



Public Works and Safety Committee Meeting Agenda

July 7, 2020 – 5:30 p.m.

Meeting Available on Zoom.us at the following meeting number:

<https://us02web.zoom.us/j/85877312880>

Dial in: 312-626-6799 Meeting ID: 858 7731 2880

1. Call to Order
2. Approve Minutes of June 2, 2020 meeting
3. Citizen Comments
4. Old Business
 - a) Discussion and Possible Action Regarding Proposed Ordinances for use of Golf Carts and Low Speed Vehicles on Village Streets
5. New Business
 - a) Optimized Corrosion Control Treatment Submittal to DNR Bureau of Drinking Water and Ground Water.
6. Adjournment

Note: It is possible that members and/or possibly a quorum of members of other governmental bodies of the municipality may be in attendance at the above-stated meeting to gather information; action will not be taken by any governmental body at the above-stated meeting other than the governmental body specifically referred to above in the notice. Upon reasonable notice, efforts will be made to accommodate the needs of disabled individuals through appropriate aids and services. To request such assistance, contact the Village Clerk at 262-691-5660.

Posted: July 2, 2020

**Village of Pewaukee
Public Works and Safety Committee Meeting Minutes
June 2, 2020**

Zoom Meeting called to order by Yonke at 5:32 pm.

Members present: Ed Hill, Kevin Yonke, Mark Grabowski, Laurin Miller, Wayne Vaughn

Members absent: Art Compton, Casey Smith

Also Present: Director of Public Works Naze, Administrator Gosse, Chief Tim Heier, Lt. Mark Garry

Agenda Item 2 – Minutes of March 3, 2020 meeting

Ed Hill noted that a correction was needed for the spelling of “Shong” under citizen comments and that Compton seconded the motion for agenda item 5a. Motion Hill to approve, second Grabowski, with corrections. Motion passed unanimously roll call vote.

Agenda Item 3 – Citizen Comments

Director Naze read aloud the contents of an email from Andrew Hacker, 1083 Quinlan Dr., supporting a Low Speed Vehicle Ordinance.

Jim Grabowski, 128 Park Ave., Supports item 5b and believes it is a benefit to the Village for convenient use of boat slips, etc., a lake community should allow use of LSV's. Regarding item 5e commented on how many times an item gets resurrected and brought back for discussion., opposed to changing Park Ave parking regulations.

Bob Rohde, 766 Glacier Dr, regarding parking for 203 W Wisconsin Ave., on 5/19 the Board approved outdoor seating, and with parking spots lost due WISDOT project, 6 of 11 spots on that end have been lost. Still believes that it is important to Chiropractic and Wellness to have reserved spots available during business hours.

Trustee Hill relayed and email from resident John Fay in support of an LSV Ordinance.

Robert Sladky, 366 park Ave., Spoke in favor of an LSV Ordinance because of the convenience it would create accessing the lake, boat slips, etc.

Kyle Krueser family, supports an LSV Ordinance for the purpose of accessing the boat launch, etc.

Agenda Item 4 – Old Business

None

Agenda Item 5 New Business

a) Recommendation to Village Board to Award 2020 Crack Sealing Proposal

Director Naze explained the proposal results for 2020 crack sealing requests. 2 proposals were received from four requests. For this year the request was for all streets in Lake Park Subdivision and for Westfield Way in Riverwood/Majeski Acres subdivision for the entire length.

Two proposals were returned, Fahrner Asphalt for \$197,071.00 and Thunder Road LLC for \$65,381.00

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The budgeted amount was \$40,000. Motion Grabowski, Second Vaughn to make recommendation to the Village Board to accept the proposal from Thunder Road, Oconomowoc, for crack sealing services in areas and type determined by the Public Works Director for an amount not to exceed \$40,000. Roll call vote approved unanimously.

b) Discussion and Possible Action Regarding Low Speed Vehicles on Village Streets

Heier and Garry spoke at length regarding the differences between the three categories of “low speed vehicles”, golf carts, low speed vehicles (LSV), and ATV/UTV’s. Golf carts are to be within a mile of a golf course, and require an ordinance to be legal on roads of less than 25 mph only. LSV’s meet NHTSA standards for vehicles and are allowed on road of less than 35 mph. ATV/UTV’s are registered with the Wisconsin DNR and must have designated routes. The use of these vehicles would be restricted geographically as they cannot be used on or even cross higher speed limit streets.

Lengthy discussion followed. Consensus was for staff to create a draft ordinance to return to the Committee for LSV and golf cart use only. The ordinance will contain such topics as golf cart safety measures, proof of insurance, inspections, registrations, etc.

c) Discussion and Possible Action Regarding Posting No Parking Restrictions on First Street

Trustee Yonke indicated that he was interested in the parking restrictions. Discussion followed with Chief Heier explaining the parking situation in the area over the winter due to snow and ice accumulation. Consensus was that observations in the area should re-occur after the school expansion project is complete and deferring further discussion until October

d) Discussion and Possible Action Regarding Reserving Street Parking for 203 West Wisconsin Ave.

Discussion by Committee included hours proposed, did businesses with street seating swap private parking spots, with other signs do lakefront businesses now have, etc. Motion by Hill, second Grabowski, to make a recommendation to the Village Board to allow Chiropractic and Wellness to create signage and post for three reserved parking spaces at 203 W Wisconsin Ave. during their business hours only, with Village staff approving the proposed signs. Roll call vote approved unanimously.

e) Discussion and Recommendation to Village Board for no trailer parking on Lake St between Park Ave & Prospect and Park Ave between Lake St and 247 Park Ave.

This topic was requested by Trustee Hill who among other things, saw people de-weeding their boat trailers on the street. Minutes of previous action at the Village Board was included in the packet. Discussion followed with the direction to revisit this topic after the Laimon Park lot has been designed and reconstructed.

Agenda Item 6 – Adjournment

Motion Grabowski, second Miller to adjourn the meeting at 6:55 pm. Motion approved unanimously.

Respectfully Submitted,
Daniel Naze, P.E.,
Director of Public Works/Village Engineer



To: Kevin Yonke, Chair
Public Works & Safety Committee

From: Scott A. Gosse
Village Administrator

Date: June 25, 2020

Re: Public Works & Safety Committee Agenda Items

BACKGROUND

Attached for your review please find information related to follow-up items from the June meeting related to Low-Speed Vehicles and Golf Carts.

ACTION REQUESTED

The action requested of the Public Works & Safety Committee is to review the attached information and to provide direction to staff or a recommendation to the Village Board.

ANALYSIS

1. Low-Speed Vehicles (LSV)

Attached for your review and information please find a copy of draft ordinance for your review and possible recommendation to the Village Board. Also attached is a copy of information from the WI DMV website related to LSV.

2. Golf Carts

Attached for your review and consideration please find a copy of a draft ordinance related to the operation of golf carts on Village roads. In reviewing the attached with the Village Attorney, it is noted that Wisconsin Statutes Section 349.18 allows for the use of golf carts on public road to go to and from a golf course for a distance not to exceed one mile (as we are aware, there is not a golf course within the Village where this would be permissible). Additionally, golf carts may be allowed on a public roadway within a municipality for maintenance purposes. Therefore, the attached ordinance would allow for golf carts on Village roads for purposes allowed by the applicable Wisconsin Statutes only, as the Village cannot allow the operation of golf carts for purposes not allowed by State Law.

Attachments

DRAFT

Chapter 86, Article IX Low-speed vehicles (LSV)

Sec. 86.145 – Definitions.

A low-speed vehicle (LSV) must meet the National Highway Traffic Safety Administration's (NHTSA) Federal Motor Vehicle Safety Standards and must have a certification label stating that the vehicle meets those standards. A golf cart, ATV or UTV are not considered a LSV.

