



Chicago Metropolitan Agency for Planning

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Wastewater Committee

Agenda Item No 4.1

Date: June 13, 2012

CMAQ Water Quality Review #: 12-WQ-004

Applicant: City of Chicago

Re: The City of Chicago has requested a transfer of 311.4 acres from the Bensenville Facility Planning Area (FPA) to the Metropolitan Water Reclamation District of Greater Chicago's (MWRDGC) FPA.

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.

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.



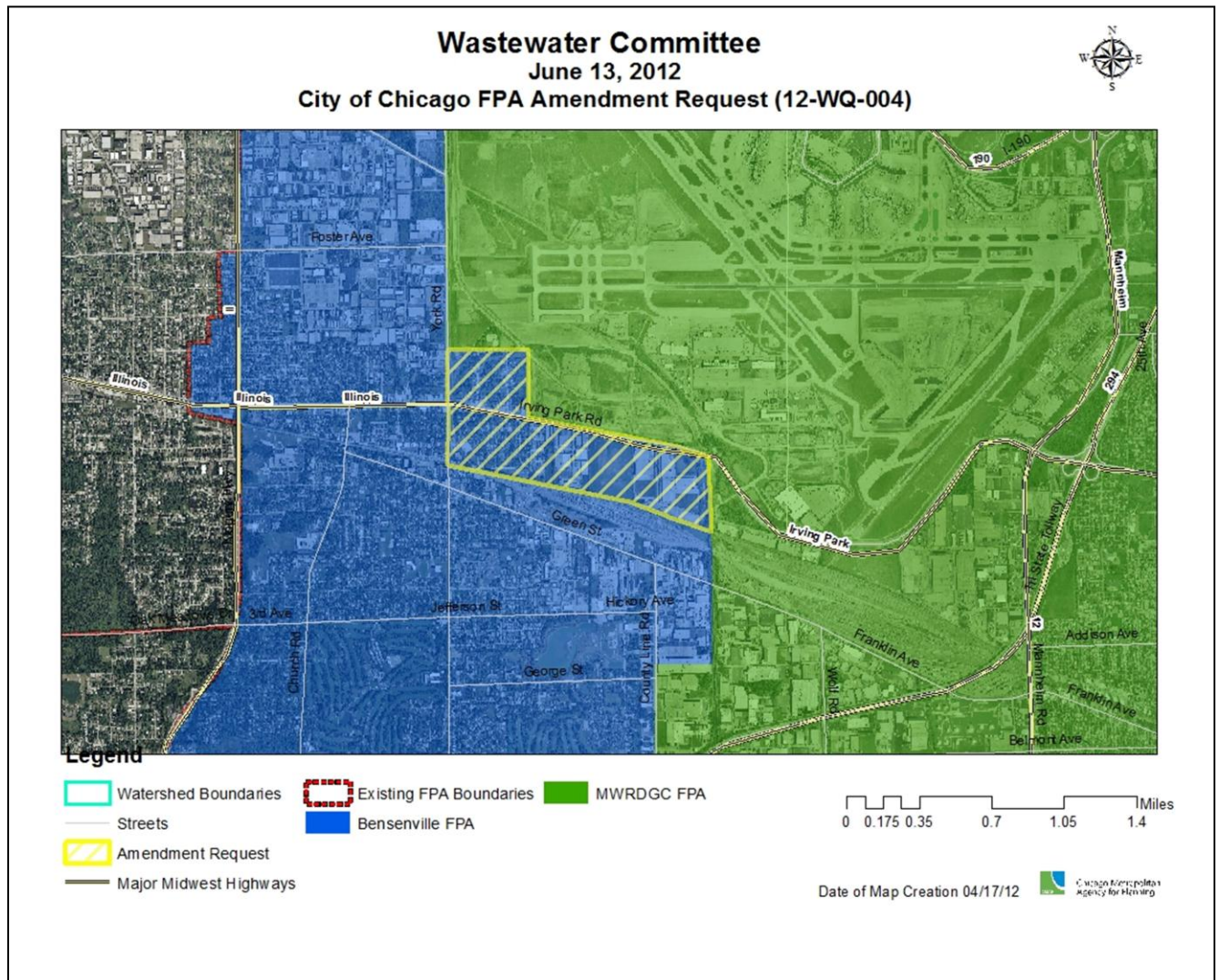
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A. REQUEST SUMMARY

The City of Chicago has requested a transfer of 311.4 acres from the Bensenville FPA to the MWRDGC FPA. The property was recently acquired by the City of Chicago and requires wastewater treatment service from MWRDGC. The amendment is located in DuPage and Cook Counties, Leyden Township.

