City of Joliet
Alternative Water Source Study, Phase II
Questions & Answers – Part 2
12-10-19

The following are questions (in black) received at the Public Forum held on December 5, 2019. Answers (in blue) are provided by the project team.

1. Multiple questions received regarding the Illinois River raw water quality:
   - Why is the City even considering the Illinois River? It is radioactive from the power plant and so polluted that even the Asian carp can't survive.
   - Have there been any laboratory pilot tests done to determine if the water from the Dresden pool can be cleaned to acceptable standards to be drinkable (present or future standards)?
   - Can you discuss the concerns regarding the Dresden Pool and possible radioactive material & such found in the water in this pool?

   First, we need to keep in mind that no water source is pure – all raw water sources being considered have contaminants that need to be treated before they can meet drinking water standards.

   As noted in the Q&A Part 1, Question #26, the Dresden Power Plant (DPP) has an NPDES discharge permit that regulates the water quality of the discharge to the Illinois River. DPP is also regulated by the Nuclear Regulatory Commission (NRC) which monitors its operation and compliance for discharge of radioactive elements, in particular tritium.

   Normal exposure is a very small fraction of the drinking water Maximum Contaminant Level (MCL). And it is much smaller than the exposure a person gets from daily sources of radiation including from the sun, watching TV, getting an x-ray or jet travel.

   If there was a catastrophic release from the DPP (which has not previously occurred), the long transmission main required from the Illinois River to Joliet provides a layer of protection. In this case, the City would have time to turn off the raw water transmission main and switch to the online backup supply from the existing well system before the contaminated water even reaches the water treatment plant.

   Looking at the Asian carp in the Illinois River, there have been studies by the USGS as well as a recent article in ScienceDirect which indicate that Asian carp in the leading edge (located in the Des Plaines River upstream of the confluence of the Des Plaines River and Kankakee River) are not spawning. Research has suggested that this could be the result of poor water quality. The research also shows that at two downstream locations (one between the Dresden Pool and Marseilles Pool near Minooka and the other downstream of the Marseilles Dam) there is not only the presence of Asian carp, but also observed spawning.

   As noted in Appendix G in the Draft Phase II Report, extensive river water sampling was completed, and sampling results were sent to IEPA requesting determination to use the Illinois River as a water source. IEPA responded by indicating that they did not see any red flags in the

sample data which would prevent the Illinois River from being utilized as a raw water source. In addition, IEPA indicated that the water quality sampling data did not suggest that advanced treatment would be required if the City were to utilize the Illinois River as a raw water source.

It has been assumed that if the City selected the Illinois River, intake locations between Dresden Pool and Marseilles Pool (approximately 24 miles downstream) would be considered during preliminary design to address raw water quality concerns. Additional water quality sampling and analysis would also be performed to establish an extensive baseline for final design of the required water treatment facility.

2. What Cities/Village presently use the Illinois River as a potable water supply?

   The Illinois River is currently used as a raw water source by Illinois American Water in Peoria, Illinois.

3. Multiple questions received regarding the Illinois River water quantity:
   - How many years will the Illinois River last providing water to Joliet?
   - If other Municipalities hook on the Illinois River will it cause Joliet to have to look for a new source again?

   Based on the evaluation of low flow conditions (found in the Phase I and Phase II Reports), the Illinois River annual average number of low flow days is only 1 day for the Joliet only (30 MGD) and Joliet plus neighboring deep well communities (60 MGD) scenarios. The Illinois River annual maximum number of low flow days is 21 days for the Joliet only (30 MGD) and 22 days for Joliet plus neighboring deep well communities (60 MGD) scenarios. Even at 150 MGD withdrawal, the resulting annual average number of low flow days is only 1 day, and the annual maximum number of low flow days is 28 days. This is still within the timeframe of 2 to 3 months that the City's existing wells can provide a backup supply. So, the water quantity is sufficient for not only Joliet, but also the region even if other municipalities use the Illinois River as a raw water source.

4. Can't everyone just conserve more water so that the Kankakee River can be used?

   Water conservation was already built into the water demand projections that were utilized for all of the water supply alternatives that were considered. In general, the more water use can be reduced per person, the smaller the proposed water facilities can be sized, and the cost of the new facilities can be minimized.

