DEPARTMENT OF THE ARMY
DETROIT DISTRICT, CORPS OF ENGINEERS
BOX 1027
DETROIT, MICHIGAN 48231-1027

IN REPLY REFER TO

October 28, 2010

Engineering and Technical Services Division
Great Lakes Hydraulics and Hydrology Office

To Our Lake Winnebago Partners:

On October 20, 2010, we held the annual Lake Winnebago Regulation meeting at the Radisson Paper Valley Hotel. It was brought to our attention that many people did not receive our meeting notice in time to attend our meeting. This was due to a clerical error on our part. We sincerely apologize for this error.

We have posted the presentation from the Regulation Meeting on our website at www.lre.usace.army.mil/greatlakes/hh/lakewinnebago. In this letter, we have enclosed a copy of last year's water levels compared to the target water levels as was presented at the meeting. The proposed water level strategy for 2010-2011 is also enclosed. Advance copies of the updated Lake Winnebago Facts Book were distributed at the meeting. We will mail you a copy of the updated Facts Book shortly.

After reviewing the enclosed documents, please feel free to contact John Allis, Chief of the Watershed Hydrology Branch, with any comments or questions. Mr. Allis can be reached at (313) 226-2137, via email at john.t.allis@usace.army.mil, or at the address listed at the top of this letter. Notes from the Regulation meeting have been posted to our website and are enclosed for your review and comment as well.

Again, we apologize for the late meeting notice. Your participation in these meetings is very important to us. We look forward to your continued participation in our public meetings and conference calls. Please let us know if you have any questions or comments.

