



Joliet Alternative Water Source Study – Phase II

July 9, 2019

Environmental Commission
Meeting



Status and Schedule Update

Alternative Water Source Study

Study Schedule



Phase I: August 2018 – January 2019 – Complete!

- Stakeholder Engagement and Strategic Planning
- Water Demand Projections, Groundwater Model Updates, Water Conservation Efforts and Short Term Emergency Planning
- Evaluation of 14 alternative water source options
- Identification of viable alternatives primarily based on quantity and quality

Phase II: February – December 2019

- Detailed analysis of 5 selected options identified in Phase I
- Identification of improvements for each viable alternative and their associated cost
- Refinement and prioritization of Phase II criteria (control, governance, maintenance, redundancy and risk to schedule)
- Selection of alternative water source at completion

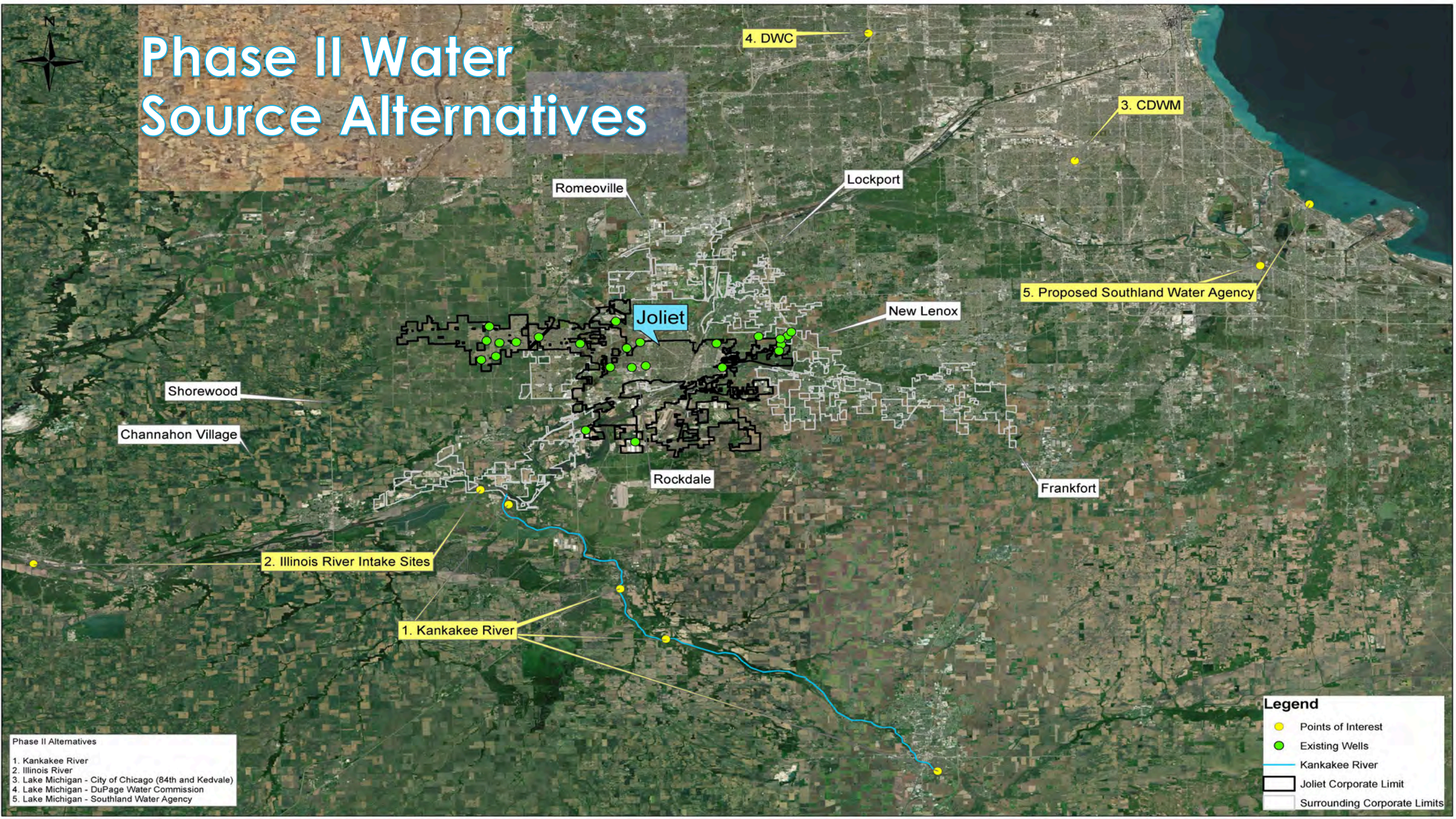
Phase II Study



The following alternatives were **advanced to Phase II** for further analysis:

- **Kankakee River**
- **Illinois River**
- **Lake Michigan Water – Chicago Department of Water Management**
- **Lake Michigan Water – DuPage Water Commission**
- **Lake Michigan Water – Southland Water Agency**

Phase II Water Source Alternatives



- Phase II Alternatives
1. Kankakee River
 2. Illinois River
 3. Lake Michigan - City of Chicago (84th and Kedvale)
 4. Lake Michigan - DuPage Water Commission
 5. Lake Michigan - Southland Water Agency

Legend

- Points of Interest
- Existing Wells
- Kankakee River
- ▭ Joliet Corporate Limit
- ▭ Surrounding Corporate Limits

Phase II Study



Items completed since the last Environmental Commission meeting:

- **River Water Sampling completed June 11, 2019 (last sampling was March 26, 2019)**
- **Request for Qualifications for Independent Cost Review published on June 20th, Notice of Intent due July 3rd**
- **Request for Information for Potential Water Suppliers published June 27th**
- **Preparing the Conceptual Design Parameter Technical Memorandum**
- **Regional Water Supply Questionnaire prepared for Communities & Non-Communities (Industry) and sent to Potentially Interested Communities**

