



Wastewater Committee

Agenda Item No 4.1

Date: November 13, 2013

CMAP Water Quality Review #: 13-WQ-135

Applicant: Village of Beach Park

Re: The Village of Beach Park has requested a transfer of 152.50 acres from the Northeast Lake Facility Planning Area (FPA) to the North Shore Sanitary District (NSSD) FPA. The amendment is in accordance with intergovernmental agreements between Lake County, the Village of Beach Park, and the NSSD.

Based on the policies and recommendations of the *Areawide Water Quality Management Plan for Northeastern Illinois*, the *Illinois Water Quality Management Plan*, local government and agency comments, comments received from various interested and affected parties, and staff's analysis, staff recommends a recommendation of "*Support*" for the proposed amendment request.

Staff's recommendation is contingent upon the following:

- Receipt of a signoff letter from the Illinois Department of Natural Resources.

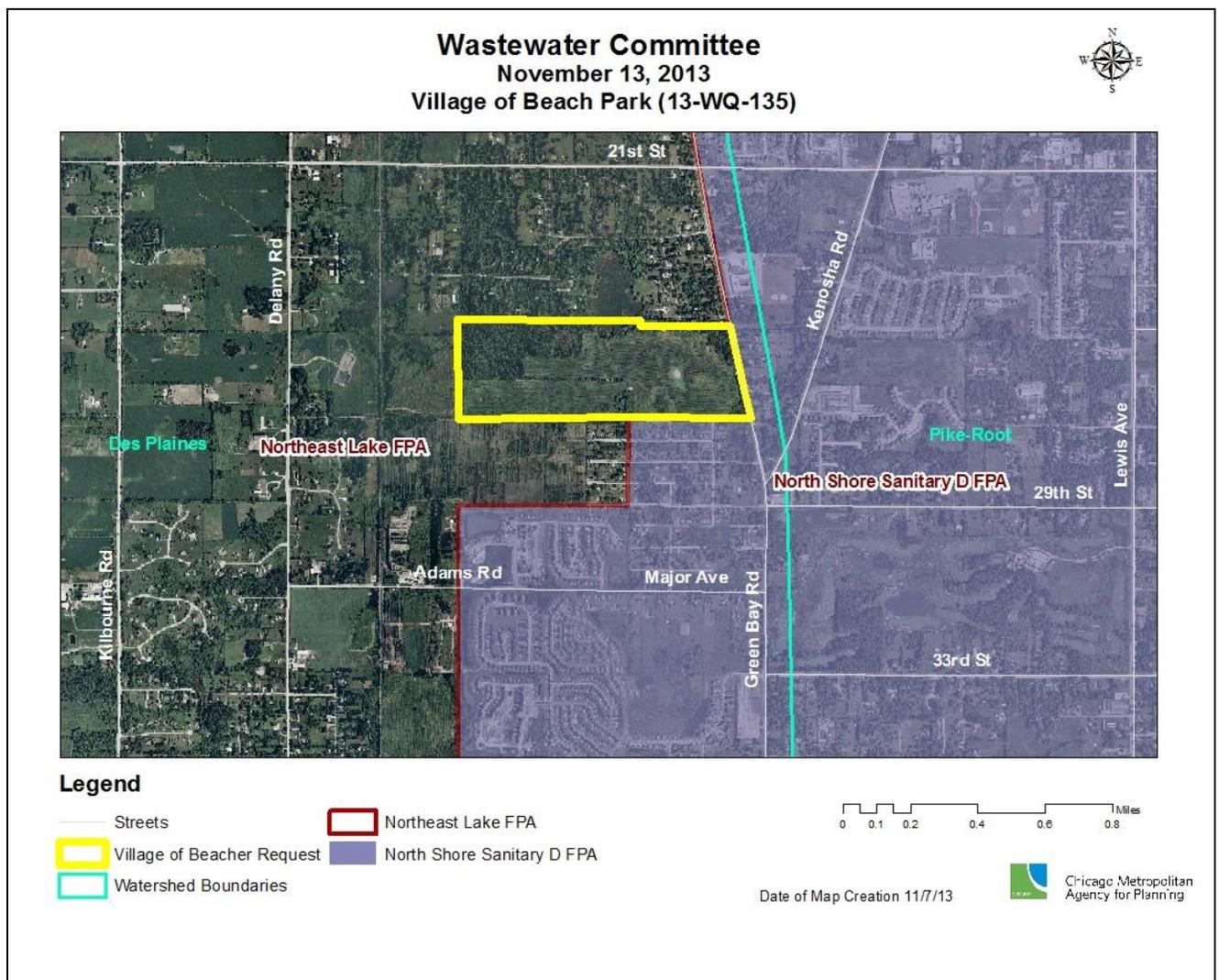
Important Note: CMAP is the designated areawide water quality planning agency and the advisory comprehensive regional planning agency for northeastern Illinois. Therefore, CMAP needs to act as a consensus builder by promoting sound planning principles and practices. Though not specifically required by the Illinois Environmental Protection Agency (IEPA), Criteria Nos. 6 – 9 specifically address CMAP's regional role and promote sound planning.