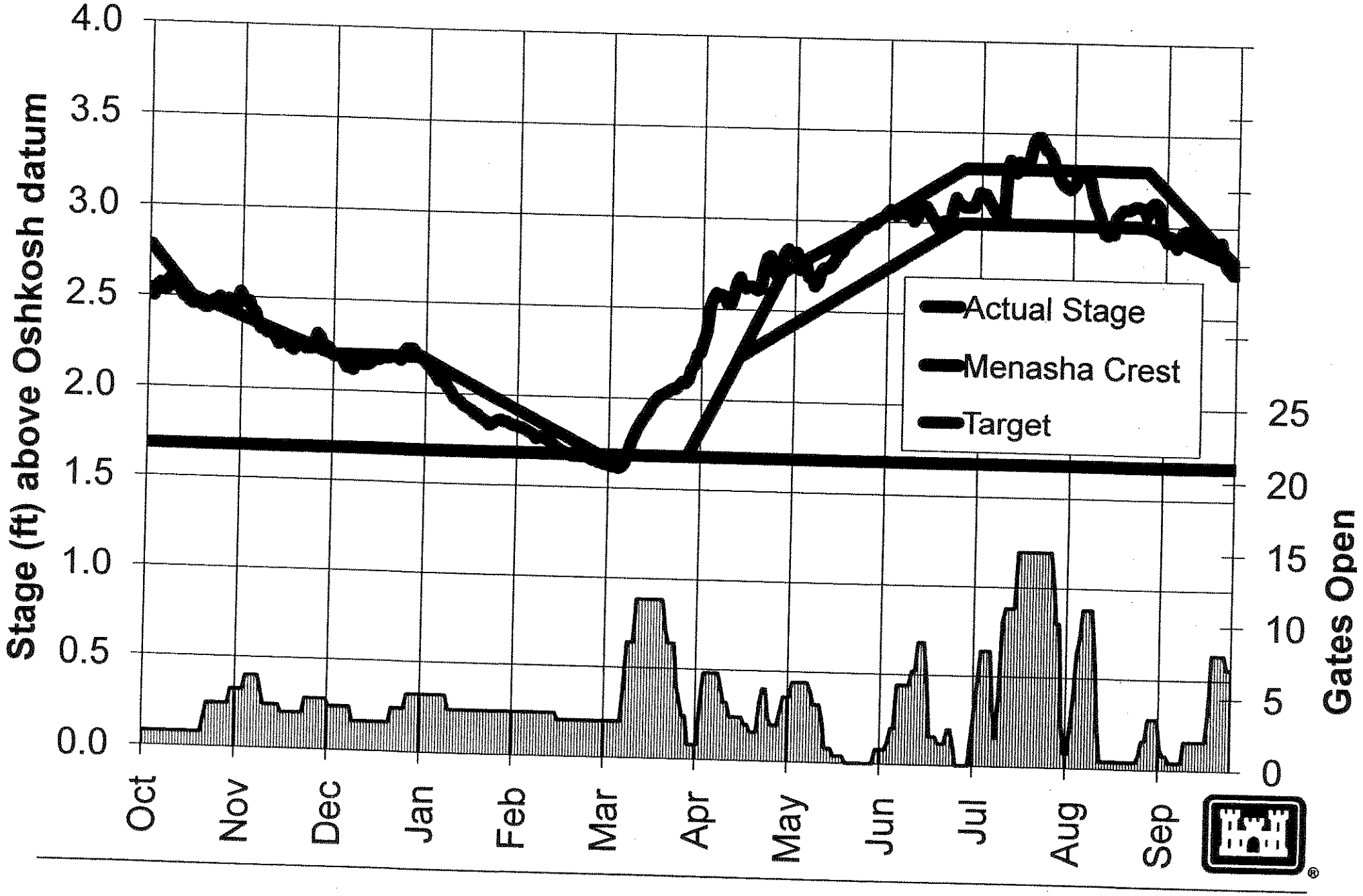
Sincerely,

Eric Tarriaum for

Michael K. O'Bryan
Chief, Engineering and Technical
Services Division

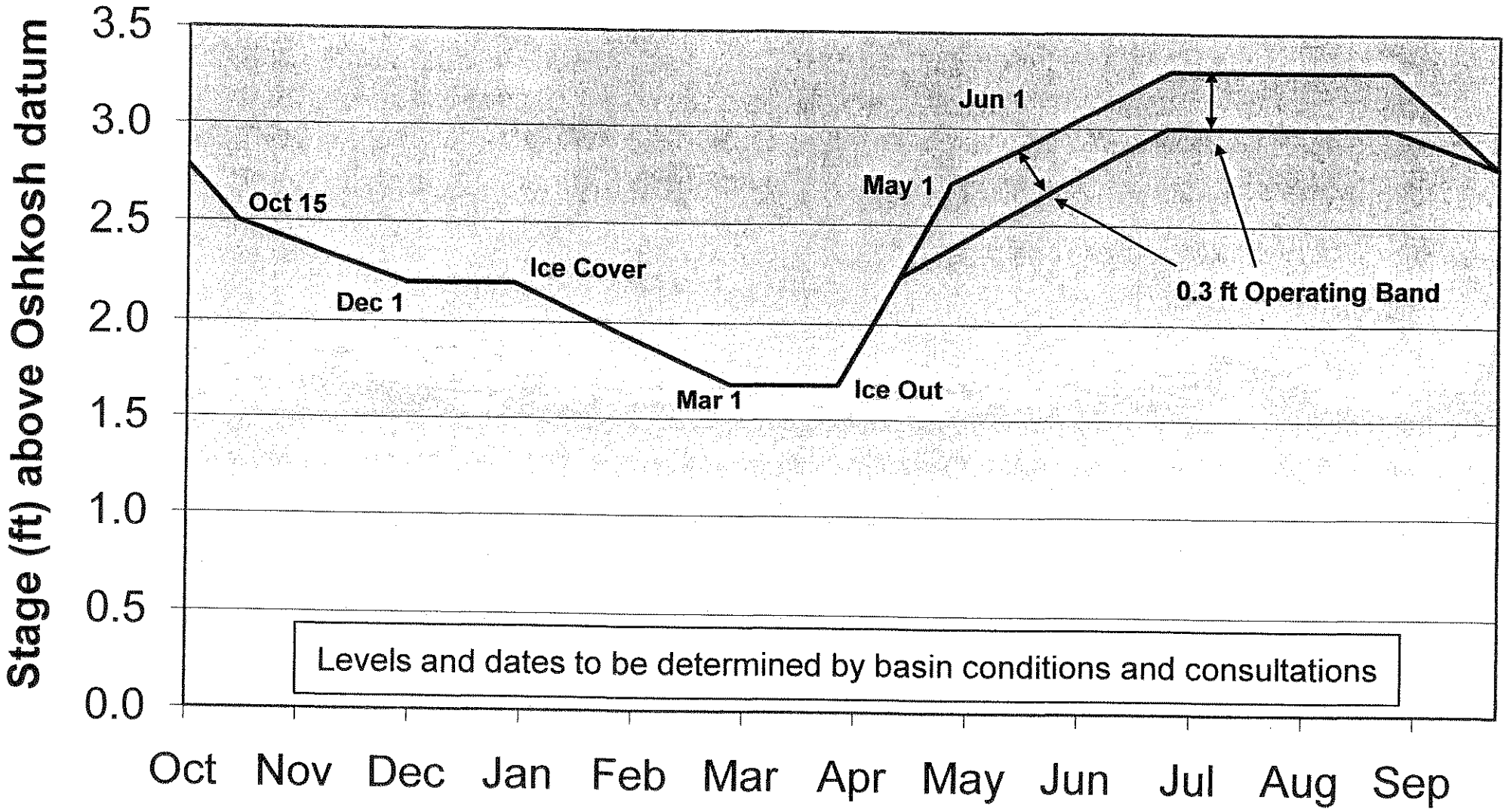
Enclosures

2009-2010 Stage with # of Open Gates



BUILDING STRONG®

Proposed 2010-2011 Target Water Levels



Lake Winnebago
Inter-Agency Regulation Meeting Minutes
20 October 2010

1. **Introduction** The U.S. Army Corps of Engineers (USACE), Detroit District held its annual inter-agency regulation meeting at the Radisson Paper Valley Hotel in Appleton, Wisconsin. Mr. Michael O'Bryan, Chief of Engineering and Technical Services for the USACE, Detroit District, called the meeting to order at approximately 2:10 p.m. Mr. O'Bryan thanked all of those present for attending the meeting and asked for feedback regarding the scheduled afternoon meeting as it was the first afternoon regulation meeting held. He also directed everyone's attention to the front table where there were advanced copies of the revised Lake Winnebago Facts Book available. Final copies will be mailed out shortly and a copy of the book will be posted on the Lake Winnebago homepage. Mr. O'Bryan asked those interested in receiving multiple copies for distribution to get in contact with Fox River Office personnel or other Corps personnel.

2. **Attendees** A list of attendees is included at the end of the minutes.

3. **Presentation of the agenda** Mr. O'Bryan opened the meeting with introductory remarks and self-introduction of all attendees. He then summarized the meeting agenda, which included a basin overview, 2009-2010 maintenance and repair work, precipitation and weather conditions, Lake Poygan water levels, a summary of the 2009-2010 water level regulation activities, and a presentation on the 2010-2011 water level strategy. The meeting continued with presentations by Mr. James Bonetti, Mrs. Melissa Kropfreiter and Mr. John Allis each addressing their areas of expertise.