Phase II Study



Items anticipated to be completed in the next month:

- **River Water Sampling will continue with sampling in mid-July**
- **Lake Michigan sampling anticipated in July (week of July 22nd)**
- **Request for Information for Potential Water Suppliers Notice of Intent due July 11th (Information Packets due August 22nd)**
- **Regional Water Supply Meeting July 16th (Follow-up to Questionnaire sent last month)**
- **Request for Qualifications for Independent Cost Review Proposals due July 18th, Review of Proposals by July 25th, Recommendation for Selection at next meeting (August 13th)**
- **Meeting with IEPA on July 23rd**
- **City Council and Environmental Commission Workshop to be held July 30th**

July 30th Workshop



- **City Council, Environmental Commission and Public Invited**
- **To be held in City Council Chambers**
- **Group Presentation on Summary of last joint Workshop (4/23/19)**
- **Group Presentation on five alternatives**
- **Walkabout Stations for five alternatives**
 - **Project team representatives and potential water supplier representatives at each station to answer questions**

Public Relations Activities in Past Month



1. New Orleans North (June 8, 2019)
2. Paws on 66 (June 9, 2019)
3. Taste of Joliet (June 21-23, 2019)
4. Race Fan Rally (June 26, 2019)

Upcoming Public Relations Activities



1. Downtown Joliet Farmer's Market (2nd Wednesday of June, July, August, September, October)
2. Slammers Water Conservation Day (July 21, 2019)
3. Kidzfest (August 3, 2019)
4. Blues and Brews (August 17, 2019)
5. Joliet Prison Break-in (August 24, 2019)
6. Alianza Fiesta Street Festival En La Calle (September 14, 2019)



Ongoing Public Relations Activities

- *Billboards – Toilet Rebate & Survey (June), Slammers Water Conservation Day (July)*
- *Social Media Posts – 18 Posts in June, 14 Scheduled for July*
- *Eblast – Newsletter, EC Meeting*
- *Water Bill Inserts – Community Survey*
- *City Newsletter Article*

Community Survey



Please share the link and encourage participation.