   The recent past water use patterns were utilized to first define a current trends water use projection. A number of water conservation best management practices were then quantified and built into a less resources intensive water use projection. The four main water conservation practices that were factored in were reduction in outdoor water use, reduction in water loss from the distribution system, low flow toilet and fixture replacements in the older portion of the City and reductions in water use by commercial and industrial entities. The final projection that was then utilized for the study was an average of the current trends' projection and the less resource intensive projection. The water use projections utilized in the Phase II analysis estimate water use per person would be reduced by approximately 11% over the planning period.

5. Multiple questions received regarding conservation methods/practices:
   - Future construction? Reduce the number of bathrooms and decrease number of homes per acre?
   - Can we look at more restrictions for watering lawns? How much water will be required by the Northpoint Construction?

   Water conservation assumed in the water usage projections has not assumed restricting the City's development, building codes or land usage.

   The City currently has even-odd lawn watering restrictions. More restrictive lawn watering has not been assumed in the water usage projections.

   As for the Northpoint Development, while the exact water usage requirements are currently not known, water usage for warehouse type developments are typical less per acre than residential developments.

6. Why is the Kankakee River still on the list? I heard that the River can't meet the demands.

   As noted in Q&A Part 1, Question #19, the Kankakee River alternative has not been recommended by City Staff because it could limit Joliet's growth past 2050 and limit Joliet's ability to be a regional water provider.

   As noted in Q&A Part 1, Question #20, the Environmental Commission can decide to recommend any of the alternatives evaluated. All of the alternatives are feasible; however, some are more limiting in terms of being a regional solution or accommodating future growth.

7. Are committee members aware of an intake structure along the Kankakee River that supplied water to the Joliet Arsenal by a pipeline? Could we use this structure to take water from the Kankakee River and pipe it East to Route 53 (Chicago Street) then pipe it north to the Hickory Creek area to join the existing pipes? The land from the intake (at Kankakee River) is already owned by the State. This would lessen $ for land acquisition. An assessment of the intake and pipes would be needed. But the land is there to be used. It borders Blodget Road. Stay away from anything from Chicago.

   As noted in Q&A Part 1, Question #19, the Kankakee River alternative has not been recommended by City Staff because it could limit Joliet's growth past 2050 and limit Joliet's ability to be a regional water provider. While utilizing existing infrastructure could be cost-effective, it would still not address the low flow restrictions.

8. Can't we just put water back into the Aquifer and stay with the wells?

   Aquifer storage and recovery was one of the alternatives that was considered in Phase I. When considering aquifer storage and recovery, one must remember the main aquifer that the City utilizes, the Ironton-Galesville sandstone aquifer, is approximately 1,000 – 1,300 feet below ground surface. There are many bedrock formations, some of which severely inhibit downward flow, above the Ironton-Galesville formation in the Joliet area. Therefore, rainwater that hits the ground in Joliet cannot reach the Ironton-Galesville aquifer, unless it is directed down one of the well holes.

The project team considered injecting water into the Ironton-Galesville formation through multiple wells. The regional groundwater model determined the physical parameters of the sandstone aquifer limited how much water could be injected into the aquifer. In addition, when aquifer storage and recovery was implemented in the same Ironton-Galesville aquifer in Northern Wisconsin, the geologic formations released arsenic into the groundwater. Given the hydraulic and water quality challenges associated with aquifer storage and recovery, it was determined it is not a viable long-term sustainable option for the City at this time.

9. Re: Aquifer, will we still have access? Time to replenish (if possible)? Would different vegetation improve replenishment? Area aquifer draws from? Is there a modern version of individual cisterns? (I was told the runoff from grass is almost as much as from concrete. Planting ground covers was very effective in reducing sump pump activity.)

   It has been assumed that the existing wells will be used as a back-up water supply for all of the alternatives. The aquifer levels will naturally increase once Joliet no longer withdraws water from the aquifer. Based on groundwater modeling performed by the Illinois State Water Survey during the Phase I & Phase II Studies, it appears as though a majority of the rebound occurs in the first year after the aquifer is no longer used by the City. After 10 years, modeling indicates that the existing wells can be a backup supply for 2 to 3 months before the water levels decrease to the point of no longer being able to be used.