4. **Lake Winnebago basin** Mr. James Bonetti, Chief of the Fox River Sub-Office, described the 6,430 square mile Fox-Wolf-Winnebago watershed and its unique characteristics. He noted that the size of the basin provides challenging and unique issues when regulating Lake Winnebago. There are two major rivers that flow into Lake Winnebago. The Wolf River originates in Forest County to the north and flows southerly through Lakes Poygan, Winneconne and Butt des Morts into Lake Winnebago. The Upper Fox River originates in Green Lake County, flows through Green Lake and Winnebago Counties and meets the Wolf River in Oshkosh before flowing into Lake Winnebago. Lake Winnebago, with the lake level at the crest of the Menasha dam, is about 206 square miles, and is roughly 30 miles long, 10 miles wide and has a maximum depth of 20 ft.

5. **Lake Winnebago Controls** Mr. Bonetti stated that the Federal dam at Menasha and the private dam at Neenah are the control points for outflow from Lake Winnebago. Flows released from these two dams discharge into the head of the Lower Fox River. He pointed out the tainter and needle gates as well as the spillways at both dams. Mr. Bonetti further defined how the Fox River Sub-Office crew operates the 6 gates at the Menasha dam while Neenah Paper operates the 14 gates on the dam in Neenah through coordination with the Detroit District. Mr. Bonetti noted that since the Neenah dam is private, a 1-day notice to

Neenah Paper is preferred to make gate changes because Neenah Paper has to mobilize their contractor to make any gate changes at the Neenah dam.

6. **Lake Winnebago Stakeholders** Mr. Bonetti presented an overview of the over 30 major stakeholders located along the 39-mile long Lower Fox River. The users include the Neenah Water Plant, Sonoco U.S. Paper Mills, SCA Tissue North America, Kimberly Clark-Neenah Paper, We Energies, North American Hydro, Fox River Papers, Kaukauna Utilities, Thilmany Papers and Water Board Warriors, to mention a few. Mr. Bonetti indicated that there are many diverse interests that have competing uses with opposing ideas with some benefitting one and not the other. Mr. Bonetti emphasized that the USACE's job in the daily regulation of Lake Winnebago is to balance the needs and concerns of all stakeholders.