A. REQUEST SUMMARY

The Village of Beach Park has requested a transfer of 152.50 acres from the Northeast Lake FPA to the NSSD FPA. The amendment area is located in Lake County, Newton and Benton Townships, Section 24 (Newton) and Section 19 (Benton). The request will allow the NSSD to provide sewer service to the proposed amendment area.

Map of FPA Boundary Amendment Site





RELATIONSHIP TO RECOMMENDED CRITERIA FOR FACILITY PLAN AMENDMENTS

The site is located within the Northeast Lake FPA and will be transferred to the NSSD FPA.

The following amendments have been considered by the Illinois Environmental Protection Agency (IEPA) for the NSSD FPA since the adoption of the *Area Water Quality Management Plan* and the *Illinois Water Quality Management Plan*.

Review No.	Action	From FPA	To FPA
01-WQ-004	Map Correction	---	North Shore Sanitary District
03-WQ-038	FPA Boundary Change	NE Central Lake	North Shore Sanitary District
03-WQ-045	Map Correction	---	North Shore Sanitary District
06-WQ-174	FPA Boundary Change	Gurnee	North Shore Sanitary District
11-WQ-005	FPA Boundary Change	NE Lake	North Shore Sanitary District



Review Criteria and Staff Analysis	Results
<p>1. <i>“The proposed facility amendment must be designed to meet the State of Illinois water quality standards for the receiving waters and the appropriate discharge standards or must receive a variance from the Illinois Pollution Control Board.”</i></p>	<p>Consistent</p>
<p>The Village of Beach Park is requesting an amendment to modify the NSSD FPA. The request is in accordance with agreements between the Village of Beach Park, Lake County and the LaSalle National Bank. The 152.50 subject parcel will be developed with no more than 335 residential uses. Current landuse within the amendment is agricultural, however, as of March 2013; the Village of Beach Park zoned the area single family residential. The existing NSSD FPA is contiguous to the proposed amendment area addition.</p> <p>Wastewater generated within the amendment area is proposed to be collected and transmitted to the NSSD’s Waukegan Sewage Treatment Plant (STP) through its interceptor sewer. The proposed development will be connected to an existing 12-inch gravity sewer that runs adjacent to the subject property.</p> <p>The NSSD’s Waukegan STP has a current design average flow (DAF) of 18.54 and 22.0 million gallons per day (mgd) permitted capacity. The facility’s treatment process includes screening, grit removal, excess flow treatment, primary settling, two-stage activated sludge, sand filters and ultraviolet disinfection. The STP has a current excess capacity of 3.46 mgd. Monthly flow data submitted within the application states monthly average flows to the NSSD’s Waukegan STP ranged from 12.49 MGD to 45.26 MGD. The average daily flow during that time period was reported to be 18.54 MGD.</p> <p>The NSSD’s Waukegan STP operates under National Pollution Discharge Elimination System (NPDES) Permit No. IL0030244, which expired on April 30, 2012. The NSSD has applied for a new permit, however IEPA approval is still pending. The STP contains two outfalls for treated wastewater disposal. The main outfall discharges to the Des Plaines River, whereas the secondary excess flow outfall discharges to Lake Michigan when the Des Plaines River water levels are elevated. The NPDES permit contains typical effluent concentration limits for CBOD₅ (10 mg/l), total suspended solids (12 mg/l), dissolved oxygen (not less than 6 mg/l), pH (6-9 standard units), fecal coliform (, 400per 100) and ammonia –nitrogen 1.4 – 2.1 mg/l depending on the season. The existing facility also contains phosphorus monitoring requirements. NSSD effluent data was provided for the period of July 2012 through July 2013. Based on the flow and effluent data summary provided by the applicant, it would appear the NSSD’s Waukegan STP meets the requirements established in the facility’s current NPDES permit.</p> <p>As stated, the NSSD’s Waukegan’s STP currently discharges treated wastewater into the Des Plaines River under most circumstances, but also has a secondary outfall to Lake Michigan.</p>	



