# Illinois Environmental Protection Agency
# Public Water Supply Loan Program

# Project Plan

## Treated Water Storage Improvements

## L17-5108

City of Evanston, Illinois

- Original Submittal – March 2013
- Amendment 1 – March 2015
- Amendment 1 Follow-up – December 2015
- Update Memo – September 2017
- Agency Signoffs – December 20, 2017

**Illinois Environmental Protection Agency**
**Public Water Supply Loan Program**

# Project Plan

## 14 MG Finished Water Reservoir

City of Evanston, Illinois

*March 2013*

## 1.0 Background

The City of Evanston, Illinois, is located on Lake Michigan just north of Chicago. The City operates and maintains a water system that serves the City and additionally provides wholesale water service to the Village of Skokie and the the Northwest Water Commission (Arlington Heights, Buffalo Grove, Palatine, and Wheeling). Including these wholesale customers, the City is responsible for providing water to over 365,000 customers. Within Evanston, the water service area makes up approximately 14,400 accounts (a total of 74,000 residents), with the largest users being Northwestern University, Evanston Hospital and St. Francis Hospital. The top ten water uses within Evanston comprise approximately 22 percent of the metered water consumption.

The City of Evanston Water Treatment Plant (WTP) is a surface water treatment facility consisting of three Lake Michigan water intakes, preliminary chemical feed and flash mix, flocculation, sedimentation, filtration, post-chlorine feed and blended phosphate addition. The plant site also includes low and high lift pumping and finished water storage. Rated capacity of the plant is 108 million gallons per day (mgd), though both the low and high lift pumping systems are rated at higher capacities. Finished water storage at the plant consists of clearwell and reservoir storage with a total usable volume of 7.6 million gallons (MG).

The City's water distribution system consists of one major pumping station at the water treatment plant, two standpipes (5.0 MG and 7.5 MG), and approximately 157 miles of water main ranging in diameter from 3 inches to 48 inches.

## 2.0 Projected Water Demand

The Evanston WTP is rated at 108 mgd. In 2011, the average day demand (ADD) was 38.0 mgd, maximum day demand (MDD) was 66.1 mgd, and the peak hour demand (PHD) was 75.1 mgd. Utilizing water demand projections for the year 2030 from the IDNR's 2012 Illinois Lake Michigan Water Allocations, ultimate water demands are projected as shown in Table 2.1. A peaking factor of 1.825 is used to project ultimate MDD for each customer. At this time, there are no formalized plans to expand the City's water service area to include additional communities.

**Table 2.1 Projected Growth in Customer Demands**

| Customer | 2011 ADD | 2030 ADD | 2030 MDD |
|---|---|---|---|
| City of Evanston | 8.00 mgd | 9.68 mgd | 17.66 mgd |
| Village of Skokie | 7.85 mgd | 10.84 mgd | 19.78 mgd |
| Northwest Water Commission | 22.14 mgd | 30.14 mgd | 55.00 mgd |
| **Total Demand** | **38.00 mgd** | **50.70 mgd** | **92.44 mgd** |

## 3.0 Existing Facilities

Evanston operates and maintains several water storage facilities located both at the WTP and throughout the City. These facilities are used to even out fluctuations in the distribution system demand, maintain system pressures in the remote areas of the distribution system, provide fire flows, and provide emergency water storage in the event of a treatment plant or pumping station shutdown. Table 3.1 summarizes the storage facilities.

**Table 3.1 Evanston Finished Water Storage**

| | |
|---|---|
| Located at Treatment Plant | |
| Clearwells | 2.6 MG (usable volume) |
| Reservoir | 5.0 MG |
| Total Plant Storage | 7.6 MG |
| Located Remotely in System | |
| North Standpipe | 7.5 MG |
| South Standpipe | 5.0 MG |
| Total System Storage | 12.5 MG |
| **Total Storage** | **22.0 MG** |

Legend: MG = million gallons

## 4.0 Selected Alternative and Project Need

The water storage facilities at the WTP are the primary source of supply to Evanston in an emergency, as the distribution system storage facilities are also needed to meet fire flow demands, maintain system pressures, and provide emergency supply to the adjacent Village of Skokie (a wholesale customer of the City of Evanston). Therefore, it is Evanston's goal to maintain two average days of storage at the WTP to ensure Evanston's basic water demands can be met in a water supply emergency.

Evanston's average day demand has averaged about 8 mgd over the last five years. Therefore, total storage volume of 16 MG would be needed at the WTP in order to provide two average days of storage. Existing finished water storage at the WTP totals 7.6 MG, representing a current deficiency of 8.4 MG. Furthermore, the existing 5 MG finished water reservoir, constructed in 1933, was recently inspected and significant structural deterioration was found in the roof slab (see attached excerpt from the structural inspection report).

Replacing the roof slab of the 80-year-old reservoir, estimated at over $4 million, is cost-prohibitive considering that the City would still need to construct additional storage to meet the 16 MG on-site storage goal, which cannot be done on the existing reservoir site due to space constraints. Furthermore, it is difficult to provide for peak water demands without the reservoir, so it cannot be taken out of service for an extended period for major repairs.

Therefore, the City's selected alternative is to abandon the 5 MG reservoir and construct a new 14 MG reservoir beneath Long Field, an athletic field adjacent to the plant. The existing 5 MG reservoir will remain in service during construction, to enable the plant to fully meet water demands until the new reservoir is in service. The new reservoir, along with the 2.6 MG usable volume in the clearwells, will provide 16.6 MG total storage volume, or about 2.1 days average days of supply.

## 5.0 Cost Estimate

The estimated costs for design and construction of these improvements are outlined in Table 5.1.

**Table 5.1 Capital Cost Estimate**

| Description | Cost |
|---|---|
| Site Work (excavation and artificial turf) | $ 832,000 |
| Concrete | $15,979,000 |
| Fiberglass Baffling | $ 1,218,000 |
| Site Piping (reservoir feed and draw, sewer replacement) | $ 891,000 |
| General Conditions (10%) | $ 1,901,000 |
| Total Construction Cost Estimate | $20,821,000 |
| Design Engineering (7%) | $ 1,460,000 |
| Construction Engineering (7%) | $ 1,460,000 |
| Subtotal | $23,741,000 |
| Contingency (10%) | $ 2,375,000 |
| **Total Capital Cost Estimate** | **$26,116,000** |

Bidding and legal services will be completed in-house and are not included as part of the cost estimate. Operations and maintenance for this project will be funded separately and is not included in this loan application.

## 6.0 Regulatory Compliance

This project is not being constructed to meet a regulatory compliance goal but to address water storage reliability concerns. All Evanston WTP improvements are constructed and operated in compliance with the Illinois Administrative Code 601 through 691.

## 7.0 Basis of Design

The proposed 14 MG reservoir will be a below grade, cast-in-place concrete structure consisting of two 7 MG cells, each 100' wide by 470' long by 20' deep. A project location map and site plan are included in Appendix A to illustrate where the reservoir will be constructed. The two cells will have valved

interconnections that would normally be open, but could be closed to isolate a single cell for maintenance while the other remains in service.

Filtered water piping and high lift suction piping associated with the existing 5 MG reservoir will be abandoned in place. The existing 5 MG reservoir will also be abandoned in place. An excerpt from the structural inspection report describing the condition of the reservoir is included as Appendix B.

New 48" filtered water lines will be extended across Sheridan Road to the new reservoir. New 48" high lift pump suction lines will also be extended to the new reservoir, and will be connected to the existing high lift suction lines. Other piping improvements include re-routing an existing 27" combined sewer that runs north-south across Long Field and conflicts with the proposed location for the new reservoir.

During restoration, the existing turf grass on Long Field will be replaced with artificial turf, to protect finished water quality by eliminating the need for herbicide and fertilizer use.

## 8.0 Environmental Impacts

This project was reviewed against the IEPA Loan Applicant Environmental Checklist. Table 8.1 summarizes the conclusions of that review. Copies of sign-off requests are included in Appendix C.

**Table 8.1 Environmental Checklist Review**

| Potential Impact | Anticipated Result |
|---|---|
| National Historic Preservation Act, Section 106 | Work will occur entirely within existing developed areas. No impact is anticipated. IHPA sign-off request is attached. |
| Illinois Department of Natural Resources compliance with:<br>Illinois Endangered Species Act<br>Illinois Natural Areas Preservation Act<br>Interagency Wetlands Protection Act | Work will occur entirely within existing developed areas. No impact is anticipated. IDNR sign-off letter is attached. |
| Construction in Floodways, Wetlands, and on Stream Banks | Work will not occur in floodways, wetlands, or stream banks. No impact is anticipated. |
| Conversion of prime agricultural land | Work will occur entirely within developed areas. No impact is anticipated. |
| Growth in more than 30% reserve capacity | Work will occur in a highly developed, urban area. It will not increase the capacity of the existing water system. No additional development is anticipated as a result of this project. No impact is anticipated. |

## 9.0 Implementation Plan

The anticipated construction schedule is outlined in Table 9.1.

| Table 9.1 Proposed Project Schedule | |
|---|---|
| Plans and Specifications Finalized | 5/1/2014 |
| Project Advertised | 5/15/2014 |
| Bid Opening | 6/24/2014 |
| Notice of Intent to Award | 7/14/2014 |
| Receive IEPA Loan Offer* | 8/28/2014 |
| Notice of Award | 9/8/2014 |
| Notice to Proceed | 10/13/2014 |
| Construction Complete** | 10/13/2016 |

* Assume 45-day turn-around.
** Assume 365 days to final completion.