Responses to date:

English - 284

Spanish - 14



Next Month:



- ✓ Month Seven (August 2019)
- ✓ **Educational Topic** – What are emerging contaminants and how are they regulated?
- ✓ **End-of-month Deliverable (July)**
 - Draft Technical Memorandum (Short-Term Groundwater Strategies)



Phase II Deliverables:

- ✓ RFQ for Independent Cost Review (May) 
- ✓ RFI for Potential Water Suppliers (June)
- ✓ Technical Memorandums:
 - Short-Term Groundwater Strategies (July)
 - Conceptual Water Loss Reduction Plan (August)
 - Conceptual Design Parameters (August)
 - Funding Strategies (September)
- ✓ Draft Report (November)
- ✓ Final Report (December)



Next Steps:



- ✓ Complete Phase II evaluation by December 31, 2019 and select new alternative water source
- ✓ Discuss regional solution with neighboring communities
- ✓ Proceed with preliminary design of selected alternative water source
- ✓ New Alternative Water Source online by 2030



Educational Topic #10

The Total Cost of Water

The Total Cost of Water



- Emailed to City Council and Environmental Commission members on 7/1/19
- Provided an overview of the multiple elements that will impact the total cost of water for Joliet customers in the future
- Brief overview presentation to follow with time for questions

Major Cost Components



- Water Supply Costs
 - Costs charged to Joliet by another entity responsible for the supply of water
- Capital Improvement Costs
 - Costs for design and construction of Joliet-owned water supply infrastructure
- Operating and Maintenance Costs
 - Costs associated with the sustainable operation of the new supply system

Water Supply Costs



- Sign-on/Membership/Capacity Recovery Charge
 - One-time charge upon execution of water supply agreement (or rolled into water rate)
- Supplier Capital Improvement Cost
 - One-time charge upon execution of water supply agreement (or rolled into water rate)
- Annual Charge for Access to Water
 - Annual charge for duration specified in water supply agreement
- Costs for Purchase of Water from Supplier
 - Water rate charged to Joliet by the supplier for the purchase of water

Capital Improvement Costs



- Water Supply/Production Infrastructure
 - Costs to design & construct infrastructure required to obtain & treat water from new source
- Water Transmission/Delivery Infrastructure
 - Costs to design & construct infrastructure required to convey water from supply point to Joliet receiving point
- Joint Back-up Supply Improvements
 - Costs to design & construct infrastructure required to provide back-up supply to Joliet during periods of shortage in primary supply
- Joliet Distribution System Improvements
 - Costs to design & construct infrastructure required to distribute water from Joliet receiving point throughout service area
- Financing Costs
 - Costs to secure financing & repay loans or bonds

Operating and Maintenance (O&M) Costs



- Reduction in O&M Costs for Existing Wells and Treatment System
 - Reduction in costs resulting from decreased use of existing wells & treatment facilities
- O&M Costs for New Production/Transmission Facilities
 - Costs for O&M of new Joliet-owned water supply, treatment, pumping, storage and conveyance facilities
- Increased Distribution System O&M Costs
 - Costs for O&M of new distribution pumping, storage and conveyance infrastructure within Joliet system
- Joliet Non-Revenue Water Reduction Improvements
 - Costs for annual inspection, testing, repair and replacement projects required to reduce non-revenue water levels