<p>The Des Plaines River, in the location where the STP discharges, has a 0.5 cfs 7Q10 low flow. The segment of the Des Plaines River where the STP discharges to is classified as an impaired waterbody by the Illinois EPA. Therefore, it is included on the draft 2012 Illinois Section 303(d) list of impaired waters. The Des Plaines River impairments are for aquatic life, fish consumption, and primary contact recreation. The potential causes for the aquatic life impairment are arsenic, chloride, total phosphorus load. The potential causes for the fish consumption impairment are mercury and polychlorinated biphenyls. The cause for impairment for primary contact recreation is fecal coliform. The IEPA has indicated that a Total Maximum Daily Load Study for the northern portion of the Des Plaines River will be conducted in the future.</p> <p>In conclusion, the proposed approach to provide sanitary sewer service to the amendment area by conveying the wastewater to the NSSD's Waukegan STP appears to meet the current State of Illinois water quality standards. However, given the fact that a cause for impairment of the Des Plaines Rivers is total phosphorus, it is quite possible a reduction in total phosphorus load to the Des Planes River by the NSSD Waukegan STP could be expected. A possible reduction in the total phosphorus load and current discussions relative to potentially lowering phosphorus discharge standards on a statewide basis could someday affect the STP, as well. Given this potential, reducing phosphorus loads to the STP, where appropriate, should be a water quality management strategy.</p>	
<p>2. <i>"The population and employment for which the proposed amendment is designed must fall within the twenty year forecast most recently adopted by the Commission for the facility planning area or the Commission may agree to adjustments within the regional forecast total."</i></p>	<p>Consistent</p>
<p>Supplemental information provided by the applicant projects the amendment area will one day contain 951 residential (PE), including 335 homes at 2.84 P.E. per household generating 95,100 gallons per day (gpd) of wastewater upon full buildout (Year 2030).</p> <p>The applicant assumed a 2.84 P.E. per household and 100 gallons per day of wastewater per CMAP's regional 2040 forecast totals which were interpolated from 2010 pre-census estimates that were used as a forecast base. The Village's population projections fall within CMAP's forecasts 2040 population forecasts.</p>	
<p>3. <i>"The applicant must demonstrate that the unit of local government granting zoning to the project formally accept financial responsibility for the wastewater treatment system in the event of a system malfunction or failure. Such acceptance must be in the form of a resolution from the unit of government granting zoning."</i></p>	<p>Not Applicable</p>
<p>The requested amendment does not involve the construction, operation or modification of a privately-owned treatment facility.</p>	
<p>4. <i>"The proposed amendment should not reduce the effectiveness of the water quality improvement strategy contained in the original plan, either for point or nonpoint source"</i></p>	<p>Consistent</p>