Map of FPA Boundary Amendment Site





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RELATIONSHIP TO RECOMMENDED CRITERIA FOR FACILITY PLAN AMENDMENTS

The amendment request is part of the City of Chicago's O'Hare Modernization Program (OMP). The OMP includes acquisition of approximately 450 acres in the northwest and southwest corner of the airfield to accommodate the construction of new runways. While the northwest area lies within the MWRDGC FPA boundary, the majority of the southwest acquisition area (311.4 acres), lies outside of the FPA boundary and is included as part of the amendment request.

The amendment area was recently annexed to the City of Chicago and demolition of the existing structures including sewer, water, streets, and stormwater drainage occurred. Under the OMP, a new runway, taxiway, glide slope antenna, runway protect and safety zones and other NAVAID facilities are proposed. Approximately 68 acres of the 311.4 acre site will be collected by a stormwater collection system, conveyed to the South Detention Basin, and subsequently discharged to MWRDGC for treatment when deicing agents are used. The stormwater collection system will collect and discharge all other areas of the airfield by overland flowing to the Bensenville Ditch and the Des Plaines River.



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>The City of Chicago’s OMP is expanding the airport footprint to improve air-travel service. The City’s request will serve planned uses for the airport, including a new runway. The amendment request has also been sized to accommodate possible future non aviation planned uses including a parking lot, which would not require conveyance of wastewater to MWRDGC. Instead, urban stormwater from any future uses would be detained in a reservoir and released to the Bensenville Ditch and the Des Plaines River.</p> <p>Deicing agents are required with the OMP for runways and taxiways. Deicing agents are often high in Biological Oxygen Demand (BOD) and require treatment to safeguard water quality. Therefore, when deicing fluids are applied, stormwater runoff from a small portion of the site (68 acres) will gravity flow east towards the airport’s south detention basin for eventual treatment at MWRDGC. Stormwater that is discharged when deicing fluids are not used, will gravity flow discharge to the Des Plaines River. The City of Chicago has applied for a National Pollution Discharge Elimination System (NPDES) permit to authorize the discharge of stormwater to the Des Plaines River.</p> <p>MWRDGC is the wastewater management agency responsible for treatment of all deicing contaminated stormwater and sanitary flow from O’Hare Airport. As such, MWRDGC entered into an extraterritorial agreement with the City of Chicago to treat wastewater flows generated from the site at its Stickney Water Reclamation Facility (WRF). The WRF has sufficient capacity to service wastewater flows from the site. However, any wastewater producing uses not currently included in the extraterritorial agreement will require an amendment of the agreement.</p> <p>The Stickney WRF discharges under National Pollution Discharge Elimination System (NPDES) Permit # IL0028053 and utilizes a biological treatment process. The high concentration of deicing fluids could negatively impact the WRF. Therefore, the WRF does not provide pre-treatment to handle these constituents. Instead, MWRDGC confirmed that the size of the WRF will allow it to absorb high BOD concentrations when discharged to the WRF’s interceptor.^a A review of the effluent records reveals the wastewater treatment plant is in compliance with the terms of its NPDES Permit. To accommodate peak flow, MWRDGC’s Tunnel and Reservoir Plan system manages excess flows to the Stickney WRF to fully treat all wastewater prior to discharge. NPDES effluent limits include:</p>	<p>Consistent</p>

^a Email correspondence from Joe Schuessler from the MWRDGC dated June 4, 2012.



Proposed WWTF Effluent Limits		
Constituent	Concentration (mg/L) Monthly	Average Daily Load (lb/month)
Suspended Solids	12 mg/L	120,096 (144,115)
CBOD	10mg/L	100,800 (120,096)
pH		Shall be in the range of 6 to 9 units
Dissolved Oxygen		Shall be a Daily Minimum of 6.0 mg/L
Ammonia Nitrogen		
April-Oct.	2.5	125,020 (30,024)
Nov.-March	4.0	40,032 (48,038)

The WRF discharges to the Chicago Sanitary and Ship Canal (CSSC).^b Water quality in the CSSC is severely degraded, and has been for many years as noted in the 1979 *Areawide Water Quality Management Plan (AQWMP) for Northeastern Illinois*. The Canal has been assessed for designated use attainment and is listed as an impaired waterway in the 2010 Illinois Integrated Water Quality Report.^c The Report designates the Canal as a secondary contact waterway^d capable of supporting indigenous aquatic life. Impaired designated uses include indigenous aquatic life and fish consumption. Potential causes include iron, oil and grease, total phosphorus, and polychlorinated biphenyls.