7. **Locks on the Lower Fox River** Mr. Bonetti invited Mr. Harlan Kiesow of the Fox River Navigational System Authority to provide an overview of on-going Fox River Locks Restoration. Mr. Kiesow reported that all of the locks are operational except for the Rapide Croche boat lift and five Kaukauna locks. As funding becomes available, the restoration of the Kaukauna locks at Kaukauna will proceed at a rate of one lock per year. In addition, Mr. Kiesow said the Aquatic Invasive Species Barrier at Rapide Croche will be maintained.

8. **2009-2010 Maintenance and Repair Work** Mr. James Bonetti, Chief of the Fox River Sub-Office, gave an overview of the maintenance and repair work that was conducted in the Fox-Wolf-Winnebago watershed this past year. He highlighted ongoing repairs of the DePere and Little Chute dams where the major concerns were with the concrete cracking at the gate anchorages (trunnion pins). During the course of construction, it was determined that several gates at the DePere and Cedars dams had to be replaced. Mr. Bonetti also showed photographs of the on-going gate automation project for the federal dams on the Lower Fox River. He emphasized how useful the gate automation was at each dam given the active summer weather that occurred. Mr. Bonetti then briefly discussed an ongoing contract for spillway pier and walkway repairs at the Rapide Croche and Cedars dams. He also mentioned a potential project for Lake Poygan that would provide a breakwater from the mouth of the Wolf River east toward Boom Bay and provide an area to restore vegetation that has been lost over the years. The project could potentially receive funding in FY 2011 and start construction in 2012 if funded. Finally, Mr. Bonetti discussed the aquatic vegetation that affected the entire basin this spring and summer. The vegetation impacted all stakeholders – it forced some hydropower companies to shut down, caused problems for boaters and interfered with the Corps' operations as well.

9. **Basin Conditions** Mrs. Kropfreiter reviewed basin conditions for the 2009-2010 regulation period. She presented a graphic depicting the 2009-2010 Lake Winnebago Basin-Wide precipitation. She noted that the precipitation was below average for the winter and very much above average in June and July. She then discussed that most of the winter's snowfall occurred during a major blizzard in December and that warm temperatures in March led to an early snowmelt and early ice out on Lake Winnebago. Photos of ice shoves that occurred at the end of March were presented and Mrs. Kropfreiter explained that wind and ice condition are the driving factors for ice shoves. They tend to occur every year regardless of the lake level. Mrs. Kropfreiter outlined how the combination of factors such as early spring runoff,

early snowmelt, above average spring temperatures and water clarity led to the aquatic vegetation outbreak this year. Art Techlow of the Wisconsin DNR added that the conditions this year were ideal for the invasive species such as curly leaf pondweed and Eurasian milfoil. The native species, coontail, was found in abundance throughout the basin this year and appeared to have caused the most problems for stakeholders. He is not sure if this species will be as prevalent throughout the system next year as it is condition dependent. However he did point out that if this problem occurs year after year, then there will have to be a comprehensive approach to eradicate the issue. He noted that he would be available to discuss the vegetation issue further after the presentation.

10. **Basin Data Collection** Mrs. Kropfreiter noted the locations of the data collection points spread throughout the Winnebago basin. She stated that the ten data collection points collect hourly stage and water level information which is useful in the USACE daily regulation of Lake Winnebago. Four of the gages also collect water temperature data which will be used to build a data set for estimated lake evaporation. She further explained the data available for regulation decisions such as weather forecasts and precipitation forecasts. A very active weather pattern developed over the basin this past June and July and the Corps utilized all data available to make informed regulation decisions. The July rain event that brought more than 3 inches of rain in 12 hours was discussed in detail. This amount was well above the forecast for a maximum of 1.5 inches of rain potentially falling in 5 days. Mrs. Kropfreiter emphasized that forecasts are tools and need to be used with caution. She concluded that despite the significant rain that fell, water levels on Lake Winnebago and down the Lower Fox River were kept to manageable levels thanks to the automated gate operations that allowed the field staff to safely operate the gates round the clock.