<i>control.”</i>	
<p><u>Point Source Impacts</u> (See analysis under Criterion #1)</p> <p><u>Nonpoint Source Impacts</u></p> <p>The amendment request is subject to the Lake County Watershed Development Ordinance which has provisions for stormwater management, soil erosion and sediment control, floodplain management, and stream and wetland protections. The ordinance is generally consistent with CMAP’s model ordinances. However, there are several discrepancies including:</p> <ul style="list-style-type: none"> • The ordinance does not prohibit detention in the floodway. However, while detention is not explicitly prohibited it is not specifically listed as an appropriate use in the floodway. • The ordinance does not have a provision to prohibit on-stream detention unless it provides regional stormwater storage. However, it does provide requirements that on-stream detention provide a water quality benefit and a Volume Safety Factor. • The ordinance does not restrict modifications in the floodway to the following appropriate uses: public flood control projects, public recreation and open space uses, water dependent activities, and crossing roadways and bridges. However, the ordinance list of appropriate uses is consistent with the Illinois Department of Natural Resources (IDNR) regulatory floodway requirements which would not prohibit new treatment plants and pumping facilities, detached garages, shed and other non-habitable structures, parking lots, airplane parking aprons, and roadways which run longitudinally along a watercourse. • The ordinance does not prohibit the modification of high quality, irreplaceable wetlands, lakes and stream corridors. It does, however, require documentation of avoidance and minimization of impacts and mitigation requirements (3 to 1 for high quality aquatic resources and 6 to 1 for high quality forested wetlands). • The ordinance does not designate a minimum 75 foot setback zone from the edge of identified wetlands and water bodies in which development is limited to the following activities: minor improvements like walkways and signs, maintenance of highways and utilities, and park and recreational area development. However, the ordinance does have buffer requirements ranging from 30 to 100 feet depending on quality criteria in which development is limited to those activities. • The ordinance does not prohibit watercourse relocation or modification except to remedy existing erosion problems, restore natural conditions, or to accommodate 	



<p>necessary utility crossings. However, the ordinance does discourage channel modification and require documentation of minimization efforts and mitigation.</p> <p>There is one ADID wetland within the amendment area. It is presumed that the applicant will manage the wetlands and floodplains in accordance with the pertinent local, county and federal regulations.</p> <p>There is one FEMA Zone A – 100 Year floodplain within the amendment area. Any developer modifications that will result in modification to the floodplain will be required to conform to the Lake County Watershed Development Ordinance and pertinent federal regulations.</p> <p>The applicant requested an Illinois Department of Natural Resources (IDNR) Endangered Species Protection and Natural Areas Preservation Review for the project site. IDNR’s Ecocat Ecological Compliance Tool suggested that there are no known threatened or endangered species within the vicinity of the amendment area. However, the review is not regarded as the final statement on the site and does not substitute for site and field surveys required as part of the environmental assessment. As such, Staff recommends that the applicant receive signoff from IDNR to ensure negative impacts to endangered species will not occur.</p> <p>The Illinois Historic Preservation Agency, in a letter dated July 24, 2013, determined that there are no known historical, architectural, or archaeological resources in the area.</p> <p>STAFF RECOMMENTATIONS: The Village should obtain a signoff letter from the IDNR as part of the IDNR Endangered Species consultation.</p>	
<p>5. <i>“The proposed amendment should not adversely affect the cost-effectiveness of the Areawide Water Quality Management Plan for meeting water quality standards in the facility planning areas as a whole.”</i></p>	<p>Consistent</p>
<p>The applicant explored 5 treatment alternatives including:</p> <ul style="list-style-type: none"> • Alternative No. 1: Wastewater treatment service from the North Shore Sanitary District (selected alternative). • Alternative No. 2: Wastewater treatment from the Northeast Lake FPA, Mill Creek Wastewater Treatment Facility (WWTF). • Alternative No. 3: Wastewater service from the Northeast Lake FPA, Mill Creek WWTF. • Alternative No. 4: Wastewater Reclamation and Reuse with Agricultural Discharge. • Alternative No. 5: Wastewater Reclamation and Reuse with Golf Course Discharge. <p>As part of Alternative No. 2, wastewater treatment service from the Mill Creek WWTF would require a sanitary system collection system to be constructed internal to the amendment area. Approximately 6.1 miles of forcemain and 0.8 miles of interceptor sewer would also be</p>	



needed to connect to the WWTF. The estimated total costs to provide service for this alternative totaled \$13,800,325. This alternative was deemed infeasible due to the costs.