Sec. 86.146 – Standards of a LSV.

To be eligible for use on streets of the Village, a low-speed vehicle shall comply with the following standards:

- (a) It shall be four-wheeled and shall have a speed range potential of at least 20 miles per hour but not more than 25 miles per hour on a paved surface and a gross vehicle weight at rest of less than 3,000 pounds.
- (b) It shall have headlights, front and rear turn signals and stop lamps.
- (c) It shall have red reflex reflectors on each side as far to the rear as practicable and one such reflector on the rear.
- (d) It shall have an exterior mirror mounted on the driver's side and either an exterior mirror on the passenger side or an interior rearview mirror.
- (e) It shall have a parking brake.
- (f) It shall have a windshield which conforms to the requirements of the Federal Motor Vehicle Safety Standard on glazing materials (49 CFR 571.205).
- (g) It shall possess a vehicle identification number (VIN) which complies with the Federal Code (49 CFR 565).
- (h) It shall have a Type 1 or Type 2 seatbelt assembly conforming to 49 CFR 571.209 and Federal Motor Safety Standard No. 209 for each designated seating position.
- (i) It shall meet the general test conditions under 49 CFR 571.500, Subsection S6.
- (j) Shall be self-propelled by gas or electric power.
- (k) For operation on public roads, a LSV must be titled and registered through the DMV.

Section 86.147 Operation.

- (a) Low-speed vehicles may be operated only upon those streets having a posted speed limit of 35 miles per hour or less.
- (b) The operator of a low-speed vehicle shall be in possession of a valid driver's license at the time of its operation on Village streets.
- (c) LSVs may never travel on or across expressways, freeways, interstate highways or other controlled-access highways.
- (d) The operation of a LSV shall comply in all respects with all ordinances of the Village, together with Wis. Stat Sec 346.94(22), 349.26 and any other applicable state laws.
- (e) Operators of LSVs must have a motor vehicle liability policy in effect that covers the LSV and meets minimum required coverage. The LSV operator must display proof of insurance coverage upon demand from any traffic officer.

2. The operator of a vehicle of a public utility. In this paragraph, public utility means any corporation, company, individual, or association which furnishes products or services to the public, and which is regulated under ch. 195 or 196, including railroads, telecommunications, or telegraph companies and any company furnishing or producing heat, light, power, or water.

3. The operator of a vehicle that is being used for advertising purposes.

4. The operator of a vehicle that is being used in a community event or celebration, procession or assemblage.

5. The activation of a theft alarm signal device.

6. The operator of a motorcycle being operated outside of a business or residence district.

7. A local authority that has enacted an ordinance in conformity with s. 349.135.

(17) IN-LINE SKATES ON ROADWAY. (a) A person riding upon in-line skates may go upon any roadway under the jurisdiction of a local authority, subject to any restrictions specified by municipal ordinance enacted under s. 349.235.

(b) Any person riding upon in-line skates upon any roadway shall ride in a careful and prudent manner and with due regard under the circumstances for the safety of all persons using the roadway.

(c) Notwithstanding any other provision of this subsection or s. 349.235, no person riding upon in-line skates may attach the in-line skates or himself or herself to any vehicle upon a roadway or, except while crossing a roadway at a crosswalk, go upon any roadway under the jurisdiction of the department.

(18) ELECTRIC PERSONAL ASSISTIVE MOBILITY DEVICES ON ROADWAYS AND SIDEWALKS. (a) 1. Except as otherwise prohibited in this chapter, a person may operate an electric personal assistive mobility device upon any roadway or sidewalk that is under the jurisdiction of the department.

2. Except as provided in s. 349.236 (1) (c), the department may by rule prohibit electric personal assistive mobility devices upon any roadway under its jurisdiction for which the speed limit is more than 25 miles per hour, and may by rule prohibit such devices upon any sidewalk under its jurisdiction. This subdivision does not apply upon any sidewalk at a permanent or temporarily established driveway.

(b) A person may operate an electric personal assistive mobility device upon any roadway under the jurisdiction of a local authority, subject to any prohibitions specified by municipal ordinance enacted under s. 349.236.

(18m) PERSONAL DELIVERY DEVICES ON SIDEWALKS AND CROSSWALKS. (a) 1. Except as otherwise prohibited in this chapter, a personal delivery device operator may operate a personal delivery device upon a sidewalk or crosswalk that is under the jurisdiction of the department.

2. Except as provided in s. 349.236 (1) (c), the department may by rule prohibit personal delivery devices upon any sidewalk under its jurisdiction. This subdivision does not apply upon any sidewalk at a permanent or temporarily established driveway.

(b) A personal delivery device operator may operate a personal delivery device upon any sidewalk under the jurisdiction of a local authority, subject to any prohibitions specified by municipal ordinance enacted under s. 349.236.

(18s) ELECTRIC SCOOTERS ON ROADWAYS, SIDEWALKS, BICYCLE LANES, AND BICYCLE WAYS. (a) Except as otherwise prohibited in this chapter, a person may operate an electric scooter upon any roadway, sidewalk, bicycle lane, or bicycle way that is under the jurisdiction of the department or that is open to operation of bicycles.

(b) A person may operate an electric scooter upon any roadway, sidewalk, bicycle lane, or bicycle way under the jurisdiction of a local authority, subject to any restrictions or prohibitions specified by municipal ordinance enacted under s. 349.237.

(c) No person may operate an electric scooter upon any roadway, sidewalk, bicycle lane, or bicycle way at a speed in excess of 15 miles per hour.

(19) OFF-ROAD UTILITY VEHICLES ON ROADWAY. (a) A person may operate an off-road utility vehicle upon any roadway that has a speed limit of 35 miles per hour or less. This paragraph applies only if the person operating the off-road utility vehicle is employed by, or under contract with, the state or a local governmental unit, as defined in s. 19.42 (7u), and the off-road utility vehicle is being used for the state or local governmental purpose of collecting residential or commercial solid waste, landscaping, or performing incidental street maintenance, and is operated on a highway for a distance not to exceed one half mile.

(b) No person may operate an off-road utility vehicle upon any highway that has a speed limit of more than 35 miles per hour.

(20) OPENING MOTOR VEHICLE DOOR ON HIGHWAY. (a) No person may open any door of a motor vehicle located on a highway without first taking due precaution to ensure that his or her act will not interfere with the movement of traffic or endanger any other person or vehicle.

(b) The operator of a motor vehicle located on a highway may not permit any person under 16 years of age to open any door of the motor vehicle without the operator first taking due precaution to ensure that opening the door will not interfere with the movement of traffic or endanger any other person or vehicle.

(21) LIGHTWEIGHT UTILITY VEHICLES ON HIGHWAYS. (a) In this subsection:

1. "Agricultural operations" includes transporting farm implements, equipment, supplies, or products on a farm or between farms.

2. "Lightweight utility vehicle" has the meaning given in s. 23.33 (11m) (a) 2., except that the term does not include a device that is equipped with a seat designed to be straddled by the operator.

NOTE: Section 23.33 (11m) was repealed by 2009 Wis. Act 175.

(b) 1. Notwithstanding s. 23.33 (11m), a person may operate in the conduct of agricultural operations a lightweight utility vehicle on a highway, including any roadway or, notwithstanding ss. 346.05 (1) and 346.08, any shoulder of a highway, to cross the highway or to travel on the highway.

NOTE: Section 23.33 (11m) was repealed by 2009 Wis. Act 175.

2. Any person operating a lightweight utility vehicle on a highway shall exercise due care and, as far as is practicable, avoid interfering with the movement of traffic.

