9w) | Unnamed |
| 2124600 | 1 | Unnamed Trib to Lowes Cr | Unnamed |
| 2124700 | 1 | Graham Creek | Graham Creek |
| 2124800 | 1 | Kelly Creek | Kelley Creek |
| 2125100 | 1 | Sherman Creek | Sherman Creek |
| 2125400 | 1 | Half Moon Lake | Halfmoon Lake |
| 2125500 | 1 | Little Niagara Creek | Little Niagara Creek |
| 2125600 | 1 | Eau Claire River | Eau Claire River |
| 2125600 | 2 | Eau Claire River | Eau Claire River |
| 2125600 | 3 | Eau Claire River | Eau Claire River |

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|---------|---|-------------------------|-------------------------|
| 2125600 | 4 | Eau Claire River | Eau Claire River |
| 2125600 | 5 | Eau Claire River | Eau Claire River |
| 2125700 | 1 | Otter Creek | Otter Creek |
| 2126100 | 1 | Un Lake | Unnamed |
| 2126800 | 1 | Beaver Creek | Beaver Creek |
| 2127500 | 1 | Kluckman Valley Creek | Kluckman Valley Creek |
| 2128100 | 1 | Lake Altoona | Altoona Lake |
| 2128200 | 1 | Fivemile Creek | Fivemile Creek |
| 2128500 | 1 | Sixmile Creek | Sixmile Creek |
| 2128600 | 1 | Ninemile Creek South | Ninemile Creek -South |
| 2128700 | 1 | Sevenmile Creek | Sevenmile Creek |
| 2128900 | 1 | Ninemile Creek North | Ninemile Creek -North |
| 2128900 | 2 | Ninemile Creek (North) | Ninemile Creek -North |
| 2129300 | 1 | Deinhammer Creek | Deinhammer Creek |
| 2129400 | 1 | Beaver Creek | Beaver Creek |
| 2129400 | 3 | Beaver Creek | Beaver Creek |
| 2129500 | 1 | Creek 16-12 (T27n, R7w) | Unnamed |
| 2129600 | 1 | Pine Creek (T27N, R7W) | Pine Creek |
| 2129650 | 1 | Creek 15-2 (T27n, R7w) | Unnamed |
| 2129900 | 1 | Fall Creek | Fall Creek |
| 2129900 | 2 | Fall Creek | Fall Creek |
| 2130100 | 1 | Fall Creek Pond | Fall Creek Pond |
| 2130200 | 1 | Rush Creek | Rush Creek |
| 2130200 | 2 | Rush Creek | Rush Creek |
| 2130300 | 1 | Bears Grass Creek | Bears Grass Creek |
| 2130300 | 3 | Bears Grass Creek | Bears Grass Creek |
| 2130500 | 1 | Sand Creek | Sand Creek |
| 2130600 | 1 | Bridge Creek | Bridge Creek |
| 2130600 | 2 | Bridge Creek | Bridge Creek |
| 2130600 | 3 | Bridge Creek | Bridge Creek |
| 2130700 | 1 | Browns Creek | Browns Creek |
| 2130800 | 1 | Un Lake | Unnamed |
| 2131000 | 1 | Dells Millpond (Rodell) | Dells Millpond (Rodell) |
| 2131100 | 1 | Thompson Valley Creek | Thompson Valley Creek |
| 2131100 | 2 | Thompson Valley Creek | Thompson Valley Creek |