Under Alternative No. 3, a sanitary sewer collection sewer would be constructed and approximately 7.5 miles of forcemain and 0.3 miles of sanitary sewer would be needed to provide service to the amendment area. The sewer would then discharge to the County's existing Northeast Lake interceptors. Costs for this alternative were upwards of \$11,707,085. This alternative was deemed infeasible due to the costs.

Alternative No. 4 evaluated the use of a land application system but dismissed this alternative since soils in the vicinity of the proposed area were classified as "very limited" with respect to on-site sanitary treatment by the USDA Soil Survey for Lake County, Illinois. Costs associated with this alternative totaled \$8,350,000.

Alternative No. 5 included a lagoon treatment system, coupled with a spray irrigation system, which uses treated wastewater for golf course irrigation. Similar to Alternative No. 5, this alternative was dismissed due to "very limited" soils as classified by the USDA Soil Survey. The applicant argued that it would also not be amenable to the golf course to disrupt operations to "reconfigure a site for reuse facilities." Total costs associated with this alternative totaled \$6,682,000. However, supplemental information provided by the applicant does not indicate that the neighboring golf course was ever approached by the Village to discuss reuse opportunities to justify this argument. Wastewater reuse with spray irrigation on a golf course would not only eliminate the additional wastewater to be treated and released at the existing NSSD's Waukegan STP, it also would significantly reduce and possibly eliminate the stress on the existing sources of irrigation water the golf course currently utilizes.

The applicant's selected alternative is in accordance with an existing sanitary sewer agreement between the NSSD, Lake County and the Village of Beach Park. The alternative would provide sanitary sewer service through an existing sanitary sewer owned and operated by the Village of Beach Park and tributary to the NSSD's interceptor system. The total cost to provide wastewater service to the amendment area totals \$3,114,020. The monthly per household user costs total \$15.12 for 9,000 gallons per month of wastewater service.

In conclusion, the proposed approach to provide sanitary sewer service to the amendment area by conveying the wastewater to the NSSD's Waukegan STP appears to meet the current State of Illinois water quality standards. However, near future changes in standards, namely more stringent nutrient standards could require the area served by the STP to consider reducing nutrient loads to the facility. Therefore, the applicant should continue to consider implementing land application of wastewater in its service area in the near future.

STAFF RECOMMENDATIONS: The LRSD should continue to evaluate options for land



<p>application for the treated wastewater to reduce the point source loads into the Des Plaines River and Lake Michigan. Additionally, when development proposals for the amendment area are brought forward in the future, the applicant should work with the zoning authorities to determine if water reuse options can be cost-effectively integrated into the development plan.</p>	
<p>6. <i>“The proposed amendment should have the endorsement of the designated management agency for wastewater treatment and substantial support by the municipalities within the affected facility planning area.”</i></p>	<p>Consistent</p>
<p>On July 5, 2013, the elected Board of the Village of Beach Park passed Resolution No. 2013-R-31 formally endorsing submittal of the amendment application.</p>	<p>Consistent</p>
<p>7. <i>“The proposed amendment should not adversely affect adjoining units of government.”</i></p>	<p>Consistent</p>
<p>The amendment request is in accordance with agreements entered into by the Village of Beach Park, the NSSD and Lake County.</p> <p>The Lake County Public Works Department provided a letter dated September 11, 2013 supporting the terms of the intergovernmental agreement between the Village of Beach Park, Lake County and the NSSD which includes providing wastewater service to the amendment request.</p>	
<p>8. <i>“The proposed amendment should be consistent with other county and regional or state policies, such as the Governor’s Executive Order #4 on the preservation of agricultural land.”</i></p> <p>Receipt of a letter of support from the IDOA is still pending for the amendment request.</p> <p>STAFF RECOMMENDATIONS: The Village of Beach Park should obtain a signoff letter from the IDOA.</p>	<p>Addition Information Needed</p>
<p>9. <i>“Consideration will be given to evidence of municipal or county zoning approval and commencement of development activity prior to Areawide Water Quality Management Plan adoption in January 1979.”</i></p>	<p>Not Applicable</p>