Cost Components Table



Cost Component	Description	Controlling Entity	Example	Illinois River	Kankakee River	Lake Michigan - CDWM	Lake Michigan - DWC	Lake Michigan - SWA (Treated Water)
Water Supply Costs								
1.1	Sign-on/Membership/Capacity Recovery Charge	One time charge upon execution of water supply agreement or rolled into water rate	Water Supply Entity	Cost to become a member of the DuPage Water Commission			X	
1.2	Supplier Capital Improvement Cost	One time charge upon construction of supplier capital improvements or rolled into water rate	Water Supply Entity	Cost for installation of new pump at Chicago's Southwest Pumping Station		X	X	X
1.3	Annual Charge for Access to Water	Annual charge for duration specified in water supply agreement	Raw Water Supply Entity	Hammond raw water access charge to Southland Water Agency				X
1.4	Costs for Purchase of Water from Supplier Fixed Water Purchase Cost Volumetric Water Purchase Cost Other Water Purchase Cost	Water rate charged to Joliet by supplier for the purchase of water during a period of time (month, quarter, etc.)	Water Supply Entity	Monthly water rate charged to Joliet by Southland Water Agency for the purchase of water		X	X	X
Capital Improvement Costs								
2.1	Water Supply/Production Infrastructure Engineering Design/Construction Services Easements/Land Acquisition Infrastructure Construction	Costs to design and construct infrastructure required to obtain and treat water from a new source of supply	Joliet	Cost for construction for Joliet-owned facilities required to obtain and treat Illinois River water	X	X		X
2.2	Water Transmission/Delivery Infrastructure Engineering Design/Construction Services Easements/Land Acquisition Infrastructure Construction	Costs to design and construct infrastructure required to convey water from supply point to Joliet receiving point	Joliet	Cost for construction of Joliet-owned facilities required to convey water from the Chicago supply point to Joliet	X	X	X	X
2.3	Joliet Backup Supply Improvements Engineering Design/Construction Services Easements/Land Acquisition Infrastructure Construction	Costs to design and construct infrastructure required to provide backup supply to Joliet during periods of shortage in primary supply	Joliet	Cost for modification or improvement of Joliet wells to provide backup supply during extended low flow periods on the Kankakee River	X	X	?	?
2.4	Joliet Distribution System Improvements Engineering Design/Construction Services Easements/Land Acquisition Infrastructure Construction	Costs to design and construct infrastructure required to distribute water from Joliet receiving point throughout service area.	Joliet	Costs for design and construction of a new distribution main piping to convey water from receiving point to other parts of Joliet	X	X	X	X
2.5	Financing Costs Administrative Costs (Bonds, Grants, Loans) Interest/Bond Repayment Costs	Costs to secure financing and repay loans or bonds	Financial Markets	Interest on State Revolving Fund Loans obtained from the Illinois Environmental Protection Agency	X	X	X	X
Operating and Maintenance Costs								
3.1	Reduction in O&M Costs for Existing Wells, Treatment Reduction in Labor Costs Reduction in Energy Costs Reduction in Chemical, Supply Costs Reduction in Maintenance Costs	Reduction in costs resulting from decreased use of existing wells and treatment facilities.	Joliet	Reduced cost for purchase of HMO treatment chemicals required at existing water treatment facilities	X	X	X	X
3.2	O&M Costs for New Production/Transmission Facilities Labor Costs Energy Costs Chemical, Supply Costs Maintenance Costs	Costs for operation and maintenance of new Joliet-owned water supply, treatment, pumping, storage and conveyance facilities	Joliet	Cost for energy required to operate new pumping facilities to convey water from Chicago to Joliet	X	X	X	X
3.3	Increased Distribution System O&M Costs Modified Corrosion Control Energy Costs Maintenance Costs	Costs for operation and maintenance of new distribution pumping, storage and conveyance infrastructure within the Joliet system	Joliet	Costs for energy required to operate a new pumping station at the Fairmont and Garvin water receiving point	X	X	X	X
3.4	Joliet Non-Revenue Water Reduction Improvements Increased Leak Detection/Meter Testing Increased Leak Repair/Meter Replacement Increased Water Main Replacement	Costs for annual inspection, testing, repair, and replacement projects required to reduce non-revenue water levels	Joliet/IDNR	Costs for increased annual water main replacement needed to progress toward IDNR requirement for 10% level of non-revenue water	?	?	X	X