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|---------|---|--------------------------------|-----------------------------|
| 2131300 | 1 | First Trestle Creek | First Trestle Creek |
| 2131300 | 2 | First Trestle Creek | First Trestle Creek |
| 2131400 | 1 | Diamond Valley Creek | Diamond Valley Creek |
| 2131400 | 2 | Diamond Valley Creek | Diamond Valley Creek |
| 2131750 | 1 | Unnamed Impoundment | Unnamed |
| 2131900 | 1 | Hay Creek (T25N R6W) | Hay Creek |
| 2132700 | 1 | Travis Creek | Travis Creek |
| 2133200 | 1 | Eau Claire Lake | Eau Claire Lake |
| 2133300 | 2 | Hay Creek | Hay Creek |
| 2133300 | 3 | Hay Creek | Hay Creek |
| 2133400 | 1 | Unnamed Creek 27-8 (T27N, R6W) | Cold Creek |
| 2133500 | 1 | Darrow Creek | Darrow Creek |
| 2133700 | 1 | Unnamed Pond (T27n R6w S2-2) | Unnamed |
| 2134200 | 1 | Muskrat Creek | Muskrat Creek |
| 2134200 | 2 | Muskrat Creek | Muskrat Creek |
| 2134200 | 3 | Muskrat Creek | Muskrat Creek |
| 2134400 | 1 | Unnamed Trib to Muskrat Cr | Unnamed |
| 2134400 | 2 | Unnamed Trib to Muskrat Cr | Unnamed |
| 2134800 | 1 | Hathway Creek | Hathaway Creek |
| 2134900 | 1 | Whippoorwill Creek | Whippoorwill Creek |
| 2135000 | 1 | Coon Gut Creek | Coon Gut Creek |
| 2135100 | 1 | Coon Fork Creek | Coon Fk Creek |
| 2135200 | 1 | Pea Creek | Pea Creek |
| 2135600 | 1 | Coon Fork Flowage | Coon Fork Flowage |
| 2135700 | 1 | Black Creek | Black Creek |
| 2135800 | 1 | Travis Creek | Unnamed |
| 2135900 | 1 | Schoolhouse Creek | Schoolhouse Creek |
| 2135900 | 2 | Schoolhouse Creek | Schoolhouse Creek |
| 2136000 | 1 | McGaver Creek | McGaver Creek |
| 2136200 | 1 | Fairchild Pond | Fairchild Pond |
| 2136600 | 1 | Unnamed Creek | Unnamed |
| 2136700 | 1 | Local Water | Unnamed |
| 2137000 | 1 | South Fork Eau Claire River | South Fork Eau Claire River |
| 2137100 | 1 | Horse Creek | Horse Creek |
| 2137100 | 2 | Horse Creek | Horse Creek |

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|---------|---|-----------------------------|-----------------------------|
| 2145400 | 1 | North Fork Eau Claire | North Fork Eau Claire River |
| 2145400 | 4 | North Fork Eau Claire | North Fork Eau Claire River |
| 2145500 | 1 | Beeman Creek | Beeman Creek |
| 2145600 | 1 | Shambaugh Creek | Shambaugh Creek |
| 2145700 | 1 | Local Water | Unnamed |
| 2145900 | 1 | Loper Creek | Loper Creek |
| 2146000 | 1 | Wolf River | Wolf River |
| 2146100 | 1 | Swim Creek (Swan) | Swim Creek |
| 2147800 | 1 | Simes Creek | Simes Creek |
| 2149900 | 1 | Dells Pond | Dells Pond |
| 2149900 | 2 | Dells Pond | Dells Pond |
| 2152600 | 1 | Chippewa Falls Flowage | Chippewa Falls Flowage 5555 |
| 2153300 | 1 | South Fork Paint Creek | South Fork Paint Creek |
| 2154000 | 1 | Alder Creek | Alder Creek |
| 3000037 | 1 | Local Water | Unnamed |
| 5012705 | 1 | Beaver Creek | Unnamed |
| 5012788 | 1 | Beaver Creek | Unnamed |
| 5012913 | 1 | Local Water | Unnamed |
| 5012952 | 1 | Local Water | Unnamed |
| 5012990 | 1 | Local Water | Unnamed |
| 5013053 | 1 | Local Water | Unnamed |
| 5013091 | 1 | Local Water | Unnamed |
| 5013121 | 1 | Unnamed Creek 29-16 | Unnamed |
| 5013271 | 1 | Local Water | Unnamed |
| 5013524 | 1 | Local Water | Unnamed |
| 5013600 | 1 | Local Water | Unnamed |
| 5013650 | 1 | Local Water | Unnamed |
| 5014606 | 1 | Unnamed Trib to Lowes Cr | Unnamed |
| 5015040 | 1 | Local Water | Unnamed |
| 5015165 | 1 | Unnamed Trib to Black Creek | Unnamed |
| 5537331 | 1 | Local Water | Unnamed |
| 5537394 | 1 | Local Water | Unnamed |
| 5537833 | 1 | Local Water | Unnamed |
| 5537860 | 1 | Local Water | Unnamed |
| 5537967 | 1 | Local Water | Unnamed |