3. Any person operating a lightweight utility vehicle upon any roadway shall operate as close as practicable to the right-hand edge or curb of the unobstructed roadway.

(c) Except as provided in par. (b) and s. 23.33 (11m), no person may operate a lightweight utility vehicle on a highway.

NOTE: Section 23.33 (11m) was repealed by 2009 Wis. Act 175.

(22) LOW-SPEED VEHICLES OPERATED ON HIGHWAYS. (a) Except as provided in par. (b) and s. 349.26, a person may operate a low-speed vehicle on any highway that has a speed limit of 35 miles per hour or less and that is under the jurisdiction, for maintenance purposes, of a municipality or county.

(b) 1. Paragraph (a) applies to the operation of a low-speed vehicle on a connecting highway only if the connecting highway has a speed limit of 25 miles per hour or less or the municipality or county with jurisdiction has adopted a valid ordinance under s. 349.26 (2).

2. Subject to subd. 3., par. (a) applies to an intersection where the highway under the jurisdiction of the municipality or county crosses a state trunk highway or connecting highway only if the state trunk highway or connecting highway has a speed limit at the intersection of 35 miles per hour or less and traffic at the intersection is controlled by traffic control signals.

3. Paragraph (a) does not apply to an intersection where the highway under the jurisdiction of the municipality or county

crosses an expressway, as defined in s. 346.57 (1) (ag), or freeway, as defined in s. 346.57 (1) (am), or a controlled-access highway designated under s. 83.027 or 84.25.

(c) No person may operate a low-speed vehicle on any highway except as authorized under this subsection or s. 349.26 (2).

(d) No person may operate a low-speed vehicle at a speed in excess of 25 miles per hour.

(23) COMMERCIAL QUADRICYCLES. (a) In this subsection:

1. "Alcohol beverages" has the meaning given in s. 125.02 (1).

2. "Fermented malt beverages" has the meaning given in s. 125.02 (6).

(b) No driver of a commercial quadricycle may consume alcohol while the commercial quadricycle is occupied by passengers.

(c) No person may drive a commercial quadricycle while the person has an alcohol concentration of more than 0.02.

(d) No person may drive a commercial quadricycle occupied by passengers after 10:30 p.m. or after any earlier time established by ordinance under s. 349.18 (1) (d).

(e) No person may drive a commercial quadricycle on which any alcohol beverages other than fermented malt beverages are carried or consumed. No person may drive a commercial quadricycle on which any alcohol beverages are sold, including delivery on the commercial quadricycle of alcohol beverages previously sold by a caterer.

(f) No person may possess on, or carry onto, a commercial quadricycle more than 36 fluid ounces of fermented malt beverages.

(g) Upon conviction of a driver of a commercial quadricycle for a violation of this subsection, the court shall enter an order permanently prohibiting the person from driving a commercial quadricycle. No person may drive a commercial quadricycle in violation of such an order.

History: 1973 c. 182, 314; 1975 c. 320; 1977 c. 68; 1983 a. 56, 175, 243, 538; 1989 a. 335; 1991 a. 83, 87; 1993 a. 260; 1995 a. 131, 138, 216, 373; 1997 a. 27; 2001 a. 90; 2003 a. 26, 192; 2005 a. 118, 250; 2007 a. 11; 2009 a. 22, 157, 311, 367; 2013 a. 106; 2015 a. 117, 170; 2017 a. 13; 2017 a. 365 s. 111; 2019 a. 11.

An ordinance adopting sub. (4) in its entirety violated the constitutional guarantee of free speech. *Deida v. City of Milwaukee*, 176 F. Supp. 2d 859 (2001).

346.945 Vehicle owner's liability for radios or other electric sound amplification devices. (1) (a) Subject to s. 346.01 (2), the owner of a vehicle involved in a violation of s. 346.94 (16) shall be presumed liable for the violation as provided in this section.

(b) Notwithstanding par. (a), no owner of a vehicle involved in a violation of s. 346.94 (16) may be convicted under this section if the person operating the vehicle or having the vehicle under his or her control at the time of the violation has been convicted for the violation under this section or under s. 346.94 (16).

(2) Any member of the public who observes a violation of s. 346.94 (16) may prepare a written report indicating that a violation has occurred. If possible, the report shall contain the following information:

(a) The time and the approximate location at which the violation occurred.

(b) The license number and color of the motor vehicle involved in the violation.

(c) Identification of the motor vehicle as an automobile, motor truck, motor bus, motorcycle or other type of vehicle.

(3) (a) 1. Within 24 hours after observing the violation, a member of the public may deliver a report containing all of the information in sub. (2) to a traffic officer of the county or municipality in which the violation occurred. A report which does not contain all of the information in sub. (2) shall nevertheless be delivered and shall be maintained by the county or municipality for statistical purposes.

2. Within 48 hours after receiving a report containing all of the information in sub. (2), the traffic officer shall investigate the

violation and may prepare a uniform traffic citation under s. 345.11 and, within 72 hours after receiving such report, any traffic officer employed by the authority issuing the citation may personally serve it upon the owner of the vehicle.

(b) If with reasonable diligence the owner cannot be served under par. (a), service may be made by leaving a copy of the citation at the owner's usual place of abode within this state in the presence of a competent member of the family who is at least 14 years of age and who shall be informed of the contents thereof. Service under this paragraph may be made by any traffic officer employed by the authority issuing the citation and shall be performed within 72 hours after a report containing all of the information in sub. (2) was delivered to a traffic officer under par. (a) 1.

(c) If with reasonable diligence the owner cannot be served under par. (a) or (b) or if the owner lives outside of the jurisdiction of the issuing authority, service may be made by certified mail addressed to the owner's last-known address. Service under this paragraph shall be performed by posting the certified mail within 72 hours after a report containing all of the information in sub. (2) was delivered to a traffic officer under par. (a) 1. Except for owners who live outside of the jurisdiction of the issuing authority, service under this paragraph may not be performed unless service under pars. (a) and (b) has been attempted.

(4) Defenses to the imposition of liability under this section include:

(a) That a report that the vehicle was stolen was given to a traffic officer before the violation occurred or within a reasonable time after the violation occurred.

(b) If the owner of the vehicle provides a traffic officer employed by the authority issuing the citation with the name and address of the person operating the vehicle or having the vehicle under his or her control at the time of the violation and sufficient information for the officer to determine that probable cause does not exist to believe that the owner of the vehicle was operating the vehicle or having the vehicle under his or her control at the time of the violation, then the owner of the vehicle shall not be liable under this section or under s. 346.94 (16).

(c) If the vehicle is owned by a lessor of vehicles and at the time of the violation the vehicle was in the possession of a lessee, and the lessor provides a traffic officer employed by the authority issuing the citation with the information required under s. 343.46 (3), then the lessee and not the lessor shall be liable under this section or under s. 346.94 (16).

(d) If the vehicle is owned by a dealer, as defined in s. 340.01 (11) (intro.) but including the persons specified in s. 340.01 (11) (a) to (d), and at the time of the violation the vehicle was being operated by or was under the control of any person on a trial run, and if the dealer provides a traffic officer employed by the authority issuing the citation with the name, address and operator's license number of the person operating the vehicle or having the vehicle under his or her control on a trial run, then that person, and not the dealer, shall be liable under this section or under the applicable provision of s. 346.94 (16).

(5) Notwithstanding s. 346.94 (16) (b) 6., this section does not apply to the operation of a motorcycle.

History: 1995 a. 373; 1997 a. 27; 1999 a. 80.