Cost Components Summary



Cost Component		Illinois River	Kankakee River	Lake Michigan - CDWM	Lake Michigan - DWC	Lake Michigan - SWA (Treated Water)
Water Supply Costs						
1.1	Sign-on/Membership/Capacity Recovery Charge	--	--	--	X	--
1.2	Supplier Capital Improvement Cost	--	--	X	X	X
1.3	Annual Charge for Access to Water	--	--	--	--	X
1.4	Costs for Purchase of Water from Supplier	--	--	X	X	X
Capital Improvement Costs						
2.1	Water Supply/Production Infrastructure	X	X	--	--	X
2.2	Water Transmission/Delivery Infrastructure	X	X	X	X	X
2.3	Joliet Backup Supply Improvements	X	X	?	?	?
2.4	Joliet Distribution System Improvements	X	X	X	X	X
2.5	Financing Costs	X	X	X	X	X
Operating and Maintenance Costs						
3.1	Reduction in O&M Costs for Existing Wells, Treatment	X	X	X	X	X
3.2	O&M Costs for New Production/Transmission Facilities	X	X	X	X	X
3.3	Increased Distribution System O&M Costs	X	X	X	X	X
3.4	Joliet Non-Revenue Water Reduction Improvements	?	?	X	X	X

Total Cost of Water



- All components of cost must be considered
- One time costs (establishment of water supply agreement and capital costs) will be amortized based on typical borrowing rates to generate annual costs
- These will be added to annual costs (purchased water, access to water and O&M) to estimate impact on cost of water for an average customer



Questions?



Great Lake Compact

Implications for Joliet

Great Lakes Compact and IDNR Lake Michigan Allocations



- What are these agreements/programs?
- Why are they relevant to Joliet's Alternative Water Source Study?
- What actions are required to work within their requirements?

The Great Lakes Basin



Source: Conference of Great Lakes and St. Lawrence Governors and Premiers.
www.gsgp.org/media/1333/glbasinmap.pdf. July 2019.

Great Lakes Water Management Timeline



1848-1899 Illinois Diversion

1899 Initial lawsuit filed before US Supreme Court challenging Illinois Diversion

1967 Initial Supreme Court Consent Decree establishes limit of 3,200 cfs for Illinois Diversion. Illinois made responsible for permitting.

1985 Great Lake Charter signed by Governors and Premiers to require prior notice, management and regulation of diversions

2005 Great Lakes – St. Lawrence River Basin Sustainable Water Agreement and Water Resources Compact endorsed. Compact passed into US law in 2008

Adapted from Conference of Great Lakes and St. Lawrence Governors and Premiers.

www.gsgp.org/media/1306/great_lakes_water_management_chronology_5-15-06.pdf. July 2019.

Great Lakes Compact



- Development driven by ongoing discussions of potential diversions of water out of the Great Lakes Basin
- Agreement endorsed by the Great Lakes St. Lawrence Governors & Premiers in 2005 to establish clear rules regarding the management and protection of the Great Lakes Basin
- Passed into law by the US Congress in 2008
- Provides a framework for each State and Province to enact measures for the protection of the Great Lakes Basin

Adapted from Conference of Great Lakes and St. Lawrence Governors and Premiers.

www.gsgp.org/projects/water-management/overview/ July 2019.

Compact Considerations



- In general, the Compact bans new diversions of water from the Basin with limited exceptions for communities near the basin
- Communities that apply for an exception must meet rigorous standards subject to review by Great Lakes States and Provinces
- The States and Provinces will use a consistent standard to review proposed uses of Basin water
- Regional goals for water conservation and efficiency have been developed for use by States and Provinces in implementing their own programs
- Section 4.14 separates Illinois diversion program from Compact requirements for diversions