The total project cost is estimated at $26,116,000. A projected debt repayment schedule based on Public Water Supply Loan Program (PWSLP) funding is shown in Table 9.2. The established interest rate of 1.93% for FY 2013 is used.

| Table 9.2 Debt Repayment Calculation | |
|---|---|
| Percent Funded | 100% |
| Dollars Funded | $26,116,000 |
| Loan Interest Rate | 1.93% |
| Loan Duration | 20 years |
| **Annual Loan Payment** | **$1,586,400** |

Revenues for debt repayment will be generated through the Water User Charges. Estimated revenues are based on retail water sale quantities and are deposited in the Water Fund, an enterprise fund. A summary of the Water Fund budget for FY 2013, beginning January 1, 2013, is shown in Table 9.3.

| Table 9.3 Water Fund – FY 2013 Budget Summary | | |
|---|---|---|
| | **FY 2012 Year-End Estimate** | **FY 2013 Adopted Budget** |
| **Operating Revenues** | | |
| Retail Water Sales | $ 6,100,000 | $ 5,684,000 |
| Wholesale Water Sales | $ 7,688,000 | $ 7,373,000 |
| Cross Connection Control | $ 97,406 | $ 100,500 |
| Bond Proceeds | $ 4,400,000 | $ 2,000,000 |
| IEPA Loan Proceeds | $ 0 | $ 1,370,000 |
| Grants | $ 262,500 | $ 0 |
| Insurance Reimbursement | $ 79,000 | $ 0 |
| Phosphate Sales | $ 60,000 | $ 66,000 |
| Property Sales and Rentals | $ 203,100 | $ 213,300 |
| Other Fees and Sales | $ 120,000 | $ 120,000 |
| Investment Proceeds | $ 2,500 | $ 2,500 |
| Miscellaneous | $ 0 | $ 0 |
| **Total Revenue** | **$19,012,506** | **$16,929,300** |
| **Operating Expenses** | | |
| General Support | $ 832,831 | $ 990,583 |
| Pumping | $ 2,364,465 | $ 2,333,247 |
| Filtration | $ 2,902,021 | $ 2,635,539 |
| Distribution | $ 1,441,374 | $ 1,424,324 |
| Meter Maintenance | $ 313,841 | $ 309,163 |
| Other Operating Expenses | $ 270,530 | $ 478,592 |
| Capital Outlay | $ 76,300 | $ 248,500 |
| Capital Improvement | $ 7,107,062 | $ 7,435,000 |
| Debt Service – Bonds | $ 944,157 | $ 864,233 |
| Debt Service – IEPA Loan 3382 | $ 67,506 | $ 67,506 |
| Transfer to General Fund | $ 3,356,300 | $ 3,356,300 |
| Transfer to Insurance Fund | $ 468,492 | $ 468,492 |
| **Total Expenses** | **$20,144,879** | **$20,611,479** |
| **Net Surplus (Deficit)** | **($ 1,132,373)** | **($ 3,682,179)** |
| **Beginning Fund Balance** | $ 8,246,988 | $ 7,114,615 |
| **Ending Fund Balance** | $ 7,114,615 | $ 3,432,436 |

## 10.0 Rate Structure

The existing water rate is billed as a minimum charge for the first 5 units based on water meter size, and a quantity charge for every unit in excess of the first 5 units in the bi-monthly billing period (1 unit = 100 cubic feet or 748 gallons of water).

Effective July 1, 2013, the minimum charge and the quantity charge will increase by three percent. For the 5/8-inch and the 3/4-inch meter sizes (the meter sizes most commonly used in single family homes) the minimum charge for the first 5 units consumed in the bi-monthly billing period will increase from $6.24 to $6.43. The quantity charge for usage in excess of the first 5 units will increase from $1.75 per unit to $1.80 per unit. Calculation of the average bi-monthly residential water bill under the new rates is shown in Table 10.1.

| **Table 10.1 Average Bi-Monthly Residential Water Bill** | |
|---|---|
| Bi-Monthly Minimum Charge | $6.43 |
| Average Water Use per Bi-Monthly Billing Period | 19.2 CCF |
| Water Use Included in Minimum Charge | – 5 CCF |
| Water Use Billed to Quantity Charge | 14.2 CCF |
| Water Quantity Rate | x $1.80/CCF |
| Water Quantity Charge | $25.56 |
| **Average Bi-Monthly Residential Water Bill** | **$31.99** |

Total annual water usage in Evanston is approximately 3,311,187 CCF. Table 10.2 outlines the estimate of the annual debt service cost per CCF for this project and the resulting impact on an average residential customer's bi-monthly water bill.

| **Table 10.2 Average Residential Water Bill Increase** | |
|---|---|
| Annual Loan Payment | $1,586,400 |
| Debt Service Cost per CCF | $0.479 |
| Bi-Monthly Water Usage Billed at Quantity Rate (CCF) | 14.2 |
| **Increase to Bi-Monthly Water Bill** | **$6.80** |