346.95 Penalty for violating sections 346.87 to 346.94.

(1) Except as provided in sub. (13), any person violating s. 346.87, 346.88, 346.89 (4), (4m), or (5), 346.90 to 346.92, or 346.94 (1), (9), (10), (11), (12), or (15) may be required to forfeit not less than \$20 nor more than \$40 for the first offense and not less than \$50 nor more than \$100 for the 2nd or subsequent conviction within a year.

(2) Any person violating s. 346.89 (1) or (3) (a) or 346.94 (2), (4), or (7) may be required to forfeit not less than \$20 nor more than \$400.

(2m) Any person violating s. 346.935 may be required to forfeit not more than \$100.

349.25 STATE AND LOCAL POWERS

Updated 17–18 Wis. Stats. 14

or conviction record, subject to ss. 111.321, 111.322 and 111.335, and until the applicant exhibits proof that liability insurance will be in force for the protection of passengers in the minimum amount of \$10,000 for any one passenger and \$50,000 for any single accident. Section 632.24 is applicable to the insurance required under this section, whether the vehicle is a motor vehicle or is propelled in some other manner. The county board shall set the amount for each license issued, not to exceed an amount reasonably related to the actual and necessary cost of providing the license.

(3) The county board may, after notice and hearing accorded the licensee, revoke any license issued by it pursuant to this section whenever in its judgment the public safety so requires.

(4) No vehicle licensed pursuant to this section shall be operated upon a highway for the purpose of transporting persons for hire unless it is equipped with at least one red reflector at each of the 2 rear corners of the vehicle and with at least one blue reflector at each of the 2 front corners of the vehicle and at the front end of the pole or tongue. All such reflectors shall be of a type approved by the department.

(5) The county board in any county not containing a city of the

first or second class may by ordinance require owners and operators of vehicles to be used for the purposes specified in sub. (1) to be licensed. The actual issuance of the license may be delegated to the county clerk.

History: 1975 c. 375 s. 44; 1975 c. 421; 1977 c. 29 s. 1654 (7) (a); 1981 c. 380; 1981 c. 391 s. 211; 1983 a. 146.

349.26 Authority to allow or prohibit the operation of low-speed vehicles. (1m) The governing body of any municipality or county may by ordinance prohibit the operation of low-speed vehicles on any highway that is under the jurisdiction, for maintenance purposes, of the municipality or county. A county ordinance enacted under this subsection does not apply within any municipality that has enacted or enacts an ordinance under sub. (2).

(2) The governing body of any municipality may by ordinance allow the use of a low-speed vehicle on a roadway that has a speed limit of 35 miles per hour or less and that is located within the territorial boundaries of the municipality, regardless of whether the municipality has jurisdiction over the roadway.

History: 2005 a. 329; 2007 a. 33; 2009 a. 311.

Cross-reference: See also ch. Trans 145, Wis. adm. code.



State of Wisconsin Department of Transportation

Low-speed vehicle (LSV)

- Online services
- Vehicles
- Titles
- Plate guide
- Special plates
- Motor carriers
- DMV customer service centers
- Forms
- Drivers

A low-speed vehicle (LSV) must meet the National Highway Traffic Safety Administration's (NHTSA) Federal Motor Vehicle Safety Standards and must have a certification label stating that the vehicle meets those standards. A golf cart is not considered an LSV.

An LSV:

- has four wheels.
- has a top attainable speed in one mile of more than 20 mph and not more than 25 mph on a paved level surface.



Wisconsin LSV license plate

- has a gross vehicle weight rating of less than 3,000 pounds.
- is self-propelled by gas or electric power (also known as "neighborhood electric vehicles"),
- is exempt from state emissions testing.
- is not required to display a slow moving vehicle sign.

Operation on local roads

LSVs may be operated:

- on local or county roads that have a speed limit of 35 miles per hour or less.
- on connecting highways having a speed limit of 25 miles per hour or less, or if allowed by the local municipality, having a speed limit of 35 miles per hour or less.
- across numbered state highways where the state highway has a speed limit of 35 miles per hour or less and the intersection has traffic control signals.

LSVs may never travel on or across expressways, freeways, interstate highways or other controlled-access highways.

Driver license required

The operator of an LSV must have a valid regular or probationary driver license and follow all traffic laws.

Insurance required

Just like automobiles, LSV operators must have a motor vehicle liability policy in effect that covers the LSV and meets minimum required coverage. The LSV operator must display proof of insurance coverage upon demand from any traffic officer.

Title and registration

For operation on public roads, a LSV must be titled and registered through the DMV.

- The biennial registration fee is \$23, with expiration on April 30 of even-numbered years (see [pro-rated fee chart](#)).
- The registered owner may transfer the plate to another LSV when the vehicle is sold.
- The title fee for LSVs is \$157.
- Unless exempt, LSVs are subject to state and local sales and use tax.

To receive LSV title and registration, you must mail a completed MV14 application form for title and registration and fees to the DMV. **Local DMV customer service centers cannot provide title and registration services for these vehicles.**

Keep a copy of the application in your vehicle until you receive the Certificate of Vehicle Registration and license plate. When you receive the title, keep it in a secure place, not in the vehicle.

To apply, send:

Chapter 86, Article X – Golf Carts

Sec. 86.149 – Definitions

A golf cart is a vehicle designed and manufactured for operation on a golf course for sporting or recreational purposes and that is not capable of exceeding 20 miles per hour.

Sec. 86.150 – COVERAGE

- a. The operation of golf carts on public roads in the Village of Pewaukee subject to the restrictions set forth in Wis. Stat Sec. 349.18 and the provisions outlined in this ordinance shall be permitted.
- b. No person who is less than 16 years of age or who does not have a valid driver's license issued under or granted by the laws of Wisconsin or some other state may operate a golf cart on any public street within the Village. For purposes of this section, a learner's permit shall not be considered as a valid driver's license nor shall any license that has been revoked, temporary or otherwise, or suspended for any reason, be considered as a valid driver's license during the period of suspension or revocation.
- c. Golf carts shall not be operated on the public roads of this Village except in full compliance with the provisions of this section.
 1. Hours of operation: Golf carts can be driven on the roads of the Village of Pewaukee from one-half hour before sunrise and until one-half hour after sunset.
 2. Golf cart travel is only allowed on Village roads having speed limits of 35 mph or less.
 3. The golf cart must have a reflective slow-moving vehicle sign on the back of the cart visible to all that approach the cart from the rear.
 4. The golf cart must have two headlights and two tail lights.
 5. The golf cart must have seat belts and those seat belts must be used by any occupant of the vehicle while in motion on a Village road.
 6. The number of occupants in a golf cart may not exceed the capacity designed by the manufacturer.
 7. County Highways "KF" and "M" are not Village roads and golf cart travel is not allowed on these roads under this ordinance.
 8. State Highways 16, 190 and 164 are not Village roads and golf cart travel is not allowed on these roads under this ordinance.
- d. Golf carts shall be inspected annually by the Village of Pewaukee Police Department and issued a permit by the Police Department to certify that the golf cart contain the safety features referenced above as well as any safety equipment required by the State of Wisconsin and further to ensure the Department has proper owner information on file.

Sec. 86.151 – DISCLAIMER AND LIABILITY

- a. Disclaimer: Golf carts are not designed for nor manufactured to be used on public roads and the Village of Pewaukee neither advocates nor endorses the golf cart as a safe means of travel on public streets, roads, and highways. The Village of Pewaukee in no way shall be liable for accidents, injuries, or death involving the operation of golf carts.
- b. Assumption of risk. Any person who owns, operates, or rides upon a golf cart on a public street, road, or highway within the Village of Pewaukee does do so at his or her own risk and peril and assumes all liability resulting from the operation of the golf cart.

reasonable notice that a special weight limitation is in effect and the nature of that limitation. Imposition of the special weight limitations authorized by sub. (1) (b) shall be done by erecting signs before each end of the bridge or culvert to which the weight limitation applies sufficient to give reasonable notice that a special weight limitation is in effect and the nature of that limitation. All weight limitation signs and their erection shall comply with the rules of the department and shall be standard throughout the state.