Exception Standard



- Applies to: Straddling Communities, Intra-Basin Transfer, Straddling Counties
- Exception cannot be reasonably avoided through efficient use and conservation of existing supplies
- Exception is limited to quantities considered reasonable
- All water withdrawn shall be returned to the Source Watershed, less an allowance for Consumptive Use
- Exception will result in no significant adverse impacts to the quantity or quality of Basin waters and water dependent natural resources
- Exception will incorporate Environmentally Sound and Economically Feasible Water Conservation Measures

Implications for Joliet



Based on discussions with IDNR staff:

- Illinois Diversion is an existing diversion.
- An allocation permit granted to Joliet under Illinois' Allocation Program does not constitute a “new” diversion and would not be subject to review under the Great Lakes compact.

Previous correspondence with Indiana DNR by others suggests:

- Proposal for supply of Illinois communities from a new intake in Indiana would remain subject to the State of Illinois' water allocation program and would not be governed by the terms of the Great Lakes Compact.



Questions?



IDNR Lake Water Allocations

Permit Considerations for Joliet

IDNR Lake Water Allocations



- Developed in response to US Supreme Court decrees related to Illinois Diversion
- Authorized by the “Level of Lake Michigan Act” [615 ILCS 50]
- Implemented by the Illinois Department of Natural Resources Office of Water Resources Lake Michigan Management Section (Chicago)
- Requirements defined in IDNR Part 3730 Rules “Allocation of Water from Lake Michigan” last updated in November 2014.
- Final diversion accounting is managed by the US Army Corps of Engineers (www.lrc.usace.army.mil/Missions/Lake-Michigan-Diversion-Accounting/)