# 14 MG FINISHED WATER RESERVOIR

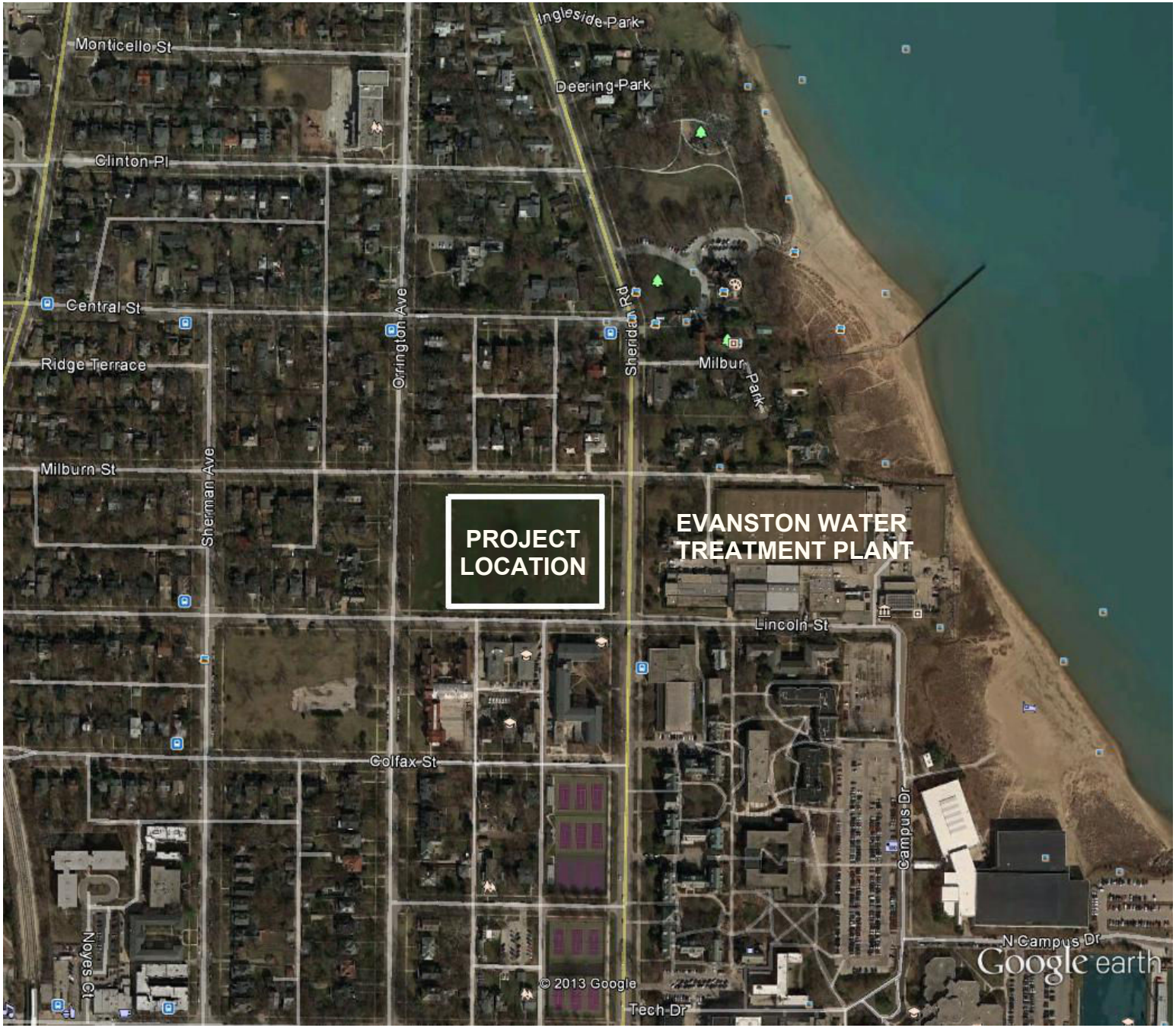
# APPENDIX A

## PROJECT LOCATION MAP

## SITE PLAN

14 MG FINISHED WATER RESERVOIR
PROJECT LOCATION MAP

APPENDIX A

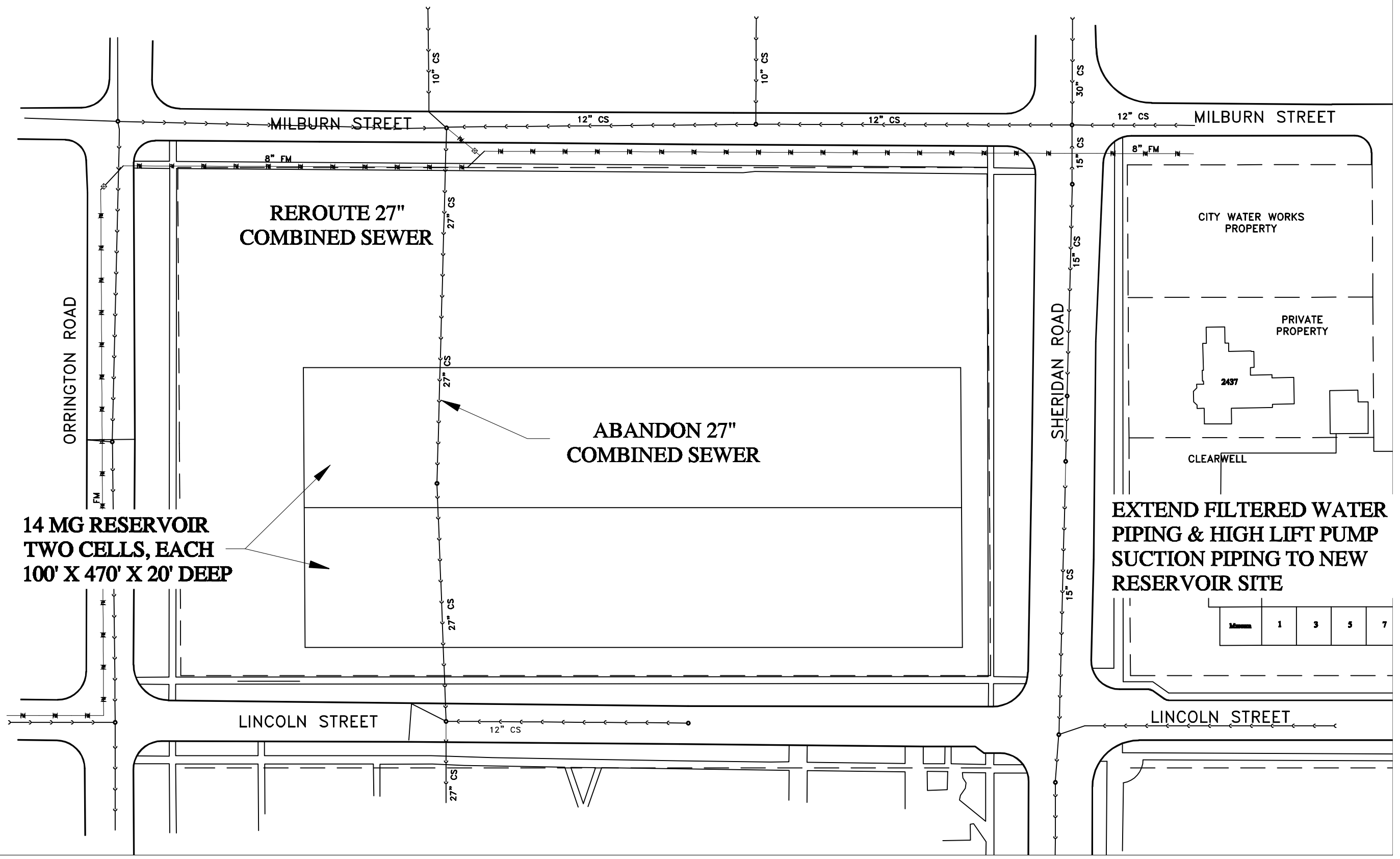



Google earth

feet 2000
meters 600

Appendix A

# City of Evanston
# Project Plan - 14 MG Reservoir
# Site Plan & Proposed Improvements



# 14 MG FINISHED WATER RESERVOIR

# APPENDIX B

## RESERVOIR INSPECTION REPORT EXCERPT

# 5 CONCLUSIONS AND RECOMMENDATIONS

## 5.1 CONCLUSIONS

### 5.1.1 Settling Basins No. 1 and 2

Interior surfaces of Settling Basins No. 1 and 2 generally appear to be in good condition with no significant deterioration or distress observed. Isolated cracks in walls and slabs are considered normal for a structure of this type, and were likely caused by restrained volume changes/drying shrinkage of the concrete. Based on laboratory test and examination results, concrete is judged to be of good quality and strength. Many cracks appear to be filled with efflorescence, indicating previous moisture migration. No active seepage through cracks was observed at the time of our inspection.

Some above-grade access manholes for Settling Basins No. 1 and 2, as well as a few other manholes serving adjacent mixing basins and associated conduits, exhibit areas of cracking and rubble concrete. Observed deterioration in the access manholes is attributed to repeated freezing and thawing of non-air-entrained concrete while in a saturated state. Air-entrained concrete did not exist at the time these structures were built. Freeze-thaw damage results from moisture freezing in concrete that lacks an adequate air-void system. Typically, non-air-entrained concrete which is critically saturated and subjected to cyclic freezing and thawing produces microcracks in the cement paste and often results in thin, laminar delaminations parallel to the exposed surface. Conditions are exacerbated by additional cracking which allows moisture to penetrate deeper into the concrete section. Ultimately, the concrete may eventually disintegrate into rubble, with many loose fragments of hardened cement paste, sand, and coarse aggregates.

### 5.1.2 Finished Water Reservoir

The interior surfaces of the walls and floor slab in the Finished Water Reservoir generally appear to be in good condition. Some concrete scaling was observed on upper regions of the walls. Isolated cracks in walls and slabs are considered normal for a structure of this type, and were likely caused by restrained volume changes/drying shrinkage of the concrete. Based on laboratory test and examination results, concrete is judged to be of good quality and strength.

Many cracks appear to be filled with efflorescence, indicating previous moisture migration. No active seepage was observed at the time of our inspection.

Internal inspection findings and subsequent laboratory studies performed on representative material samples indicate that the roof slab of the Finished Water Reservoir is in poor condition. Visible surface cracking is extensive in some areas, particularly in the southeast quadrant. Numerous areas of exposed reinforcing steel and/or inadequate concrete cover were noted. Localized areas of unconsolidated or honeycomb concrete were also observed, most of which coincide with areas of exposed reinforcement bars. However, of greatest concern, is the extensive internal surface-parallel cracking observed throughout all core samples drilled from the interior side of the roof slab. The internal surface-parallel cracking is attributed to long-term freeze-thaw exposure, and has resulted in extensive concrete deterioration throughout most, if not all, of the roof slab. Associated concrete delaminations and spalling due to freeze-thaw were also observed. Crack patterns observed on the interior surface of the roof slab appear somewhat random, and not consistent with a structural overload causation scenario. However, it is CTLGroup•s opinion that the extensive internal surface parallel cracking has likely compromised the original load carrying capacity of the roof slab to an extent that is variable and indeterminate.

The abundance of available moisture inside the Finished Water Reservoir, combined with minimal earth cover above, likely created an aggressive environment with respect to freeze-thaw exposure for concrete that does not incorporate entrained air. Visible above-grade portions of the access manholes for the Finished Water Reservoir also exhibit varying degrees of concrete deterioration that is attributed to repeated freeze-thaw exposure. Air-entrained concrete did not exist at the time the Finished Water Reservoir was built. Freeze-thaw damage results from moisture freezing in concrete that lacks an adequate air-void system. Typically, non-air-entrained concrete which is critically saturated and subjected to cyclic freezing and thawing produces microcracks in the cement paste and often results in thin, laminar delaminations parallel to the exposed surface. Conditions are exacerbated by additional cracking which allows moisture to penetrate deeper into the concrete section. Ultimately, the concrete may eventually disintegrate into rubble, with many loose fragments of hardened cement paste, sand, and coarse aggregates.

The asphalt-paved parking lot constructed on top of the Finished Water Reservoir is in poor condition. Erosion of the asphalt topping and subgrade has occurred along the east edge, locally exposing the top surface of the Finished Water Reservoir roof slab. Additionally, there are numerous patches and cracked regions present in the asphalt topping.