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| | | | |
|---------|---|-------------|---------|
| 5537983 | 1 | Local Water | Unnamed |
| 5538176 | 1 | Local Water | Unnamed |
| 5538383 | 1 | Local Water | Unnamed |
| 5538520 | 1 | Local Water | Unnamed |
| 5538808 | 1 | Local Water | Unnamed |
| 5538828 | 1 | Local Water | Unnamed |
| 5538840 | 1 | Local Water | Unnamed |
| 5538948 | 1 | Local Water | Unnamed |
| 5539002 | 1 | Local Water | Unnamed |
| 5539039 | 1 | Local Water | Unnamed |
| 5539069 | 1 | Local Water | Unnamed |
| 5539336 | 1 | Local Water | Unnamed |
| 5539342 | 1 | Local Water | Unnamed |
| 5539347 | 1 | Local Water | Unnamed |
| 5539381 | 1 | Local Water | Unnamed |
| 5539430 | 1 | Local Water | Unnamed |
| 5539620 | 1 | Local Water | Unnamed |
| 5539787 | 1 | Local Water | Unnamed |
| 5539920 | 1 | Local Water | Unnamed |
| 5540042 | 1 | Local Water | Unnamed |
| 5540147 | 1 | Local Water | Unnamed |
| 5540233 | 1 | Local Water | Unnamed |
| 5540259 | 1 | Local Water | Unnamed |
| 5540262 | 1 | Local Water | Unnamed |
| 5540434 | 1 | Local Water | Unnamed |
| 5541210 | 1 | Local Water | Unnamed |
| 5541323 | 1 | Local Water | Unnamed |
| 5541461 | 1 | Local Water | Unnamed |
| 5541582 | 1 | Local Water | Unnamed |
| 5541892 | 1 | Local Water | Unnamed |
| 5542097 | 1 | Local Water | Unnamed |
| 5542603 | 1 | Local Water | Unnamed |
| 5542688 | 1 | Local Water | Unnamed |
| 5542812 | 1 | Local Water | Unnamed |
| 5584482 | 1 | Local Water | Unnamed |

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|---------|---|-------------|---------|
| 5584490 | 1 | Local Water | Unnamed |
| 5584570 | 1 | Local Water | Unnamed |
| 5590978 | 1 | Local Water | Unnamed |
| 5590996 | 1 | Local Water | Unnamed |
| 5590997 | 1 | Local Water | Unnamed |

Lab Account Codes

| Account Code | Description | Start Date | End Date |
|--------------|-------------|------------|----------|
|--------------|-------------|------------|----------|

Forms

| Form Code | Form Name |
|-----------|-----------|
|-----------|-----------|

Methods

| Method Code | Method Description |
|-------------|--------------------|
|-------------|--------------------|

Fieldwork Events

| Start Date | Status | Field ID | Station ID | Station Name |
|------------|--------|----------|------------|--------------|
|------------|--------|----------|------------|--------------|

Documents

| Title | Description | Author | Published | Comments |
|-------|-------------|--------|-----------|----------|
|-------|-------------|--------|-----------|----------|

Budget

Combined Budgets:

Combined WSLH:

Combined Total: \$0.00

Funding

| Organization | Source | Type | Amount | Start Date | End Date |
|--------------|--------|------|--------|------------|----------|
|--------------|--------|------|--------|------------|----------|