   As stated in the response to Question 8 above, the geology of the aquifer limits its ability to recharge naturally from rainwater. Therefore, different vegetation would not impact replenishment of the aquifer.

10. Multiple questions received regarding the DuPage Water Commission estimates:
    - Why does DuPage Water Commission think your cost estimates are exaggerated by at least 100 million dollars?
    - I read in the newspaper that the costs are all wrong. How can we trust these costs? Are they accurate?

    The costs presented in the project report are the result of a comprehensive, objective, and consistent analysis of likely future costs for the development, operation and maintenance of a new water supply for the City of Joliet. The costs have been developed using information gathered from potential water suppliers and similar water utilities, recent material and construction costs, similar project costs, standardized cost curves, and publicly available documents over the course of the 18-month project. Construction costs used in the analysis were initially compiled and reviewed by the City's consultant team and then subsequently reviewed by an independent cost estimating firm hired specifically for this project. We believe that any concerns related to the costs can be addressed through a careful explanation of the cost analysis and clarification of the approach and assumptions.

    The intent of these costs is to provide an objective basis for the comparison of options available to Joliet – not to provide final pricing for any one specific option. As noted in Section 1.3 of the Phase II report, no negotiations regarding final pricing for any option have been conducted. Pricing included in the study is conceptual in nature and is intended to be used as the basis for comparison of options. Further discussions and negotiations will be required to finalize the details of any new water supply arrangement.

The basis for each of the specific elements of the total costs presented in the report is as follows:

1. *Estimates of construction costs for all options are based on conceptual project configurations that were developed using industry standard design parameters and available facility and mapping information. These configurations in turn served as the quantitative basis for the development of the cost estimates. Pipeline installation costs were developed from a blend of current material costs, recent bid tabs, consideration of construction and restoration requirements, and engineering judgement; storage, treatment, and pumping facility costs were generated from standardized cost curve indices commonly used for conceptual alternative evaluations. The project configuration used as the basis for development of costs for each of the alternatives is described in detail in Sections 6 - 12 of the Phase II Report. Detailed documentation of the basis for the design parameters and construction costs is provided in Appendices I (Conceptual Design Parameters) and M (Basis for Unit Costs) to the report.*

2. *Operating and maintenance costs used in the analysis of potential rate impacts and the total cost of water discussed in Chapter 13 of the Phase II report were calculated based on current cost of service data obtained from existing utilities, estimates of energy costs associated with operation of pumping facilities, and allowances for maintenance of capital infrastructure.*

3. *Water supply costs including capital cost recovery or "buy-in" costs, upfront and/or annual costs for access to water, and annual costs for the purchase of water from supply entities were estimated using the best information available to the Consultant Team. Where suppliers provided specific information in response to the City's RFI, those data were used; In cases where no RFI was provided or information was missing, costs were developed based upon publicly available information related to current water rates, buy-in costs applied to other communities, and follow-up communications with potential suppliers.*

11. Why did the DWC withdraw from the bidders?

The DWC expressed a concern related to the estimates of costs for options included in the City's Phase II report. Beyond that concern, DWC has not provided an explanation to the City as to its decision to withdraw from consideration as a potential water supplier for the City of Joliet. The City offered to meet with DWC to discuss their concerns but DWC declined.

12. Multiple questions received regarding the Lake Michigan Allocation and Great Lakes Compact:
    - Are we subject to the Great Lakes compact? Will this supply be "Net Zero" on borrowing of Lake Michigan Water?
    - Do we have to get permission from the other Great Lakes states to use water from Lake Michigan?

The use of Lake Michigan water by communities outside of the Great Lakes watershed (such as Joliet) is regulated. As a result of a 1967 United States Supreme Court ruling, the State of Illinois has the right to "divert" up to 3,200 cfs (slightly over 2 billion gallons per day) from Lake Michigan for public water supply and other approved uses. The Illinois Department of Natural Resource manages Illinois use of Lake Michigan water through its water allocation program (17 IL Administrative Code, Part 3730). Communities whose use of Lake Michigan water would reduce the regional use of the deep aquifer in northeastern Illinois (Category 1B) are eligible to

apply for and obtain a Lake Michigan water use allocation permit from the IDNR. Joliet and the Consultant Team have met with representatives of the IDNR and confirmed that Joliet is eligible to obtain an allocation under Illinois' program, and that there is water available under Illinois' overall allocation to meet the projected needs of Joliet and potential regional partners.