## 5.2 RECOMMENDATIONS

### 5.2.1 Settling Basins No. 1 and 2

Based on findings from internal inspection of Settling Basins No. 1 and 2, the reinforced concrete walls, roof slabs and floor slabs appear to be in good condition. Vertical and inclined cracks observed on interior surfaces of all walls appear to be filled with efflorescence and do not exhibit evidence of infiltration from exterior water sources. Although routing and sealing these cracks is certainly an option, the need for such repair measures is not apparent at this time.

Some above-grade access manholes for Settling Basins No. 1 and 2, as well as a few other manholes serving adjacent mixing basins and associated conduits, exhibit areas of cracking and rubble concrete. Consideration should be given to repairing these manholes using durable, air-entrained concrete. Recognizing that any localized patch repair would likely become undermined due to further freeze-thaw deterioration, it is CTLGroup•s opinion that a more sustainable approach be implemented. Specifically, it is recommended that full-height repairs be made on manholes that currently exhibit extensive distress to eliminate all of the non-air-entrained concrete from the top of the roof slab upward. Deterioration observed to date is variable, and the condition of many of the manholes is currently acceptable. Consequently, condition of the manholes should be monitored and future repairs should be prioritized to focus on the worst-case scenarios first. It should be noted that many of the manholes may not require repairs for several years.

It is important and advisable for Owners to take advantage of opportunities to assess condition of their assets whenever feasible. Recommended manhole repairs will allow for limited exterior access to the top surface of the settling basin roof slab(s). Recognizing that previous inspections have been primarily limited to interior surfaces of the structure, it is CTLGroup•s recommendation that limited exterior roof slab evaluation be performed at the time manhole repairs are executed.

### 5.2.2 Finished Water Reservoir

Based on findings from internal inspection of the Finished Water Reservoir, the reinforced concrete walls and floor slab appear to be in good condition. Vertical and inclined cracks observed on interior surfaces of all walls appear to be filled with efflorescence and do not exhibit evidence of infiltration from exterior water sources. Although routing and sealing these cracks is certainly an option, the need for such repair measures is not apparent at this time.

Internal inspection findings and subsequent laboratory studies performed on representative material samples indicate that the roof slab of the Finished Water Reservoir is in poor condition, due primarily to extensive internal surface-parallel cracking throughout most, if not all, of the roof slab. Crack patterns observed to date on the interior surface of the slab appear somewhat random, and not consistent with a structural overload causation scenario. However, it is CTLGroup•s opinion that the extensive internal surface parallel cracking has likely compromised the load carrying capacity of the roof slab to an extent that is variable and indeterminate. In order to restore the roof slab to a serviceable state, extensive (near full-depth) repairs or complete replacement is recommended.

Given the variable and indeterminate load carrying capacity of the roof slab, CTLGroup recommends imposing vehicle weight restrictions for the parking lot above. It is our understanding that access is currently limited to passenger cars only. Recognizing that distress attributed to vehicular overload has not been observed to date, maintaining the current access restrictions is reasonable for the near-term provided that regular follow-up inspections are performed to monitor progression of the deterioration. Recognizing that only one condition assessment of the Finished Water Reservoir has been performed to date, no basis for determining rate of deterioration through extrapolation currently exists. Consequently, it is CTLGroup•s recommendation that internal inspection of the roof slab be performed annually until either 1) sufficient additional data is generated to justify decreasing the inspection frequency, 2) the recommended repair measures are implemented, or 3) the structure is removed from service. In addition to the annual inspections, CTLGroup recommends interim signage and physical barriers to prevent access by heavier (non-passenger car) vehicles.

As previously stated, the load carrying capacity of the roof slab has likely been compromised due to extensive freeze-thaw damage. However, the expected near- and long-term structural performance of the slab is indeterminate and cannot be reliably quantified. To date, CTLGroup

has not performed structural calculations to evaluate the load carrying capacity of the slab in an undeteriorated state relative to the current service load condition of use. Although not necessary for justification of our previously-stated recommendations, it is CTLGroup•s opinion that consideration should be given to performing such calculations for the purpose of generating additional information that can be used to gauge the risk of continued near- and long-term use.

# 6 PRELIMINARY REPAIR A ND FOLLOW-UP INSPECTION COST DATA

## 6.1 SETTLING BASINS NO. 1 AND 2

Some above-grade access manholes for Settling Basins No. 1 and 2, as well as a few other manholes serving adjacent mixing basins and associated conduits, exhibit areas of cracking and rubble concrete. CTLGroup recommends that full-height repairs be made on manholes that currently exhibit extensive distress to eliminate all of the non-air-entrained concrete from the top of the roof slab upward. Based on available drawings, several different access manhole details were used. In some cases, adjacent manholes share a common wall, which may require two manholes to be rehabilitated simultaneously. Consequently, incremental rehabilitation costs will likely vary depending on the manhole detail involved.

For budgetary purposes, CTLGroup conservatively estimates unit costs for manhole repairs to be on the order of $12,000 to $25,000 depending on repair volume, access, and associated safety requirements. More accurate cost estimates can be developed on a case-by-case basis. As previously mentioned in Section 5.2.1, CTLGroup recommends that limited roof slab evaluation be performed at the time manhole repairs are executed. The evaluation would include visual inspection of exposed roof slab surfaces, localized nondestructive testing to identify reinforcing steel, removal of at least one partial-depth core sample, and laboratory examination of the core sample to evaluate concrete condition. We recommend a budget of $2,500 for each evaluation.

## 6.2 FINISHED WATER RESERVOIR

Internal inspection findings and subsequent laboratory studies performed on representative material samples indicate that the roof slab of the Finished Water Reservoir is in poor condition. If the Evanston Water Utility anticipates future long-term use of this structure, CTLGroup recommends complete removal and replacement of the roof slab and associated manholes. CTLGroup estimates the roof replacement construction cost to be approximately $4,000,000. This cost includes provisions for in-kind removal and replacement of both the roof slab and parking lot. However, it should be noted that this cost does not include allowance for re-design, development of plans, specifications and bid documents, costs associated with selection of contractors, permit costs, construction observation services, and costs associated with loss of use.

# 14 MG FINISHED WATER RESERVOIR

# APPENDIX C

## IHPA SIGN-OFF REQUEST

## IDNR ECOCAT CONSULTATION

Illinois Department of
**Natural Resources**
One Natural Resources Way Springfield, Illinois 62702-1271
http://dnr.state.il.us

Pat Quinn, Governor
Marc Miller, Director

March 26, 2013

Kristin Rehg
City of Evanston
555 Lincoln Street
Evanston, IL 60201

**RE: 14 MG Finished Water Reservoir**
**Project Number(s): 1311415**
**County: Cook**

Dear Applicant:

This letter is in reference to the project you recently submitted for consultation. The natural resource review provided by EcoCAT identified protected resources that may be in the vicinity of the proposed action. The Department has evaluated this information and concluded that adverse effects are unlikely. Therefore, consultation under 17 Ill. Adm. Code Part 1075 and 1090 is terminated.

Consultation for Part 1075 is valid for two years unless new information becomes available that was not previously considered; the proposed action is modified; or additional species, essential habitat, or Natural Areas are identified in the vicinity. If the project has not been implemented within two years of the date of this letter, or any of the above listed conditions develop, a new consultation is necessary. Consultation for Part 1090 (Interagency Wetland Policy Act) is valid for three years.

The natural resource review reflects the information existing in the Illinois Natural Heritage Database and the Illinois Wetlands Inventory at the time of the project submittal, and should not be regarded as a final statement on the site being considered, nor should it be a substitute for detailed site surveys or field surveys required for environmental assessments. If additional protected resources are encountered during the project's implementation, you must comply with the applicable statutes and regulations. Also, note that termination does not imply IDNR's authorization or endorsement of the proposed action.

Please contact me if you have questions regarding this review.

Tracy Evans
Division of Ecosystems and Environment
217-785-5500

Utilities Department
555 Lincoln Street
Evanston, Illinois 60201
T 847.448-8198
TTY 847.448.8064
www.cityofevanston.org

March 22, 2013

Ms. Anne E. Haaker
Deputy State Historic Preservation Officer
Illinois Historic Preservation Agency
1 Old State Capitol Plaza
Springfield, IL 62701-1512

RE: City of Evanston
Finished Water Reservoir
Sign-off Request

Dear Ms. Haaker:

The City of Evanston is pursuing funding from the IEPA Revolving Loan Program for the subject project. This project includes construction of a new reservoir across the street from the Evanston Water Treatment Plant, to provide emergency water storage. The project site is an existing athletic field. The reservoir will be constructed below grade, and the athletic field restored above the reservoir. The project location is located in the City of Evanston, Cook County, T41N / R14E / Section 7. The location is also shown in the attached map.

If all is in order, please send me a copy of your sign-off letter. If it is more convenient, you may email it to me at krehg@cityofevanston.org. Thank you.

Sincerely,

_____

Kristin J. Rehg, P.E.
City of Evanston
Utilities Department

## IEPA - Project Planning Submittal Checklist

**Before** the Agency will begin review of a Project Plan, **ALL of the items below,** comprising the basic mininum requirements of a Project Plan must be included and the **page numbers(s) of ALL items noted**. If any of the basic information is not provided the planning and loan application will be returned to the applicant.