(3) (a) The authority in charge of the maintenance of the highway may exempt vehicles carrying certain commodities specified by the authority or which are used to perform certain services specified by the authority from the special weight limitations which are imposed under sub. (1) (a), or may set different weight limitations than those imposed under sub. (1) (a) for vehicles carrying those commodities or which are used to perform those services, if the exemption or limitation is reasonable and necessary to promote the public health, safety, and welfare.

(b) The authority in charge of the maintenance of the highway shall exempt from the special or seasonal weight limitations imposed under sub. (1) (a) a vehicle that is used to transport material pumped from a septic or holding tank if, because of health concerns, material needs to be removed from a septic or holding tank within 24 hours after the vehicle owner or operator is notified and if the vehicle is operated for the purpose of emptying the septic or holding tank and disposing of its contents and is operated on a route that minimizes travel on highways subject to weight limitations imposed under sub. (1) (a). Within 72 hours after operating a vehicle that transported material pumped from a septic or holding tank and that exceeded special or seasonal weight limitations as authorized by this paragraph, the owner or operator of the vehicle shall notify the authority in charge of maintenance of the highways over which the vehicle was operated.

(c) The authority in charge of the maintenance of the highway shall exempt from the special or seasonal weight limitations imposed under sub. (1) (a) a vehicle operated by or at the direction of a public utility, as defined in s. 196.01 (5), a telecommunications provider, as defined in s. 196.01 (8p), or a cooperative association organized under ch. 185 for the purpose of producing or furnishing heat, light, power, or water to its members, that is being operated for the purpose of responding to a service interruption.

(d) The authority in charge of the maintenance of the highway shall exempt from the special or seasonal weight limitations imposed under sub. (1) (a) a motor vehicle that is being operated to deliver propane for heating purposes if the gross weight imposed on the highway by the vehicle does not exceed 30,000 pounds, for a vehicle with a single rear axle, or 40,000 pounds, for a vehicle with tandem rear axles, and, if the motor vehicle is a tank vehicle, the tank is loaded to no more than 50 percent of the capacity of the tank. A tank vehicle operated under this paragraph shall be equipped with a gauge on the tank that shows the amount of propane in the tank as a percent of the capacity of the tank and shall carry documentation of the capacity of the tank either on the cargo tank or in the cab of the vehicle. A motor vehicle operated under this paragraph shall, to the extent practicable, make deliveries on seasonally weight-restricted roads at times of the day when the highways used are the least vulnerable.

History: 1975 c. 141; 1977 c. 29 s. 1654 (8) (a); 1977 c. 435; 1983 a. 307; 1999 a. 46; 2015 a. 44; 2017 a. 68.

349.17 Authority of cities, villages and towns to regulate heavy traffic. (1) Any city, village or town may by ordinance or resolution designate any street or highway under its jurisdiction as a heavy traffic route and designate the type and character of vehicles which may be operated thereon. A city, village or town may restrict or prohibit heavy traffic from using other streets or highways under its jurisdiction except that it may not place such restrictions on streets or highways over which are routed state trunk highways and may not prohibit heavy traffic from using a street or highway for the purpose of obtaining orders for supplies or moving or delivering supplies or commodities to or from any place of business or residence which has an entrance

on such street or highway. Whenever a city, village or town designates any street or highway under its jurisdiction as a heavy traffic route, it shall cause appropriate signs to be erected giving notice thereof.

(2) In this section, "heavy traffic" means all vehicles not operating completely on pneumatic tires and all vehicles or combination of vehicles, other than motor buses, designed or used for transporting property of any nature and having a gross weight of more than 6,000 pounds.

History: 1977 c. 116; 1993 a. 246.

Legislative Council Note, 1977: Sub. (1) authorizes cities and villages to designate any street as a heavy traffic route. As defined in s. 340.01 (64), the term "street" means every highway within the corporate limits of a city or village except alleys. By adding "or highway" after "street", s. 349.17 (1) authorizes a city or village to prohibit heavy traffic from using any street or alley which has not been designated as a heavy traffic route unless such street or alley is being used to obtain orders for supplies or to deliver supplies or commodities to or from a place of business or residence with an entrance on such street or alley. "Highway" is defined in s. 340.01 (22), to mean "all public ways and thoroughfares", including alleys. [Bill 465-A]

349.18 Additional traffic-control authority of counties and municipalities. (1) Any city, village or town, by ordinance, may:

(a) Designate the number of persons that may ride on a motor bicycle at any one time and the highways upon which a motor bicycle or moped may or may not be operated.

(b) Establish a golf cart crossing point upon a highway within its limits. An ordinance enacted under this paragraph shall require that a golf cart stop and yield the right-of-way to all vehicles approaching on the highway before crossing the highway. The ordinance may require that a golf cart be equipped with reflective devices as specified in the ordinance. The city, village or town shall place a sign of a type approved by the department to mark the crossing point on both sides of the highway.

(c) Regulate the operation of a golf cart to and from a golf course for a distance not to exceed one mile upon a highway under its exclusive jurisdiction. The city, village or town shall place a sign of a type approved by the department to mark any golf cart travel route designated by the ordinance.

(d) Establish a time earlier than that specified in s. 346.94 (23) (d) after which a person may not drive a commercial quadricycle occupied by passengers within the city, village, or town.

(1m) (a) Except as provided in par. (c), a municipality may, by ordinance, allow the operation of golf carts on any highway that has a speed limit of 25 miles per hour or less and that is located within the territorial boundaries of the municipality, regardless of whether the municipality has jurisdiction, for maintenance purposes, over the highway.

(b) Except as provided in par. (c), a county may, by ordinance, allow the operation of golf carts on any highway that has a speed limit of 25 miles per hour or less and that is under the jurisdiction, for maintenance purposes, of the county.

(e) 1. An ordinance under this subsection may not allow the operation of golf carts on or, except as provided in subd. 2., across any state trunk highway or connecting highway.

2. A municipality or county may, by ordinance, allow the operation of golf carts across a state trunk or connecting highway if the state trunk or connecting highway has a speed limit of 35 miles per hour or less, the highway crossing will connect highways designated for golf cart operation under par. (a) or (b), and the municipality or county provides sufficient funds to the department to cover the costs of erecting and maintaining highway crossing signs. If a highway crossing is established under this subdivision, the department shall erect and maintain any signs necessary to mark the crossing.

(d) An ordinance under this subsection may include a definition of the term "golf cart."

(2) Any city, town or village may by ordinance enacted pursuant to s. 349.06 regulate the operation of bicycles and motor bicycles and may by ordinance require registration of any bicycle or motor bicycle owned by a resident of the city, town or village, including the payment of a registration fee.



PUBLIC WORKS DEPARTMENT
1000 Hickory Street
Pewaukee, WI 53072

Memo

To: Public Works and Safety Committee Members
From: Dan Naze, P.E., Director of Public Works/Village Engineer
Date: June 18, 2020
Re: Optimized Corrosion Control Treatment Submittal to DNR Bureau of Drinking Water and Ground Water.

As part of continuing compliance requirements upon the Village Water Utility to meet various and increasing Lead and Copper Rule mandates since 2017, some specific to the Village, the Village submitted a Drinking Water Corrosion Control Evaluation May 28th.