The CSSC connects the Chicago River to the Des Plaines River at Lockport. Like the CSSC, the Chicago River is also considered a secondary contact waterway with similar impairments. The Des Plaines River has been assessed for designated use attainment and is included in the 2010 Illinois Integrated Water Quality Report. The River was found to be not supporting primary contact, aquatic life, and fish consumption uses. The Report found aquatic life is impaired by chloride and phosphorus. Fish consumption is impaired by mercury and polychlorinated biphenyls, and primary contact recreation is impaired by fecal coliform. The Des Plaines

^b The Chicago Sanitary and Ship Canal was constructed for conveying wastewater away from Lake Michigan into the Illinois River. <http://il.water.usgs.gov/nawqa/uirb/sites/shipcanal.html>

^c The Report is not yet fully approved by USEPA.

^d On May 2012, Illinois EPA revised water quality standards for the Chicago Area Waterway System (CAWS), and approved new recreational uses for 8 segments of the CAWS. Four segments received disapproval of recreational use downgrades, including the Chicago Sanitary and Ship Canal. <http://www.epa.gov/region5/chicagoriver/pdfs/caws-summary-20120510.pdf>



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<p>River, in the location where the Stickney WRF discharges, has a 7Q10 low flow estimated between 60 to 80 cfs. The IEPA has developed a long-term TMDL schedule over the next 13 years; however, in this location the Des Plaines River is not identified as a priority.</p> <p>Increasing the amount of pollutants discharged into the receiving stream will not facilitate improved water quality in the Canal. Hence, at a minimum, MWRDGC should make every effort to continue to comply with its NPDES permit requirements. MWRDGC should also make every effort to improve the quality of the effluent it discharges into its receiving waters.</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>	Not Applicable
<p>The proposed amendment includes airport uses including a runway and taxiway. Wastewater flow from the proposed site includes 31.3 million gallons per day of industrial wastewater flow by the Year 2030. The amendment does not include residential or employment population. As such, Staff issues a finding of not applicable with this criterion.</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>	Not Applicable
<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 control.”</i></p>	Inconsistent
<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 DuPage County’s nonpoint source protection ordinances which have provisions for storm water management, soil erosion and sediment control, floodplain management, and stream and wetland protections. However, as compared to the CMAP’s model nonpoint source ordinances, there are several discrepancies from the checklist in Section E of the application as noted below.</p> <p>Stormwater Management</p> <ul style="list-style-type: none"> Does not require that peak post development discharge from events less than or equal to the two-year, 24-hour event be limited to 0.04 cfs per acre of watershed. Instead, the ordinance requires that grading activity for all storm events, up to and including the 	



critical duration 100-year event, does not result in an increase in runoff volume, resulting in an increase in peak release rate, result in a time decrease associated with the time of concentration, contribute to adjacent flood problems, and alter the direction of runoff.

- Does not prohibit detention in the floodway.
- Does not prohibit the direct discharge of undetained stormwater in wetlands.

Floodplain Management

- Does not require protection of a minimum 25 foot native vegetation buffer along the channel. Instead, the City's focus is on hydraulics and hydrology and maintaining or reducing flood profiles both upstream and downstream of the airfield. The City received a Stormwater Permit from Dupage County that was preceded by the development of a watershed management plan. The plan showed that with improvements from O'Hare as it relates to stormwater management, flood profiles in the streams on the airfield would either maintain or reduce historic flood profiles.

Stream and Wetland

- Does not prohibit watercourse relocation or modification except to remedy existing erosion problems, restore natural conditions or to accommodate necessary utility crossings; and require mitigation of unavoidable adverse water quality and aquatic habitat impacts.
- Does not discourage the altering of channels and banks unless natural vegetation and gradual bank sloping are inadequate to prevent severe erosion. The applicant notes that streams that reside in the airport environment will be substantially altered under the OMP. The stream channels will be hardened and resemble manmade structures versus having a natural appearance.
- Does not discourage culvert crossings of streams unless necessary for allowing access to a property.

In supplemental correspondences, the City noted that that a watershed plan was prepared which included the amendment area. The plan determined that planned stormwater detention, combined with best management practices should be enforced through the DuPage County stormwater management permit.