Project planning should contain all pertinent information detailed in Ill. Adm. Code 35 Section 662.510(e). Loan applicants should be familiar with their planning responsibilities as detailed in Sections 662.510 and 520.

Loan Applicant: City of Evanston | Agency Use: L17

Consulting Engineer: Lara N. Biggs, P.E. Phone: 847-448-8210

Project Description: 14 MG FINISHED WATER RESERVOIR: Construction of a 14 MG reservoir to provide - along with existing clearwell storage - two average days of storage capacity at the Evanston Water Treatment Plant. The existing 5 MG reservoir (80 years old and in poor condition) will be abandoned as part of this project, as well as yard piping extensions and relocation of conflicting sewer piping.

| Page(s) | |
|---|---|
| 2 | Loan applicant's background information including location, present and future service area, historical population, makeup of customer base, conditions affecting growth, and 20 year design population/customer base. |
| 2 | Discussion of the existing daily average and maximum water usage. Discuss the current population served, the water usage by customer class and the projected water usage over the 20 year planning period. |
| | **Please note: The planning must justify the primary need for any project for reasons other than servicing future growth or fire protection.** |
| N/A | Detailed description of EXISTING public water supply source and treatment facilities, along with a clear identification of the need for any proposed project(s) at the treatment plant. |
| 3 | Detailed description of EXISTING storage facilities, the adequacy of these facilities and a clear identification of the need for any proposed project(s) addressing storage. |
| N/A | Detailed description of the EXISTING distribution system, the adequacy of the the distribution system and a clear identification of the need for any proposed project(s) on the distribution system. |
| 4 | Identify any existing or possible future violations of federal or State public water supply regulations (Maximum Contaminant Levels, Treatment Technique Requirements, Technical Policy Violations, etc.) |
| 3-4 | Detailed discussion of the alternative selected to address existing system deficiencies and the identified need(s) of the public water supply system. |

| Page(s) | |
|---|---|
| 4 | Detailed cost estimates for design and building of the alternative selected, including both capital and O, M & R costs over a 20-year planning period. The estimate(s) should include cost items for design engineering, construction engineering, bidding, legal, construction and construction contingency. |
| 4 | Assessment of the chosen alternative's capability to maintain compliance with all applicable laws and regulations in addition to addressing the identified need(s) of the system. |
| 4-5 | Basis of Design for Chosen Alternative. The preliminary engineering data should include, to the extent appropriate, flow diagrams, unit process descriptions, detention times, flow rates, unit capacities, etc. to demonstrate that the proposed project will be designed in accordance with 35 Ill. Adm Code 651 through 654. |
| 5, App. C | Inventory of environmental impacts of chosen alternative and a discussion of the measures required during design and construction to mitigate or minimize negative environmental impacts. The discussion should address at a minimum; rare and endangered species, historic and cultural resources, prime agricultural land, air and water quality, recreational areas, wetlands, floodplains and other sensitive environmental areas. |
| | **Note: The IEPA Loan Applicant Environmental Checklist must be signed by the loan applicant's authorized representative and submitted to the Agency with all applicable sign-offs before a final Planning approval can be issued.** |
| App. A | Reproducible 8.5 x 11 inch map(s) showing the project(s) location(s) in the community. |
| 6-7 | Implementation plan for the proposed project including the anticipated construction schedule, the financial schedule, including necessary financial arrangements for assuring adequate annual debt service and O,M & R coverage requirements and a description of the dedicated source of revenue necessary for loan repayment. List any other funding involved in the project. |
| 8 | Detailed description of the existing residential rate structure, average water consumption or the basis for billing, current average monthly residential bill, any proposed rate changes and the proposed average monthly residential bill as a result of the project(s). |

**Three Copies** of the Project Plan and related documents should be submitted to:

Infrastructure Financial Assistance Section (IFAS)
Illinois Environmental Protection Agency
1021 North Grand Ave. East
P.O. Box 19276
Springfield, IL 62794-9276

IFAS will distribute the planning documents to the appropriate Agency staff for review, comment and approval. IFAS will contact the loan applicant if further information is needed.

**Illinois Environmental Protection Agency**
**Public Water Supply Loan Program**

# Project Plan Amendment No. 1

## Treated Water Storage Improvements

## L17-5108

City of Evanston, Illinois

*March 2015*

## 1.0 Background

The City of Evanston, Illinois, is located on Lake Michigan just north of Chicago. The City operates and maintains a water system that serves the City and additionally provides wholesale water service to the Village of Skokie and the Northwest Water Commission (Arlington Heights, Buffalo Grove, Palatine, and Wheeling). Including these wholesale customers, the City is responsible for providing water to over 365,000 people. Within Evanston, the water service area makes up approximately 14,500 accounts (over 75,000 residents and numerous commercial and institutional customers), with the largest users being Northwestern University, Evanston Hospital, and St. Francis Hospital. The top ten water uses within Evanston represent approximately 22 percent of metered water consumption.

The City of Evanston Water Treatment Plant (WTP) is a surface water treatment facility consisting of three Lake Michigan water intakes, preliminary chemical feed and flash mix, flocculation, sedimentation, filtration, post-chlorine feed and blended phosphate addition. The plant site also includes low and high lift pumping and finished water storage. Rated capacity of the plant is 108 million gallons per day (mgd), though both the low and high lift pumping systems are rated at higher capacities.

Finished water storage at the plant consists of eight clearwells beneath the filters and a separate 5.0 MG clearwell. Total (gross) storage volume is 9.4 million gallons (MG). The gross storage volume controls chlorine contact time for disinfection credits. However, the amount of water that can actually be removed from these storage facilities before breaking suction on the high service pumps (usable storage volume) is only 7.6 MG. The usable storage volume is what can be relied upon to equalize fluctuations in plant production and for emergency water supply.

The City's water distribution system consists of one major pumping station at the water treatment plant, two standpipes (5.0 MG and 7.5 MG) with remote booster stations, and approximately 157 miles of water main ranging in diameter from 3 inches to 48 inches.

## 2.0 Projected Water Demand

The Evanston WTP is rated at 108 mgd. In 2014, the average day demand (ADD) was approximately 36.8 mgd, maximum day demand (MDD) was 48.9 mgd, and the peak hour demand (PHD) was 55.8 mgd. Utilizing water demand projections for the year 2030 from the IDNR's 2012 Illinois Lake Michigan Water Allocations, ultimate water demands are projected as shown in Table 2.1. A peaking factor of 1.825 is used to project ultimate MDD for each customer. At this time, there are no formalized plans to expand the City's water service area to include additional communities.

| Table 2.1 Projected Growth in Customer Demands | | | |
|---|---|---|---|
| **Customer** | **2014 ADD** | **2030 ADD** | **2030 MDD** |
| City of Evanston | 7.45 mgd | 9.68 mgd | 17.66 mgd |
| Village of Skokie | 7.58 mgd | 10.84 mgd | 19.78 mgd |
| Northwest Water Commission | 21.76 mgd | 30.14 mgd | 55.00 mgd |
| **Total Demand** | **36.79 mgd** | **50.70 mgd** | **92.44 mgd** |

## 3.0 Existing Facilities

Evanston operates and maintains several water storage facilities located both at the WTP and throughout the City. These facilities are used to equalize fluctuations in the distribution system demand, buffer system pressures, provide fire flows, and provide emergency water storage in the event of a treatment plant or pumping station shutdown. Table 3.1 summarizes the storage facilities.

| Table 3.1 Evanston Finished Water Storage | | | | |
|---|---|---|---|---|
| **Storage Facility** | **Gross Storage (MG)** | **Usable Storage (MG)** | **Year of Construction** | **Condition** |
| Clearwells 1 & 2 | 1.75 | 0.875 | 1913 | Structural repairs to be completed in 2015 |
| Clearwells 3 & 4 | 0.65 | 0.325 | 1923 | Structural repairs to be completed in 2015 |
| Clearwells 5 & 6 | 1.0 | 0.5 | 1948 | Unknown; assume to be in good condition |
| Clearwells 7 & 8 | 1.0 | 0.5 | 1964 | Unknown; assume to be in good condition |
| 1934 Clearwell | 5.0 | 3.0 | 1934 | Poor condition (see structural evaluation in Appendix B) |
| WTP Total | 9.4 | 5.2 | | |
| South Standpipe | 5.0 | 4.0 | 1984 | Under contract to be repainted and repaired in 2015 |
| North Standpipe | 7.5 | 6.0 | 1986 | Under contract to be repainted and repaired in 2015 |
| Distribution Total | 12.5 | 10.0 | | |
| **Grand Total** | **21.9** | **15.2** | | |

Clearwells 1 – 8 are located directly beneath the filters and were constructed during the four major water treatment plant expansions. The 1934 Clearwell is a stand-alone structure located across the street from the treatment plant complex, beneath a parking lot. The project location map and site plan in Appendix A show the Evanston WTP location and the location of the existing clearwells (and potential replacement locations) on and adjacent to the WTP site.