In December 2005, the governors of eight Great Lakes states and premiers of two Canadian provinces signed the Great Lakes – St. Lawrence River Basin Sustainable Water Resource Agreement, and the eight US governors endorsed passage by Congress of the Great Lakes – St. Lawrence River Basin Water Resources Compact. These documents established specific requirements and controls for regulating the future diversion of water from the Great Lakes watershed. The Compact was signed into law in 2008 by President George W. Bush.

Section 4.14 of the Compact specifically exempts Illinois communities with Lake Michigan water allocation permits from the requirements of the overall Compact. As a result, the only approval required for Joliet to be able to use Lake Michigan as its source of water supply is from the Illinois Department of Natural Resources.

Joliet and the Consultant Team have also communicated with representatives of the Indiana Departments of Natural Resources and Environmental Management, and received written concurrence from Indiana DNR that Joliet's use of Lake Michigan water (even with an intake in Indiana) would be governed by the Illinois Allocation program and not be subject to the requirements of the Great Lakes Compact.

13. Re: Des Plaines, Is there effective filtering available?

    The Des Plaines River was evaluated as a raw water source in the Phase I Study. Since it is currently not being used by any communities as a raw water source, significant testing/piloting would be required by the Illinois Environmental Protection Agency (IEPA) to prove that it is a viable raw water source and could be treated to drinking water standards. Due to the time required to complete this testing and piloting, it was decided that the Des Plaines River would not be evaluated further during Phase II.

14. Why does the Fairmont Receiving Station require an intake so far away when the river is right west of it?

    The River to the west of the Fairmont Receiving Station is the Des Plaines River. As noted in the response above, the Des Plaines River was evaluated in Phase I and it was decided not to advance it to Phase II for further consideration.

15. Was the Fox River ever an option? Why not?

    The Fox River was evaluated as a raw water source in the Phase I Study. Given the City's water demand, the annual maximum number of low flow days exceeded the duration that the City's existing wells could be used as a back-up supply. Therefore, it was decided that the water quantity was not sufficient to continue to Phase II for evaluation.

16. Will river water treatment catch all harmful chemicals, cancer causing from the different plants and runoff?

    Based on the river water sampling performed as part of the Phase II study (included in Appendix G of the Draft Phase II Report), lime softening water treatment with UV disinfection has been assumed for treatment of the river water alternatives. This treatment is typical for river water sources to meet the City's finished water quality goals and drinking water standards.

17. Multiple questions received regarding potential partnering with neighboring communities:
    - Which other surrounding communities will benefit from Joliet's new water source?
    - Any possible other Cities/Towns to form a coalition to build a pipeline to Lake Michigan to share costs of installation, maintenance water treatment plant?
    - I have heard that one of the options involves selling water to surrounding communities. This will cause the City to "pay up front" for infrastructure to distribute – is this true? And is it possible for the additional communities to help pay for the costs up front? If not – how do we know they will buy from us once we set it up?
    - Will Joliet be able to profit from selling water or tap on rights to the pipeline system?

    From the beginning of the project, it has been envisioned that the new water source could be a regional solution because the problem with the depleting aquifer is a regional problem. As you can see from the water source alternative construction cost estimates in the Draft Phase II Report, doubling capacity of the improvements from 30 MGD to 60 MGD does not double the costs. Therefore, the City could achieve cost savings for its ratepayers by sharing the cost with potential regional partners. As part of Phase II, there have been discussions and meetings with potential regional partners to determine interest. Post selection, it is anticipated that the City would meet with regional partners to determine who will commit to partnering on the new water source. Once the partners have been determined, the City will decide whether to oversize the proposed improvements to possibly sell water in the future to other neighboring communities.

18. What percentage of water is used by industry versus households? Can we separate that usage?

    The City's water billing system does categorize water usage based on land usage type. Based on recent historical water billing, approximately 35-40% of the water usage in the City can be attributed to non-residential land usage versus 60 -65% for residential land usage.