11. **Lake Poygan Water Levels** This year, the Corps received several calls regarding high water levels on Lake Poygan. Mrs. Kropfreiter showed slides that compared Lake Poygan water levels compared to Lake Winnebago water levels for 2009-2010. The slide showed a general trend between the two lakes with a typical difference of about 0.3'-0.5'. The slide also illustrated that Lake Poygan's water level has more variability than Lake Winnebago's water level. Next, Mrs. Kropfreiter discussed other factors that influence Lake Poygan water levels. During the spring and fall when weather conditions vary quite a bit, east winds can cause Lake Poygan's water level to be nearly a foot higher than Lake Winnebago. The wind not only affects water levels, but the flow out of Lake Poygan and into Lake Winnebago. Strong east winds can "hold back" water from Lake Winnebago causing Lake Poygan's water level to increase and Lake Winnebago's level to decrease. Conversely, when west winds occur, water is "pushed" out of Lake Poygan and into Lake Winnebago causing the difference between the two lakes to be only 0.10 ft.

12. **Lake Winnebago Water Levels 2009-2010** Mr. John Allis presented numerous slides outlining the USACE target goals vs. the actual Lake Winnebago water levels with the number of gates open for the October 2009-September 2010 period. The slides showed the gate activities beginning in the fall of 2009 and running through ice formation in December, winter drawdown, spring fill-up and regulation activities during the navigation season of 2010. Key regulation events and dates to note include:

a. October 2009 - December 2009: Maintained a slow and steady drawdown toward 2.20 ft by December despite some November storms that each dumped an inch of rain.

b. 7 January 2010: Winter Drawdown conference call held. A drawdown target of 1.68 feet by the end of February was determined.

c. January 2010 - March 2010: Only had 2 gate changes over 2 months.

d. 1 March 2010: Achieved set target of 1.68 ft.

e. Mid March 2010: Warm temps caused an early snowmelt. Most of the snowpack melted.

f. 29 March 2010: Ice out on Lake Winnebago which is more than 2 weeks earlier than the ice out date from the last couple of years.

g. April 2010 – mid May 2010: Minimal number of gates open. Typically have more than 10 gates open to pass heavy spring runoff.

h. End of May2010 – All gates were closed which is very rare for this time of year.

i. Achieved summer target of 3.0 ft on 28 May 2010.

j. June 2010 – Above average precip allowed the Corps to maintain 3.0 ft summer target.

k. July 2010 – Basin received more than 9 inches of rain which is more than double the monthly July average. Had 15 gates open for the last two weeks in July. Typically, all gates are closed for the summer starting in June.

l. End of August 2010 – Levels were still above 3.0 ft due to a wet summer season.

m. 1 September 2010: Started a slow drawdown.

13. **Regulation Strategy, October 2010/September 2011** Mr. Allis outlined the proposed "plan-of-action" for the next year. He stated that the USACE proposes to follow the strategy from 2009 – 2010 Regulation year unless there were any objections. As was done last year, the Corps will draw the lake down from 2.50 ft. on October 15 to 2.20 feet Oshkosh Datum by December 1. After a stable ice cover of several inches forms on the lake, the lake would be further drawn down to a level determined during a conference call to be held in early January 2011. In past years, conference call participants have agreed upon a level of 1.68 ft by the end of February. When the ice cover has broken up in the spring, the Corps will hold a refill conference call and then begin the spring refill. Mr. Allis reiterated, as in the past few years, we will raise the lake level slowly, raising the lake to a target of 2.4-2.7 feet by May 1 and 2.7-3.0 feet by June 1. The gradual rise is critical to avoid water level spikes above 3.0 in the early spring. Although the spring was rather dry and ice-out occurred early on the lake this year, next year could be very different. Runoff from snow melt and spring rains can raise the level of the lake very quickly. Open communication between the Corps, Wisconsin DNR, Fish and Wildlife Service and other stakeholders is critical to a gradual and successful spring refill.

14. **Detroit District Home Page and Facts Booklet** Mr. Allis discussed a step-by-step outline for accessing Lake Winnebago information on the Detroit District Home page. He emphasized that this is the data that the USACE analyzes daily to regulate Lake Winnebago. The Lake Winnebago web page is:

www.lre.usace.army.mil/greatlakes/hh/lakewinebago.

Mr. Allis reiterated that some copies of the revised Facts Book were available at the front table and that final copies will be mailed out shortly. A copy will also be posted on the USACE website.