The National Wetlands Inventory indicates one wetland will be displaced with construction of the project in the interest of aviation safety. The OMP will satisfy regulatory requirements under the USACE 404 permit process. Mitigation of wetlands has been negotiated as a condition of the permit and the OMP includes a strategy to displace wetlands within the area within 5 to 10 years.

As part of the airfield modernization, the Bensenville Ditch will be relocated through the



<p>amendment area. This ditch will alter the floodplain and stream channel. The Illinois Department of Natural Resources (IDNR), in a letter dated November 24, 2010, issued a permit authorizing these stream alterations.</p> <p>IDNR conducted an Endangered Species Protection and Natural Areas Preservation Review for the project site. In a letter dated October 22, 2003, IDNR noted that three listed species were not present at the time of its review due to a lack of habitat. However, IDNR recommended that surveys be taken again before construction commences to ensure negative impacts to endangered species will not occur.</p> <p>The Illinois Historical Preservation Society determined that there are no significant known historical or cultural resources in the area.</p> <p>STAFF RECOMMENDTION: Staff requests the following:</p> <ul style="list-style-type: none"> • The City of Chicago should reinstate an endangered species consultation per IDNR’s recommendation. • DuPage County should update its model ordinances to be comparable to CMAP’s model ordinances. 	
<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>	Consistent
<p>The applicant provided several stormwater management alternatives for the amendment request. Alternatives were evaluated on a set of evaluation criteria including cost, implementability, environmental impact, and social impact. An assessment of these, including a cost comparison and relative annual operation and maintenance costs is as follows:</p> <ul style="list-style-type: none"> • Alternative No. 11: On-airport Detention with Structural Cover Under this alternative, periodic repairs of the structural cover would be required. Underground detention would increase maintenance costs due to access limitations. Cost estimates totaled \$834,000,000. As such, this alternative was dismissed. • Alternative No. 2: On-Airport Detention with Wildlife Mitigation Implementing this alternative would make basin bottom maintenance increasingly difficult to access. Cost estimates totaled \$281,000,000. This alternative was dismissed. • Alternative No. 3: Offsite, Open Water Detention Costs associated with this alternative totaled \$1,602,000,000. Costs for conveyance system maintenance and associated pumping to the detention basin were significantly higher for this alternative due to increased travel distance to each basin. As such, this alternative 	



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<p>was dismissed.</p> <ul style="list-style-type: none"> • Alternative No. 4: Discharge to TARP - MWRDGC noted that this alternative is prohibited and a violation of the intent of the TARP. Consequently, this alternative was eliminated and a cost estimate was not completed. • Alternative No. 5: Underground Detention of 2-mo, 24-hour storm Costs associated with this option totaled \$445,000,000. This option was dismissed based on reasons outlined in Alternative # 2. <p>The applicant's selected alternative includes on-airport conveyance and detention with eventual treatment provided at the MWRDGC Stickney WRF. The alternative was selected based on the City's assessment of costs for the alternative, the ability to implement the alternative, and social and environmental effects. Costs for the selected alternative totaled \$1,078,000 million dollars. Supplemental correspondences with the applicant indicate that projected costs did not include MWRDGC's extraterritorial impact fee totaling \$510,000. Hence, the total cost to provide service is \$1,588,000.</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>	Consistent
<p>The City of Chicago, in a letter dated May 29, 2012, endorsed submittal of the amendment request.</p> <p>MWRDGC submitted a letter dated May 18, 2012, in support of the amendment request.</p>	
<p>7. <i>"The proposed amendment should not adversely affect adjoining units of government."</i></p>	Consistent
<p>The amendment request is currently located within the Bensenville FPA. The Village of Bensenville, as part of Ordinance No. 61-2010, authorized exclusion and disconnection of the area from its municipal boundary. However, the Village of Bensenville did not provide a letter of support or in opposition to the amendment request.</p> <p>Staff has not received any letters from surrounding units of government objecting to the Village's 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>The Illinois Department of Agriculture, in a letter dated April 16, 2012, voiced no concerns for the transfer of land from the Bensenville FPA to the MWRDGC FPA.</p>	Consistent
<p>9. <i>"Consideration will be given to evidence of municipal or county zoning approval and</i></p>	Not



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<i>commencement of development activity prior to Area-wide Water Quality Management Plan adoption in January 1979."</i>	<i>Applicable</i>
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