## 4.0 Project Need

The finished water storage facilities at the Evanston WTP serve several important functions:

- Provide equalization
- Meet CT requirements to provide a minimum 0.5 log inactivation of *Giardia* and 2.0 log inactivation of viruses (in combination with CT credit achieved through free chlorine contact time in the sedimentation basins)
- Meet the regulatory requirement of at least one hour of post-filtration chlorine contact time
- Provide emergency storage equivalent to one average day's demand (in combination with emergency storage provided in the distribution system)

A recently completed engineering study (Appendix C) found that the finished water storage facilities at the WTP have sufficient volume to meet all applicable regulatory requirements as well as Evanston's goal for emergency storage volume. The 1934 Clearwell is an important part of achieving these goals, as it provides over half of the finished water storage capacity at the WTP.

A structural inspection was performed on the 1934 Clearwell in 2012, at which time partial depth concrete cores were taken from the interior of the roof slab. Analysis showed significant deterioration that compromised the roof's load carrying capacity and indicated that replacement would be needed in the near future. A repeat inspection was performed in 2013, at which time partial depth concrete cores were taken from the exterior of the roof slab, which also demonstrated substantial deterioration of the concrete.

The condition of the roof slab, along with other deficiencies noted below, indicate the need for major improvements or complete replacement of the 1934 Clearwell:

- The roof slab is failing and structural analysis indicates it will not last more than five years.
- Cracks and spalling are prevalent in the walls and floor slab, and the roof support column drop panels are significantly deteriorated.
- The structure was constructed prior to modern design requirements for treated water storage, and does not conform to current standards for venting, overflow, or baffling.
- Only 60 percent of the gross storage volume (approx. 3.0 MG) can be used for emergency purposes due to plant hydraulic limitations.

The above-referenced study evaluated five alternatives for rehabilitation or replacement of the 1934 Clearwell:

- Alternative A: Replace roof slab, make repairs and upgrades to address other deficiencies
- Alternative B: Rehabilitate roof slab in place, make repairs and upgrades to address other deficiencies
- Alternative C: Demolish and replace 1934 Clearwell near existing location
- Alternative D: Demolish 1934 Clearwell and construct a new clearwell in an alternate location on the WTP site
- Alternative E: Demolish 1934 Clearwell and construct a reservoir in the distribution system

The engineering study indicated that Alternatives A and B would extend the life of the 1934 Clearwell by approximately 30 years, after which time the structure would have to be demolished and replaced. The study indicated an anticipated life of 100 years for new concrete structures.

The study also considered Clearwells 1 – 4, as rehabilitation and replacement of these clearwells will be required within the same cycle as the 1934 Clearwell, due to their age (currently 90-100 years old). This includes major rehabilitation in 2015, and replacement of Clearwells 1 – 4 within 30 years.

The engineering study evaluated the 50-year life cycle costs of rehabilitating the 1934 Clearwell now and replacing it in 30 years (Alternatives A and B), as compared to replacing the entire structure now (Alternatives C, D, and E). These costs were considered in conjunction with current costs to rehabilitate Clearwells 1 – 4 in 2015 as well as future costs to replace Clearwells 1 – 4 in 30 years (this work is included in all five alternatives to maintain total finished water storage volume). The initial capital costs for the 1934 Clearwell and the 50-year life cycle costs of all necessary finished water storage improvements are summarized in Table 4.1.

**Table 4.1 Initial and Life Cycle Costs for Alternatives**

| | Initial Capital Cost [1] | 50-Year Life Cycle Cost [2] |
|---|---|---|
| **Alternative A:** Replace 1934 Clearwell roof (replace entire clearwell in 30 years) | $ 5,300,000 | $43,000,000 |
| **Alternative B:** Rehabilitate 1934 Clearwell roof in place (replace entire clearwell in 30 years) | $ 4,400,000 | $42,000,000 |
| **Alternative C:** Demolish and replace 1934 Clearwell near existing location | $19,000,000 | $37,000,000 |
| **Alternative D:** Demolish 1934 Clearwell and construct a new clearwell elsewhere on the WTP site | $20,000,000 | $38,000,000 |
| **Alternative E:** Demolish 1934 Clearwell and construct a reservoir in the distribution system | $22,000,000 | $40,000,000 |

[1] Includes only the near-term capital costs associated with the 1934 Clearwell. The near-term cost to rehab Clearwells 1–4 ($470,000) is excluded because it is common to all alternatives.

[2] The real values of future costs were inflated at an annual rate of 4.0%. The present worth value of future projects was discounted to 2015 dollars at a discount rate of 4.0%.

While Alternatives A and B have significantly lower initial capital costs, they entail higher long-term costs. This is primarily due to the fact that the City would have to invest in both a major rehabilitation and a complete replacement of the 1934 Clearwell within the 50-year cycle. In Alternatives C, D, and E, major rehabilitation of the 1934 Clearwell is unnecessary because it is replaced at the beginning of the 50-year cycle. This results in lower life cycle costs.

Note that the 50-year life cycle cost is affected by the discount rate used to translate future costs to a present worth value. The engineering study evaluated

life cycle costs for a variety of discount rates, ranging from 2.0 percent to 7.0 percent. The City determined that discount rates exceeding 4.0 percent were unrealistic, since it is not possible, at present, to obtain a rate of return on City investments that is higher than this. Therefore, 4.0 percent is used as the maximum possible discount factor when comparing life cycle costs between alternatives.

## 5.0 Regulatory Compliance

This project is not being constructed to meet a regulatory compliance goal, but rather to address significant structural deficiencies in treated water storage facilities. All Evanston WTP improvements are constructed and operated in compliance with the Illinois Administrative Code 601 through 691.

## 6.0 Selected Alternative and Basis of Design

Alternative C, replacement of the 1934 Clearwell near its existing location, is the selected alternative. At realistic discount rates, this alternative is the most cost-effective long-term. Furthermore, current lending conditions are favorable as compared to historical trends and the City's ability to repay the debt can be determined with much more certainty than if replacement is delayed 30 years. Finally, delaying replacement of the 1934 Clearwell for 30 years would mean that this project would occur at the same time as replacement of Clearwells 1 – 4. Replacing the 1934 Clearwell in the near-term will set up a staggered schedule for long-term replacement of finished water storage facilities at the Evanston WTP, spreading out the financial burden and resulting impacts to rate payers.

The replacement clearwell would be constructed in approximately the same location as the existing 1934 Clearwell, but shifted slightly east to allow for the relocation of North Campus Drive to the west of the new clearwell. In order to work within the plant's existing hydraulic profile, the new clearwell would need to be constructed at approximately the same elevation as the existing clearwell, which means it would not meet the Ten States Standards requirement for locating clearwells above groundwater levels. The proposed design includes groundwater mitigation measures and a variance request will be included with the construction permit application.

The replacement clearwell will be hydraulically connected to the existing Clearwells 1 – 8 and be fed by gravity. It will drain by gravity to the High Lift Pumping Station where water is pumped to the distribution system. A new emergency volume pumping system will allow the entire tank volume to be utilized in an emergency (existing hydraulic profile prohibits high lift pumps from using more than 60% of the clearwell volume). The emergency pump will discharge directly to the feeder main leaving the water treatment plant at a pressure equivalent to existing high lift pumps.

A basis of design is provided in Table 6.1. All elevations are on Evanston's local datum (elevation above or below average lake level). Preliminary design drawings from the engineering study are provided in Appendix C.

| Table 6.1 Basis of Design | |
|---|---|
| Elevation of Top Slab | 20.5 (2.0 feet above ground surface) |
| Elevation of Bottom Slab | -3.0 |
| High Water Elevation | 16.0 |
| Maximum Water Depth | 19.0 feet |
| Freeboard at Max Water Depth | 3.0 feet |
| Width | 140 feet |
| Length | 260 feet |
| Height | 23.5 feet |
| Gross Storage Volume | 5.17 MG |
| Groundwater Elevation | Approx. 13.0 (variance will be requested) |
| Groundwater Mitigation | Perimeter drain system at tank footing draining to a sump pump station (discharge to sewer) |
| Overflow | Two 36" diameter 90º elbows discharging 12"-24" above grade to spill structure |
| Venting | Downturned elbows with opening at least 24" above grade with 24-mesh screen |
| Access Manholes | Two locked hatches in the top slab |
| Baffles | Serpentine, NSF61 certified fiberglass |
| Emergency Volume Pump Size | 10 mgd |
| Emergency Volume Pump Type | Submersible centrifugal with VFD |

## 7.0 Cost Estimate

The estimated costs for design and construction of proposed improvements are outlined in Table 7.1. A detailed cost estimate prepared during the engineering study is provided in Appendix C. This cost estimate was prepared in 2014. To estimate costs at the time of bidding (2016), the total capital cost estimate is inflated by 4 percent per year. This inflation rate is based on the average annual change in the ENR Construction Cost Index for the Chicago area over the last 30 years.

| Table 7.1 Capital Cost Estimate | |
|---|---|
| **Description** | **Estimated Cost** |
| General Conditions | $ 1,966,760 |
| Demolition | $ 924,880 |
| Concrete for new Clearwell | $ 3,783,890 |
| Ladders, Baffles, and Hatches | $ 207,630 |
| Piping, Valves, and Pumping Systems | $ 914,370 |
| Electrical | $ 394,250 |
| Earthwork | $ 2,637,410 |
| Site Work | $ 184,690 |
| Construction Sub-Total (rounded) | $11,014,000 |
| Bond and Insurance (2%) | $ 220,000 |
| Contractor's Overhead and Profit (10%) | $ 1,123,000 |
| Undeveloped Design Details | $ 2,600,000 |
| Construction Total | $14,957,000 |
| Contingency (10%) | $ 1,500,000 |
| Engineering (15%) | $ 2,470,000 |
| **Total Capital Cost Estimate (rounded)** | **$19,000,000** |
| **Total Capital Cost Estimate at Time of Bidding (2016)** | **$20,550,000** |

Bidding and legal services will be completed in-house and are not included as part of the cost estimate. Operations and maintenance for this project will be funded separately and is not included in this loan application.