15. **Questions and General Discussion**

Mr. Dan Rudeback stated that the Corps does not consider the impacts that water levels have on the environment and aquatic vegetation. He noted that Lake Winnebago's water level regulation is primarily for the boaters and for navigation. He strongly disagrees with the June 1 target of 3.0 ft. He believes the lake level gets too high too soon. He would like to see the lake have a much slower and later refill during the spring. Ms. Marie Strum thanked him for his comment and explained that the purpose of this meeting is to gain feedback from stakeholders. The proposed strategy for 2010-2011 is very similar to past years. The strategy was developed with input from all stakeholders and has been the compromise between all interested parties for a long time. She also reminded the attendees that the Corps works closely with the Wisconsin DNR when refilling the lake during the spring as the Corps understands that it is a critical time of year for the survival of many species. She emphasized that it is very important that the Corps continues to communicate with all the interested parties in the basin and listen to their concerns and suggestions.

Mr. Rudeback's comment sparked a lot of conversation between the stakeholders. Each interest group prefers a different water level at specific times of the year. A member of the audience asked the Corps to provide a chronological chart that outlines each interest group's ideal water level, river flow and desired time of year. He suggested that instead of discussing several options at once, it would be beneficial to have a graphic for all interested parties to view. The Corps will pull the data from the interest groups and develop said graphic for further discussion.

A property owner from Fond du Lac commented that the water level near her property was significantly lower than in years past. Mr. Allis directed her to the Corps' website which has water level data available from 1980 – present. There website is set up so users can select several years at a time to make yearly comparisons of water levels.

There were several inquiries from the audience regarding aquatic vegetation management for their properties and the lakes. Mr. Techlow and Mr. Sesing, both from the Wisconsin DNR, provided extensive feedback on different approaches for nearshore vegetation management as well as aquatic vegetation management. Water quality issues were discussed in addition to the vegetation issues. Mr. Techlow noted that water clarity has a significant impact on vegetative growth in the system. Over the past 15 years or so, water clarity on Lake Winnebago has increased dramatically while water quality on Lake Poygan has decreased.

Mr. Techlow and Mr. Sesing were available after the meeting to address more questions from the audience.

16. **Conclusion** Mr. Allis concluded the meeting by stating that the Lake Winnebago regulation strategy would be continued as discussed and agreed at this meeting. A conference call will be set up for the first week of January 2010 to discuss the results and plan the winter drawdown as proposed at this meeting. Details on the conference call will be mailed to everyone on the Corps' mailing list and posted to the Lake Winnebago website. Mr. Allis thanked the attendees for their attendance.

17. **Closing Remarks** Mr. Techlow suggested that the Lake Winnebago pool be managed as a whole system. He believes we need a comprehensive plan that addresses aquatic management, water levels and water quality. He does not believe that water level regulation of Lake Winnebago is the only approach to managing the system. The system consists of the upriver lakes (Poygan, Winneconne and Butte des Morts), Lake Winnebago and the Lower Fox River. Mr. Allis thanked Mr. Techlow for his final thoughts and adjourned the meeting at 3:45 p.m.

Attendees

Dan Rudeback	Lake Poygan Sportsman's Club
Tom Buchta	Neenah Harbor Commission
Bill Murphy	Lunda Construction
Art Techlow	WDNR
Mark Sesing	WDNR
Bob Stark	Fox River Navigation System Authority
Harlan Kiesow	Fox River Navigation System Authority
Harold R. Miller	Menasha Dock Association
Jeff Feldt	Kaukauna Utilities
Rob Elliott	U.S. Fish and Wildlife Service
Walt Raith	East Central Wisconsin Planning Commission
Ruth Dudarenke	Property Owner
Renee Miller	Property Owner
Gail O'Connell	Property Owner
Harry Hoehrein	Property Owner
Gary Kellett	Property Owner
Bob Beckstrom	Property Owner
Sue Olson	City of Appleton
Ellen Balthazor	Property Owner
Chris Blohm	Property Owner
Cathy Larsen	WFL Team
Paul and Pam Lane	Property Owner
Gene Schmitz	Property Owner
Tom Leach	Leach Farms

Martin Vasquez	North American Hydro
Skip and Sue Palermo	Appleton Yacht Club
Tom Davies	Winnebago County LWCD
John Markowski	Property Owner
Kim Rohde	Property Owner
Michael O'Bryan	USACE
Marie Strum	USACE
Tom O'Bryan	USACE
Jim Bonetti	USACE
David Haefs	USACE
Michael Stencil	USACE
Robert Stanick	USACE
John Allis	USACE
Melissa Kropfreiter	USACE
Keith Kompoltowicz	USACE
Amy Moore	USACE
Michelle Grimmer	USACE