This was originally to be an Optimized Corrosion Control Treatment plan, which became a "study". A portion of the report is included for your information and discussion. The DNR has not yet replied regarding the report as of this date.

Recommendation:

None, informational only.



PUBLIC WORKS DEPARTMENT
1000 Hickory Street
Pewaukee, WI 53072

To: Village Board
Cc: Scott A. Gosse, Village Administrator
From: Dan Naze, P.E., Director of Public Works/Village Engineer
Date: March 12, 2019
Re: Agenda Item 7b, Approval of Proposal - Agreement for Optimized Corrosion Control Consulting Services

As part of the Village Water utility mandate by the DNR to optimize water system corrosion control following the 2017 lead Action Level Exceedance, I have attached an engineering agreement proposal from Process Research Solutions (PRS), Madison, Wisconsin. PRS was retained by the Village early in 2018 to draft a Corrosion Control Treatment Recommendation as required by the DNR, which was submitted March 29, 2018.

PRS services include submitting an Optimized Corrosion Control Plan to the DNR, advising and evaluating sample collection and results, managing and graphing data parameters and making ongoing recommendations, developing a sampling protocol for the radium treatment system, advising on and analyzing water main flushing data and routine required safe system sampling and additional requested water chemistry parameters. This will be followed by an interim report and meeting with the DNR during late 2019, and a final report as required by the DNR by March 31, 2020. All required and requested sampling of the water system and the communication, scheduling, and drawing samples from individual residences is done by the Village.

Recommendation:

Authorize approval of a Professional Services Agreement with Process Research Solutions, Abigail Cantor, P.E., Madison, Wisconsin, for an hourly fee not to exceed sum of \$12,500.00, plus appropriate expenses. Ms. Cantor has authored and co-authored many papers on matters of water system chemistry, the most recent listed below. She has worked with many other municipalities on lead and copper rule compliance, and has an established rapport with Madison DNR staff.

Publication Summary

Abigail F. Cantor (2018). Water Distribution System Monitoring: A Practical Approach for Evaluating Drinking Water Quality. Second Edition. Boca Raton: CRC Press.

Abigail F. Cantor (2017). Optimization of Phosphorus-Based Corrosion Control Chemicals and Flushing for Lead and Copper Control (Project #4586). Denver: Water Research Foundation.

Rich Giani, editor (2017). Manual of Water Supply Practices – M58: Assessment and Control of Internal Corrosion and Metals Release in Drinking Water Systems. Second Edition. Denver: American Water Works Association. (Abigail F. Cantor, author of Chapter 2: Fundamentals of Internal Corrosion and Metals Release and Chapter 6: Monitoring Effectiveness of Corrosion Control and Metals Release Remediation)

Abigail F. Cantor and Rob Spence (2013). What's Bugging Your Pipes: How Microorganisms Affect Plumbing Systems. Madison: Process Research Solutions, LLC.

Abigail Cantor, Barry Maynard, et. al. (2013). Assessing Risk of Lead and Copper Consumption from Drinking Water (Project #4415). Denver: Water Research Foundation.

Gregory Welter, Daniel Giammar, Abigail Cantor (2013). Galvanic Corrosion Following Partial Lead Service Line Replacement (Project #4349). Denver: Water Research Foundation.

Abigail F. Cantor, Eric Kiefer, Kevin Little, Andrew Jacque, Archie Degnan, Barry Maynard, David Mast, Judith Cantor (2012).

Distribution System Water Quality Control Demonstration (Project #4286). Denver: Water Research Foundation. (This book comes with a Microsoft Excel® add-in on a CD for creating Shewhart control charts for water system operating and monitoring data.)

State of Wisconsin
DEPARTMENT OF NATURAL RESOURCES
141 NW Barstow St., Room 180
Waukesha, WI 53188

Tony Evers, Governor
Preston D. Cole, Secretary
Telephone 608-266-2621
Toll Free 1-888-936-7463
TTY Access via relay - 711



RECEIVED

February 4, 2019

FEB - 8 2019

Pewaukee Village Waterworks
Mr. Daniel Naze, P.E.
235 Hickory Street
Pewaukee, WI 53072-3592

PWSID#: 26802292
Region: Southeast Region
County: Waukesha
File Code: 3300

SUBJECT: Lead and Copper Corrosion Control Treatment Steps and Reduced Monitoring Eligibility

Dear Mr. Naze,

Following a lead Action Level Exceedance (ALE) in 2017, The Pewaukee Village Waterworks (water utility) became subject to the Corrosion Control Treatment Steps and Deadlines as outlined in Chapter NR 809, Subchapter II - Control of Lead and Copper. The Corrosion Control Treatment Steps establish processes for public water systems to install corrosion control treatment and/or implement other corrective actions in order to minimize lead and copper in their drinking water system.

In accordance with s. NR 809.547 (4), Wis. Adm. Code, small or medium public water systems that meet lead and copper action levels of 15 $\mu\text{g/L}$ for lead and 1300 $\mu\text{g/L}$ for copper during two consecutive 6-month monitoring periods may reduce the frequency of lead and copper monitoring to once a year. Following receipt of lead and copper samples during the January 1 – June 30, 2018 and July 1 – December 31, 2018 monitoring periods, the water utility has demonstrated that lead and copper 90th percentile values are less than the lead and copper Action Levels. Eligibility for reduced monitoring means your system will be required to collect samples from 40 sites to 20 sites for the monitoring period between June 1, 2019 – September 30, 2019. Your lead and copper Monitoring Site Plan will need to be updated to reflect any changes to your sampling locations due to the reduced sampling requirement. All sample sites must be Tier 1 sites from homes with lead service lines (s. NR 809.547 (3)) and must be the sites with the historically highest lead values (s. NR. 809.542 (8)). Changes can be submitted on the Department's *Lead and Copper Sampling Monitoring Site Plan Change Request Form (3300-315)*. Changes must be made to your Monitoring Site Plan (MSP) in advance of lead and copper sampling for 2019. Please submit your updated MSP as soon as possible so we can update your MSP.

Please note that while the Department recognizes that the water utility has returned to compliance (completed two consecutive 6-month rounds of sampling where samples are less than the lead action level), the water utility must still demonstrate that the corrosion control treatment (CCT) is optimized. In accordance with s. NR 809.543 (8), the water utility must still conduct the CCT Study as described in Department correspondence sent February 1, 2019.

If you have any questions, please call me at 262-574-2134 or email at Thanintr.ratarasarn@wisconsin.gov

Sincerely,

A handwritten signature in black ink, appearing to read 'Thanintr T. Ratarasarn'.