## 8.0 Environmental Impacts

This project was reviewed against the IEPA Loan Applicant Environmental Checklist. Table 8.1 summarizes the conclusions of that review. Copies of documents referenced in Table 8.1 are included in Appendix D.

| Table 8.1 Environmental Checklist Review | |
|---|---|
| **Potential Impact** | **Anticipated Result** |
| National Historic Preservation Act, Section 106 | Work will occur entirely within existing developed areas. No impact is anticipated. IHPA sign-off request is attached. |
| Illinois Department of Natural Resources compliance with:<br>Illinois Endangered Species Act<br>Illinois Natural Areas Preservation Act<br>Interagency Wetlands Protection Act | Consultation has been terminated with IDNR and a letter is attached. Adverse effects are unlikely. Care will be taken during construction to protect endangered plant species on the adjacent beach. |
| Construction in Floodways, Wetlands, and on Stream Banks | Work will not occur in floodways, wetlands, or stream banks. No impact is anticipated. |
| Conversion of prime agricultural land | Work will occur entirely within developed areas. No impact is anticipated. |
| Growth in more than 30% reserve capacity | Work will not increase the capacity of the existing water system. No additional development is anticipated as a result of this project. No impact is anticipated. |

## 9.0 Implementation Plan

The anticipated construction schedule is outlined in Table 9.1.

| Table 9.1 Proposed Project Schedule | |
|---|---|
| Plans and Specifications Finalized* | 1/4/2016 |
| Project Advertised* | 3/4/2016 |
| Bid Opening | 4/18/2016 |
| Notice of Intent to Award | 4/25/2016 |
| Receive IEPA Loan Offer** | 6/9/2016 |
| Notice of Award | 6/27/2016 |
| Notice to Proceed | 8/1/2016 |
| Construction Complete | 10/31/2017 |

* Assumes construction permit issued within 60 days
** Assumes 45-day turn-around.

The total project cost is estimated at $20,550,000. A projected debt repayment schedule based on Public Water Supply Loan Program (PWSLP) funding is shown in Table 9.2. Since the State Revolving Fund interest rate for FY 2016 is not yet known, an assumed interest rate of 2.5% is used.

| Table 9.2 Debt Repayment Calculation | |
|---|---|
| Percent Funded | 100% |
| Dollars Funded | $20,550,000 |
| Loan Interest Rate | 2.5% |
| Loan Duration | 20 years |
| **Annual Loan Payment** | **$1,318,200** |

Revenues for debt repayment will be generated through wholesale and retail water user charges. Evanston retail customers comprise only 20 percent of water produced at the Evanston Water Treatment Plant; the remainder is pumped to the Village of Skokie and the Northwest Water Commission. Therefore, Evanston retail customers would be responsible for no more than 20 percent of loan repayment costs over the next 20 years, or approximately $263,600 per year.

Revenues from retail and wholesale water sales are deposited in the Water Fund, an enterprise fund. A summary of the Water Fund budget for FY 2015, beginning January 1, 2015, is shown in Table 9.3. The City intends to draw down excess reserves to fund capital projects in FY 2015, and anticipates maintaining the Water Fund OM&R Reserve at or near the $3,500,000 target level in future years.

| Table 9.3 Water Fund – FY 2015 Budget Summary | | |
|---|---|---|
| | **FY 2014 Year-End Estimate** | **FY 2015 Adopted Budget** |
| **Operating Revenues** | | |
| Retail Water Sales | $ 6,357,400 | $ 6,983,000 |
| Wholesale Water Sales | $ 8,113,000 | $ 8,270,000 |
| Cross Connection Control | $ 117,000 | $ 120,000 |
| Bond Proceeds | $ 2,870,000 | $ 6,100,000 |
| IEPA Loan Proceeds | $ 1,430,000 | $ 6,190,000 |
| Grants | $ 14,181 | $ 0 |
| Phosphate Sales | $ 45,000 | $ 45,000 |
| Property Sales and Rentals | $ 227,316 | $ 146,100 |
| Other Fees and Sales | $ 218,000 | $ 190,000 |
| Investment Proceeds | $ 12,000 | $ 10,000 |
| Miscellaneous | $ 4,300 | $ 5,000 |
| **Total Revenue** | **$19,408,197** | **$28,059,100** |
| **Operating Expenses** | | |
| General Support | $ 898,468 | $ 983,266 |
| Pumping | $ 2,172,119 | $ 2,246,701 |
| Filtration | $ 2,572,444 | $ 2,633,653 |
| Distribution | $ 1,450,368 | $ 1,724,142 |
| Meter Maintenance | $ 272,565 | $ 193,336 |
| Other Operating Expenses | $ 464,000 | $ 578,000 |
| Capital Outlay | $ 368,100 | $ 419,000 |
| Capital Improvement | $ 7,072,400 | $18,402,600 |
| Debt Service – Bonds | $ 1,102,835 | $ 978,894 |
| Debt Service – IEPA Loan 3382 | $ 67,505 | $ 67,505 |
| Transfer to General Fund | $ 3,369,559 | $ 3,374,053 |
| Transfer to Insurance Fund | $ 468,492 | $ 468,492 |
| **Total Expenses** | **$20,278,855** | **$32,069,642** |
| **Net Surplus (Deficit)** | **($ 870,658)** | **($ 4,010,542)** |
| **Beginning Water Fund OM&R Reserve** | $ 8,590,091 | $ 7,719,433 |
| **Ending Water Fund OM&R Reserve** | $ 7,719,433 | $ 3,708,891 |
| **Target Water Fund OM&R Reserve** | $ 3,500,000 | $ 3,500,000 |

## 10.0 Rate Structure

Evanston's retail water rates include a minimum charge for the first 5 units based on water meter size, and a quantity charge for every unit in excess of the first 5 units in the bi-monthly billing period (1 unit = 100 cubic feet or 748 gallons of water).

Current retail water rates took effect January 1, 2015. For the 5/8-inch and 3/4-inch meter sizes (the sizes most commonly used in single-family homes) the minimum charge for the first 5 units consumed in the bi-monthly billing period is $7.78. The quantity charge for usage in excess of 5 units is $2.18 per unit. Calculation of the average bi-monthly water bill (and equivalent monthly cost) for single-family residential customers under current rates is shown in Table 10.1.

| **Table 10.1 Current Average Single-Family Residential Water Bill** | |
|---|---|
| Bi-Monthly Minimum Charge | $7.78 |
| Average Water Use per Bi-Monthly Billing Period (in 2014) | 14.1 CCF |
| Water Use Included in Minimum Charge | – 5 CCF |
| Water Use Billed to Quantity Charge | 9.1 CCF |
| Water Quantity Rate | x $2.18/CCF |
| Water Quantity Charge | $19.84 |
| **Average Bi-Monthly Residential Water Bill** | **$27.62** |
| **Equivalent Monthly Water Cost** | **$13.81** |

As explained in Section 9.0, revenue from wholesale water customers will offset the revenue needed from Evanston retail rate payers to repay the loan. A calculation is provided in Table 10.2 assuming the Evanston retail rate payers must cover 20 percent of the loan repayment.