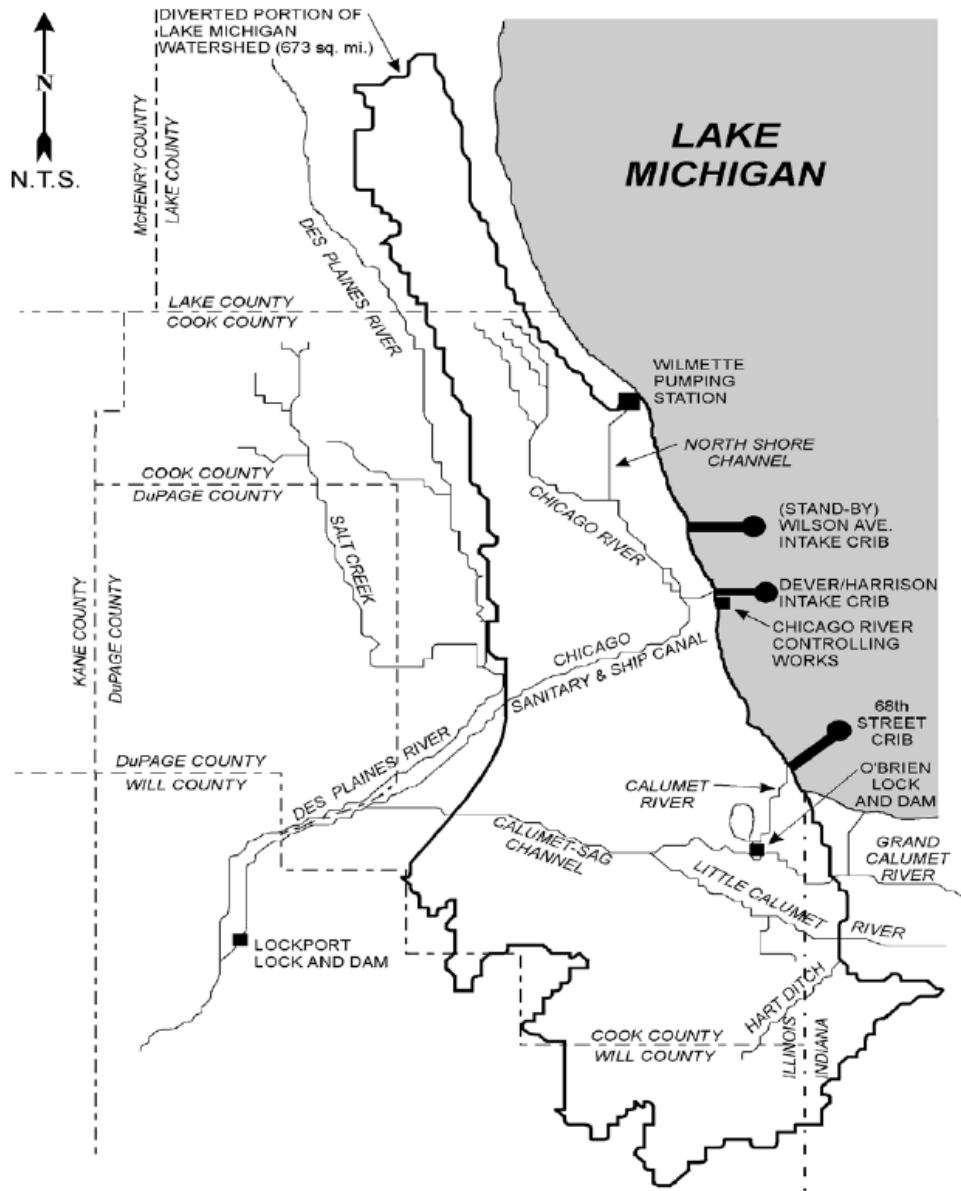
IDNR Allocation Objectives



- To make the greatest amount of Lake Michigan water available for domestic water supply
- To use Lake Michigan water allocations as a tool to preserve groundwater resources for communities in northeastern Illinois who will not have access to a Lake Michigan water supply
- To make long-term allocations so that first-time permittees can secure financing for regional water distribution systems
- To carefully consider the competing needs of all water users in the region so that allocations promote the efficient development of water supplies
- To require all users of Lake Michigan water to conserve and manage the resource

Source: Illinois Department of Natural Resources.

www.dnr.illinois.gov/WaterResource/Pages/LakeMichiganWaterAllocation.aspx



- Diversion Components
 - Domestic Water Supply
 - Direct Diversion
 - Stormwater Runoff
- Diversion period – Water Years
 - WY2018: Oct 2017 – Sept 2018
- Diversion Status as of WY2013
 - Average diversion: 3,095 cfs (for period WY1981 to WY2013)

Source: 2018 Annual Report. Water Management and Diversion Accounting Activities. Great Lakes and Ohio River Division. Chicago District, US Army Corps of Engineers. October 2018.

IDNR Domestic Water Supply Program



For Water Year 2017 (Oct 2016 – Sept 2017)

- No. of Water Supply Allocation Permittees: 221
- Total Allocation: 1,159.003 mgd (1,793.4 cfs)
- Total Lake Michigan Supply: 779.223 mgd (1,205.7 cfs)
- Non-Revenue Water: 105.726 mgd (163.6 cfs)
- Non-Revenue Water %: 13.6 %

Water Year 2017 LMO-2 Report Summary Table. Illinois Department of Natural Resources, Office of Water Resources, Lake Michigan Management Section. www.dnr.illinois.gov/WaterResources/Documents/LMO-2_Report_2017.pdf

Allocation Permit Requirements



- Joliet would be a Category 1B user – Use of Lake Michigan water would reduce the regional use of the deep aquifer
- Allocation based on consideration of defensible water requirements
- Application must include a water system improvement plan outlining actions to be taken to reduce non-revenue water to 10% or less
- Actual water use must be no greater than 105% of allocation over a five-year running period, and no greater than 115% of allocation in any one allocation period
- If actual water use over a five-year running period is less than 90% of allocation, IDNR may require modification of the allocation
- An IDNR Allocation permit will require Joliet to adopt a range of ordinances related to best management practices for water conservation (e.g., leakage monitoring/repair, metering, use of WaterSense fixtures in new construction, summertime outdoor water use restrictions)



Questions?