Thanintr T. Ratarasarn, P.E.
Water Supply Engineer - SER

Enclosure:

3Ts for Public Water Systems

e-copy:

Jesse Jensen - Regional Supervisor
Bridget Kelly; DNR – Madison
Brad Siefker; DNR – Madison
Adam DeWeese; DNR – Madison

State of Wisconsin
DEPARTMENT OF NATURAL RESOURCES
101 S. Webster Street
Box 7921
Madison WI 53707-7921

Scott Walker, Governor
Daniel L. Meyer, Secretary
Telephone 608-266-2621
Toll Free 1-888-936-7463
TTY Access via relay - 711



September 24, 2018

Mr. Daniel Naze
Pewaukee Waterworks
235 Hickory Street
Pewaukee, WI 53072

Project Number: W-2018-0597
Date Received: 03/29/2018
DNR Region: SER
PWSID: 26802292

SUBJECT: Corrosion Control Treatment Study Requirement

Dear Daniel Naze,

The Wisconsin Department of Natural Resources (Department) has received and reviewed the Pewaukee Waterworks' (Utility) Corrosion Control Treatment (CCT) Recommendation dated March 29, 2018. In accordance with subchapter II of NR 809, Wisconsin Administrative Code (Wis. Adm. Code), this evaluation and submittal were required in response to a lead action level exceedance (ALE) that occurred during the lead and copper monitoring period June 1 – September 30, 2017. The following is a summary of the information provided in your CCT Recommendation:

Corrosion Control Treatment Recommendation:

- 1) Conduct additional sampling in 2018 to determine the portion of lead and copper in the distribution system existing as particulate and dissolved.
- 2) Conduct sequential sampling to characterize the locations of elevated lead release and analyze other water quality parameters to determine what other factors may affect corrosion control
- 3) Sample water before and after operating each well pump and filter to determine corrosion impacts from well sources and microbial growth related to lead and copper release in the distribution system.
- 4) Clean and rehabilitate wells and filters.
- 5) Perform distribution system unidirectional flushing to clean water mains.
- 6) Continue to feed LPC 4 (50% Polyphosphate/ 50% Orthophosphate) for orthophosphate addition.
- 7) Maintain dose of orthophosphate between [0.3-1.5] mg/L.

In accordance with section. NR 809.542 Wis. Adm. Code, the Department must either accept the CCT Recommendation, or require the Utility to conduct a CCT Study. **The Department hereby requires the Utility to conduct and submit the completed CCT Study to the Department no later than March 31, 2020.**

In making this determination, the Department consulted EPA's guidance document *Optimal Corrosion Control Treatment Evaluation Technical Guidance for Primacy Agencies and Public Water Systems* (EPA Guidance). In alignment with the EPA Guidance, a system should conduct a CCT Study when their *CCT Study Recommendation Checklist* has two or more 'yes' responses or if the system's community has lead service lines. As your system met one or more of these criteria; the Utility must:

Conduct a CCT Study by evaluating the drinking water system and submit a report to the Department stating how your Utility intends to reduce lead and/or copper in your drinking water

system. The evaluation will be unique for each system but will likely encompass some of the following tenets: an evaluation of current treatment for efficacy in reducing lead, consideration of the sources of lead in the system, consideration of other treatment options that may be more effective at reducing lead, and evaluation of water quality parameters that can impact lead releases and corrosion control treatment efficacy. Note that an evaluation of the corrosivity of the water alone is not a substantial enough analysis to determine the likelihood of lead release. Additional guidance for what is required in a CCT Study is described in greater detail in the enclosed EPA Guidance.

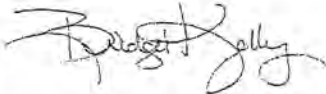
A system of your Utility's size (i.e. < 10,000 people served) may choose to conduct either a 'Desktop CCT Study' or a 'Demonstrative CCT Study.' A desktop study requires your system to evaluate CCT efficacy through evaluation of water quality data and available literature on CCT science and make a recommendation in accordance with that science. Conversely, a demonstrative study requires a system to demonstrate through use of pipe-loops or other similar technologies that a given treatment will be effective in their system.

Given the complexity of a CCT Study, the Department has established several interim deadlines, in addition to the **March 31, 2020** submittal date. Establishing interim deadlines creates an opportunity for the Department and the Utility to engage in a dialogue about the CCT study during the 18-month duration of time allotted for such a study. These deadlines are described further on the enclosed table titled *Corrosion Control Study Timeline*. The first interim deadline is for the Utility to submit a proposal to the Department outlining the basic steps/components of the CCT study and the anticipated timeline for each step. This submittal is due to your DNR Engineer, Thanintr Ratarasarn, on or before **December 31, 2018**. Following the completion and submittal of this outline, the Department would like to meet with you to discuss the remainder of the interim deadlines and CCT study process.

The Department strongly recommends that the Utility work with a consultant and/or treatment supplier to determine the best direction in conducting the CCT Study. Additionally, the Department recommends that the Utility consult the enclosed EPA Guidance, as there are several resources that can help to direct CCT Study efforts in a meaningful way. An additional Department resource, *Components of a Corrosion Control Study*, has also been enclosed for your reference.

If you have any questions regarding these requirements, you may contact me at (608) 266-9257; or your DNR Representative Thanintr Ratarasarn, at 262 574-2134.

Sincerely,



Bridget Kelly
Public Water Supply Section
Bureau of Drinking Water and Groundwater
(608) 266-9257

Enclosures:

- 1) *Optimal Corrosion Control Treatment Evaluation Technical Guidance for Primacy Agencies and Public Water Systems*
- 2) *CCT Study Recommendation Checklist*
- 3) *Corrosion Control Study Timeline*
- 4) *Components of a Corrosion Control Study*

ecopy: Thanintr Ratarasarn; Water Supply Engineer, DNR, Waukesha
Jesse Jensen; SER Supervisor, DNR, Milwaukee
Adam DeWeese; Public Water Supply Section Chief, DNR, Madison
Cathy Wunderlich; Public Water Engineering Section Chief, DNR, Madison
Bradley Siefker; Water Supply Specialist, DNR, Madison

Drinking Water Corrosion Control Evaluation

For Village of Pewaukee Water Utility

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Section 1: Project Description

In 2017, the Village of Pewaukee exceeded the 15 µg/L Action Level for lead in its 2017 compliance sampling. The 90th percentile lead level was 16 µg/L. A report, *Water Quality Investigation and Corrosion Control*, was released in March 2018 to describe the factors that most likely participated in the lead exceedance and to recommend further actions to control the release of lead and copper in the water system.

It was concluded that, in the Village of Pewaukee water system, where orthophosphate is being added for corrosion control, lead should additionally be controlled by means of removal of chemical scales and biofilms from the water system and by means of ensuring the biostability of the water. The following steps were recommended:

- Further Data Gathering
 - Perform the regulatory Lead and Copper Rule compliance monitoring for 2018 and 2019. In addition to measuring the total lead and total copper required by the regulation, measure dissolved lead and dissolved copper at all or a subset of the residences. This would indicate the degree to which lead and copper release is in dissolved form versus particulate form. There are different factors involved in the release of dissolved metals versus particulate metals. Given a different set of factors, different control strategies apply.
 - Investigate one to three residences with elevated lead from 2017, determining the plumbing configuration and performing sequential sampling to create a profile of dissolved and particulate lead concentrations through the plumbing system from the kitchen tap to the water main. This would pinpoint locations of elevated lead release in the premise plumbing and define reasons that elevated lead release can occur in Village residences.
 - Investigate the “biostability” of the wells using a new technology for understanding the role of microorganisms in creating a corrosive environment in the water system.
 - Also utilize the biostability measurements on the radium removal water filter. Water treatment filters, with slower water flow and high surface-area media, can become incubators for microorganisms and inoculate the water system downstream with microorganisms and their corrosive chemical secretions and by-products.
- System Cleaning
 - Clean and rehabilitate wells, especially with techniques to remove biofilms from the well casing and associated piping
 - Clean the filter with biofilm removal chemicals
 - Perform water main flushing to remove legacy pipe wall chemical scales and biofilms as well as prevent further build-up. Increase the

effectiveness of the flushing using uni-directional flushing techniques. For both the uni-directional flushing and for standard flushing, utilize turbidity measurements with a goal of 1 NTU to determine the end of a flushing run.

- Continued Monitoring
 - Monitor the wells and water treatment filter to determine when biofilm removal cleaning is required again in order to lower the potential for microbiologically influenced corrosion.
 - Utilize regulatory disinfection data from Revised Total Coliform Rule sites to determine where disinfection is low in the distribution system and to determine its seasonal trends. Low disinfection levels indicate the presence of pipe wall accumulations and microbiological activity, which are initiating factors in both dissolved and particulate lead and copper release.
 - It was also recommended to measure turbidity at Revised Total Coliform Rule site visits and study turbidity data in the same way as the disinfection data. High turbidity indicates release of pipe wall accumulations which is an initiating factor in particulate lead and copper release.