19. This is for source of water supply. What about distribution cost to get from one side to the other?

    The costs presented for each option also include the construction costs associated with distribution system modifications. The distribution system modification improvements were developed using the City's hydraulic model to determine the pipe network required to provide the same level of pressure and fire protection with the single point supply versus the current multiple point supply with existing wells. Distribution system modifications were identified for each of the two receiving stations that were identified – Ridge Road Standpipe on the west side of the City and Fairmont & Garvin Pump Station on the east side of the City. The costs for the distribution system modifications are significant – over $100 million (including contingencies).

20. Multiple questions regarding the additional monthly water bill cost:
    - How much more in estimated monthly cost will this new source of water have to current homeowners?
    - It was stated that only the water portion of our water bill would be increased, but whatever the water portion is the sewer portion is the same.
    - Don't our current water bills have a "sewer" component? Meaning if the water costs $80, then the sewer is also $80 in addition?

    As noted in the Public Forum presentation, boards and Draft Phase II Report, the additional monthly cost (based on a usage of 7 HCF) ranges from $42 to $67 depending on which alternative is selected. The utility bill includes charges for garbage, sewer and water. The average monthly utility bill is ~$96 (~$25 for garbage, ~$41 for sewer and ~$30 for water). The increase for the alternative water source project only affects the water portion of the bill.

    While the sewer bill is based on the amount of water used, the sewer rate will not change as a result of this alternative water source project.

21. When will water portion increase of bill start?

    That will be determined by the City Council once a new water source is selected. The City Council could decide to gradually increase water rates or do a large increase at once.

22. Multiple questions received regarding the new water source selection:
    - A decision has not been made - correct? When and will the public have input?
    - Does the City currently have a recommended solution?
    - Why did the City waste everybody's time for 17 month when the Mayor was telling everybody that it is going to be Lake Michigan water before the project started?
    - Who will make decisions on where we will get water? What criteria will be used for decision?

    A decision on the new water source has not been made. City staff has recommended three alternatives – Illinois River (between Dresden Pool and Marseilles Pool), Lake Michigan Water – Chicago Department of Water Management (CDWM) and Lake Michigan Water – New Indiana Intake. The study has been conducted in an unbiased manner by a team of experts from each of the various water source types with the oversight of the Environmental Commission. There has been significant stakeholder engagement throughout the 18-month study. This engagement has included social media posts, billboard advertisements, newsletter articles, utility bill insert, development of a project specific website, monthly Environmental Commission meetings, presentations at Neighborhood Council meetings, and attendance at local events. The public has had the opportunity to provide input throughout the process.

    Based on the current schedule, the Environmental Commission will make a recommendation for a primary and secondary water source on December 10, 2019. The City Council then will consider the recommendation of the Environmental Commission, City Staff, stakeholders and the public and make a decision on January 7, 2020.

23. Are the Commission Members residents of Joliet?

    Environmental Commission members are either residents of Joliet or they own businesses or property in Joliet.

24. How much will this raise our property taxes?

    Funding for the alternative water source project improvements will be paid for from adjustments in water rates only. No part of the project is currently anticipated to be paid for through an increase in property taxes. As noted in Q&A Part 1, Question #16, there is no clear evidence that one source of water will impact property values (and property taxes) more than another.

25. Not sure I understood your projections. The chart shows decreased demand especially since housing market crash, a small uptick and now currently dropping – yet there appears to be a sharp increase next year. Please explain.

    Water usage in the past two years has been lower because of the amount of rainfall that we have had. The water usage projections take into account an average historical water usage per person which also includes drought years where the water usage was higher than the past two years. Using the average historical water usage per person for the water usage projections results in an uptick in the first year of projection versus the past two historical non-drought years.

26. Please explain what the massive construction is below the I-80 bridge going east and on the east side of the Des Plaines River.

    This construction is not related to the City's water system. It is for the City's new combined sewer overflow treatment/storage facility.

27. If we are depleting our water source, why did the City force city water onto certain neighborhoods that were all reliant on private wells?

    City Staff is not aware of the City forcing neighborhoods off of private wells.

Q&A will be posted after the Environmental Commission Meeting on December 10th. If you have questions that you would like to have answered, email rethinkwater@joliet.gov.