This report assesses the actions taken and data gathered in 2018, 2019, and the first quarter of 2020 in response to the 2018 recommendations for the control of the lead and copper release.

Section 6: Conclusions

The 2018 and 2019 data analyzed for this report increase suspicions of microbiological activity that lead to a higher potential of microbiologically influenced corrosion of lead and copper in the Village of Pewaukee water. The reasons are:

- Higher phosphate concentrations can be seen in possible biofilm sloughing events as seasonal temperatures warm in March and April and as seasonal temperatures cool in October and November.
- There appears to be uptake of phosphate concentrations in the summer as microbiological metabolic activity increases.
- There are increasing disinfection by-products that potentially have a microbiological origin within the distribution system.
- There is consumption of chlorine disinfection in the distribution system compared to the initial dosages at the entry points to the distribution system.
- There are seasonal trends of higher chlorine consumption in the warmer microbiologically active summer months.

In addition to the possible microbiologically influenced corrosion in the system, the 2017 exceedance of the Action Level for lead may have occurred from work performed at Well 5 and new treatment plant as legacy pipe wall chemical scales and biofilms may have been disrupted. Additionally, it may have occurred because of a changed water environment from the new treatment where biofilm sloughs from pipe walls to adapt to the new conditions.

The 2018 and 2019 data also show that particulate lead and copper can be a significant fraction of the total lead or copper concentration measured in the Village of Pewaukee water system. Particulate lead and copper are not a function of uniform corrosion of metal, which is the focus of the LCR. They are not controlled by orthophosphate addition. Instead, particulate lead and copper are a function of adsorption/entrapment of lead and copper by chemical scales and biofilms.

For all of the reasons discussed above, control of lead and copper release by system cleaning and by achieving biostability of the system is warranted in the Village of Pewaukee water system in addition to the existing orthophosphate dosing.

Section 7: Recommendations

The Village of Pewaukee water system appears to be in control of lead release at this time and beginning to implement changes to operation and maintenance protocols that will continue to lower the potential for future excessive lead release.

Major steps for system cleanliness and biostability have already been taken to address the potential release of particulate lead into the water from premise plumbing. A turbidity-based water main flushing program began in 2018 and will be even more effective when an engineered uni-directional flushing program will begin in June 2020. Well rehabilitation and cleaning began in 2012 and will continue into 2020.

The following recommendations are made as additional tools that can be incorporated into system operations and maintenance as budget and labor availability allow.

PHOSPHATE DOSING CONTROL

If dissolved lead becomes elevated in the system in the future, then leveling out of the orthophosphate concentration around the system should be considered. Lay the foundation for this possibility by tracking and studying existing dosing data.

First, study the existing usage by graphing pounds of phosphate product used per gallons of water pumped per day per entry point to determine consistency of dosing at each location and between locations. These data can be converted into milligrams orthophosphate per liter using chemical product specifications of total phosphate content and percent as orthophosphate.

Also graph the measured orthophosphate dose at each entry point per day and compare to the first dosing graph in order to understand how the ratio of polyphosphate to orthophosphate might change over time and operations. Note dates when fresh tanks of corrosion control product were started.

DISINFECTION DOSING CONTROL

Perform a similar analysis with disinfection product dosing as recommended for phosphate product.

After the analysis of the existing disinfection dosing, begin a discussion about how to keep the disinfection dosing consistent at and between dosing points.

Consider disinfection dosing goals that can maintain 0.5 mg/L free chlorine around the distribution system.

These actions increase the biostability of the water system and lower the potential for microbiologically influenced corrosion of lead and copper.

WATER MAIN FLUSHING PROGRAM

Determine reasons that particular hydrants/flushing runs for the 2018 and 2019 standard flushing could not be brought down to under 5 NTUs and under 1 NTU. Prioritize future flushing and pipe replacement based on those problematic locations.

For future standard or uni-directional flushing programs, consider pushing the flushing run endpoint to less than 1 NTU as water mains become cleaner with repeat cleaning over time.

Continue to record flushing run turbidity and time of flushing. Compare the latest data to historical flushing data per site to track improvements in lowering turbidity and lowering flushing run times.

ADDITIONAL FLUSHING TRIGGERED BY DISINFECTION/TURBIDITY/ORTHOPHOSPHATE DISTRIBUTION SYSTEM DATA

Continue to study the chlorine concentrations and trends from the Revised Total Coliform Rule sampling sites. At a minimum, assess these data quarterly. At locations where the chlorine concentration falls below 0.5 mg/L, perform local standard flushing outside of the system-wide flushing program to increase the chlorine concentration while maintaining a turbidity of less than 1 NTU at the end of flushing.

Orthophosphate concentrations are measured routinely at Revised Total Coliform Rule sampling sites in the distribution system during regulatory compliance visits. Compare graphs of orthophosphate concentrations over time per site to the graphs at the entry point sites. This will determine if dosing consistency at the entry points translates out into the distribution system and will indirectly indicate possible microbiological activity occurring. High sloughing of phosphate or high consumption of phosphate should trigger additional local flushing as recommended for chlorine concentration.

Consider measuring turbidity at the Revised Total Coliform Rule sampling sites at regulatory sampling visits. The turbidity data can be analyzed similar to the chlorine concentration and orthophosphate concentration data; localized flushing can be triggered with turbidity levels greater than 1 NTU.

INVESTIGATION OF WELLS/WATER TREATMENT PLANT

As described in the timeline of water system events, since 2012 to present, all five wells have been inspected and rehabilitated. Nevertheless, it is recommended that one to five wells be sampled in a specified way and the samples analyzed for microbiological activity using a new technology to understand microbiologically influenced corrosion. Potentially corrosive microbiological activity in distribution systems starts at the wells and this testing can shed light on this aspect of corrosion. The water analyses could also shed light on disinfection by-product formation and disinfection and phosphate consumption in the distribution system. The water sampling should also be performed after the Well 5 water treatment filter to determine if the filter is removing or incubating microbiological influences.

WATER AGE REDUCTION PROGRAM

A major contributor to corrosive microbiological activity is elevated water age in the water system. Now that the water system hydraulic model has been upgraded, water age scenarios can be evaluated and plans made to keep water age low. In addition, water storage tanks can be evaluated for proper mixing and for cycles of chlorine disinfection levels throughout seasonal operation.

PIPE SCALE ANALYSIS

Consider pipe scale analysis to determine what the orthophosphate is doing regarding lead and copper release. This analysis would also determine if chemical scales are interfering with orthophosphate corrosion control and participating in lead or copper transport. For pipe scale analysis, pipes of interest, such as lead piping, brass valves, copper service lines, and galvanized service lines and interior piping, can be harvested in a prescribed manner and can be sent to a special laboratory.

LEAD AND COPPER REGULATORY AND OTHER RESIDENTIAL SAMPLING

Investigate the piping configuration and sampling technique at any residence where lead release was measured at greater than 10 µg/L. This policy aligns with the proposed "Find and Fix" step for a revised LCR. At a minimum, repeat the first-draw sampling of the affected residence with permission of the property owner. Also consider profile sampling of the residence to characterize lead and copper release from the kitchen tap through the building to the water main in order to pinpoint locations in the premise plumbing with elevated metals release. Consider using the biofilm water tests to understand how microbiology may play a role in lead and copper release in premise plumbing.