Total annual water usage in Evanston was 3,167,373 CCF in 2014. Table 10.2 outlines the estimate of the annual debt service cost per CCF for this project and the maximum impact on an average single-family residential customer's bi-monthly water bill (and equivalent monthly water cost). In reality, it is anticipated that Evanston's portion of the annual debt service will be absorbed into existing retail water rates and no retail water rate increase will be necessary to repay the loan.

| **Table 10.2 Average Single-Family Residential Water Bill Increase** | |
|---|---|
| Annual Loan Payment (Evanston portion) | $263,600 |
| Annual Water Consumption in CCF (Evanston retail customers) | 3,167,373 |
| Debt Service Cost per CCF | $0.083 |
| Bi-Monthly Water Usage Billed at Quantity Rate (CCF) | 9.1 |
| **Increase to Bi-Monthly Water Bill** | **$0.76** |
| **Equivalent Monthly Water Cost Increase** | **$0.38** |

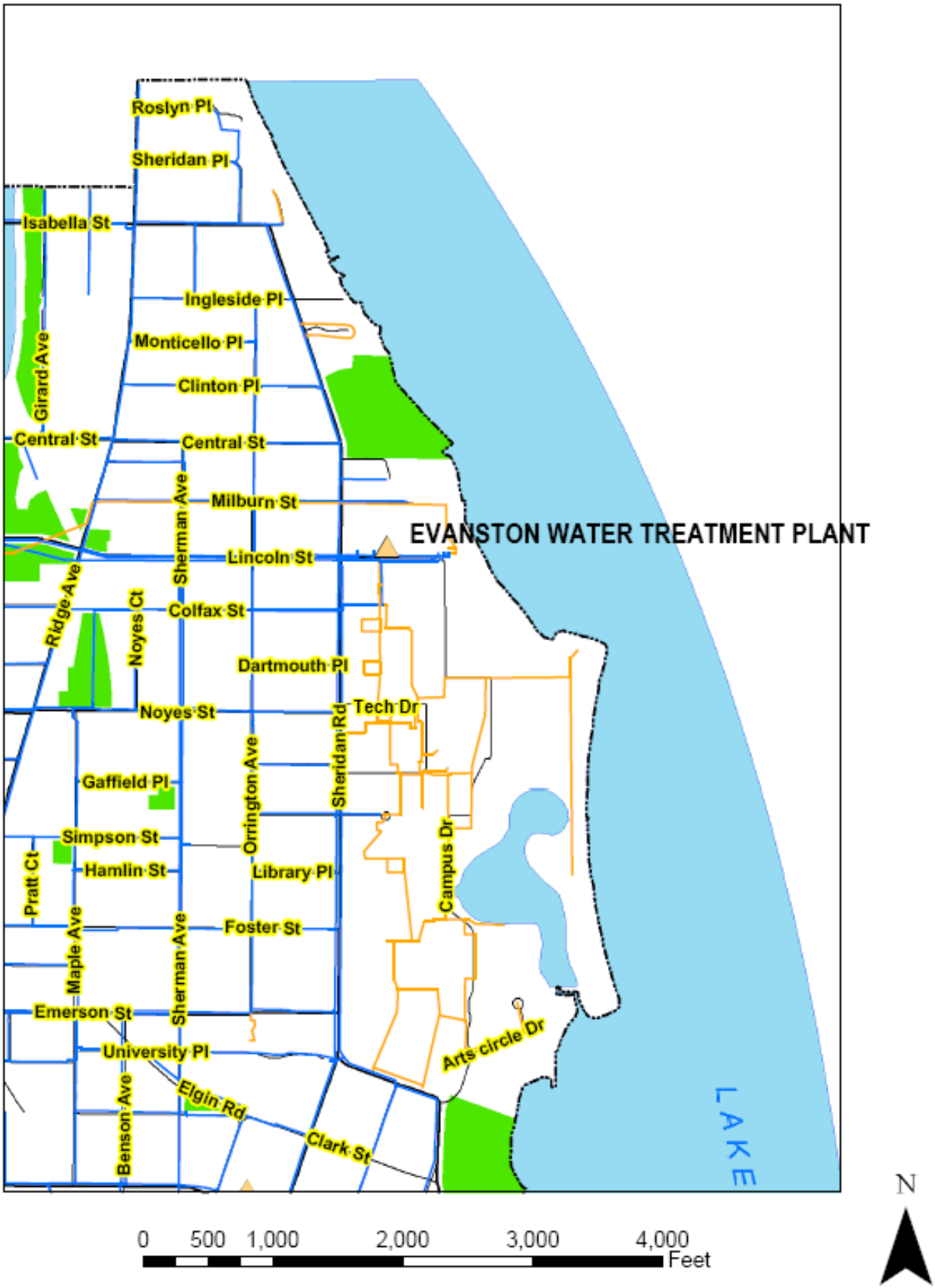
# TREATED WATER STORAGE IMPROVEMENTS
# L17-5108

# APPENDIX A

## PROJECT LOCATION MAP

## SITE PLAN

# Project Location Map



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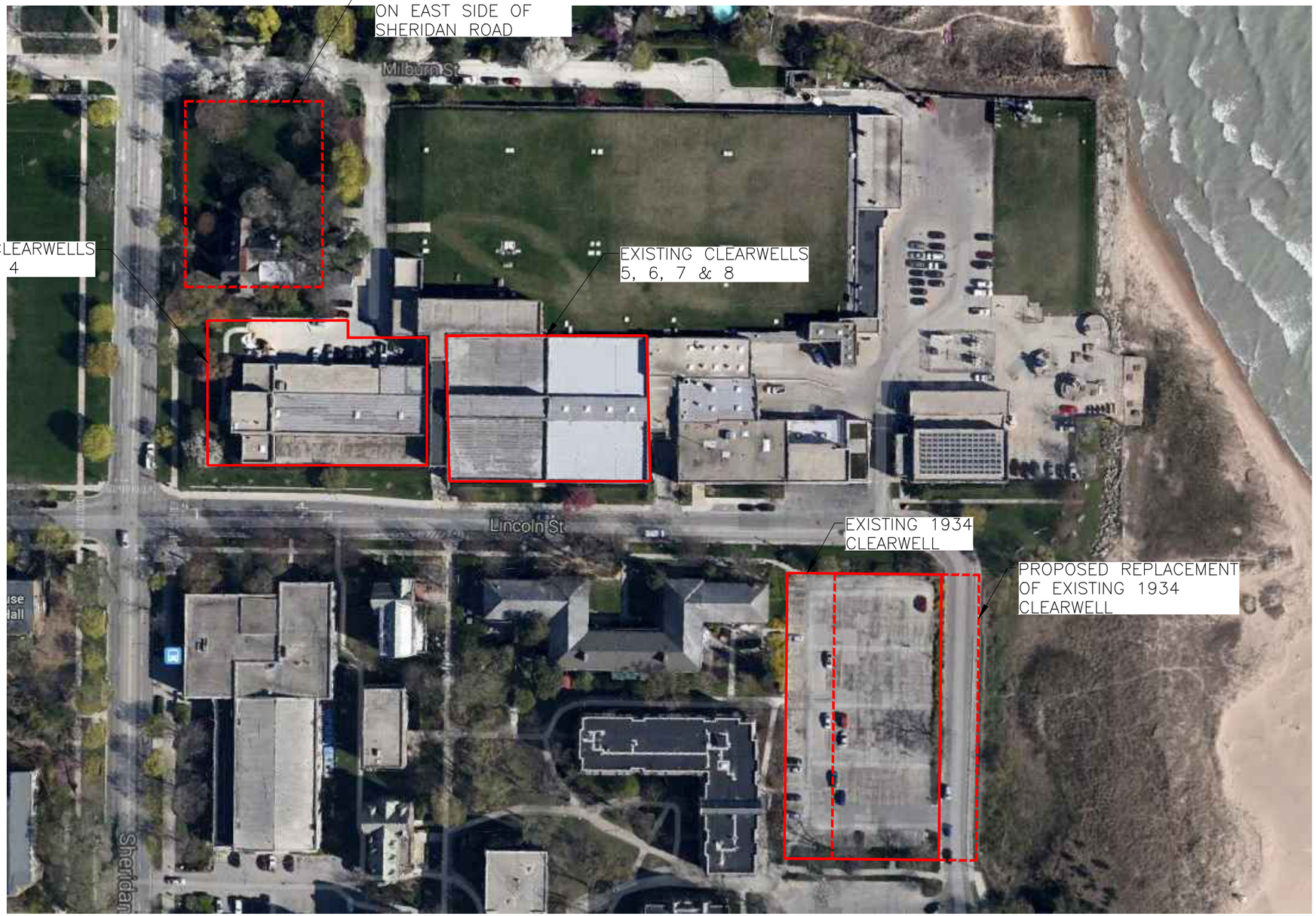


CDM Smith

EVANSTON TREATED WATER STORAGE ALTERNATIVES ASESSMENT
DECEMBER 2014

FIGURE No.1
EXISTING AND PROPOSED CLEARWELLS

# TREATED WATER STORAGE IMPROVEMENTS
# L17-5108

# APPENDIX B

## REPORT ON STRUCTURAL INSPECTION OF
## 5.0 MG CLEARWELL
## CTL GROUP, 2013

December 4, 2013

Ms. Kristin Rehg, P.E.
City of Evanston Utilities Department
555 Lincoln Street, Evanston, Illinois 60201

E-mail: krehg@cityofevanston.org

**2013 Inspection of Finished Water Reservoir**
**Evanston Water Utility, Evanston, IL**
**CTLGroup Project No. 262675**

Dear Ms. Rehg:

As authorized by the City of Evanston, CTLGroup performed a follow-up inspection of the Finished Water Reservoir to continue monitoring conditions of the roof slab. The objectives of the work were to compare current slab conditions with conditions observed in November of 2012. The scope of work included visual examination of the roof slab underside and also examination and limited hammer sounding of upper regions of the walls. CTLGroup was assisted by Hatcher Family Construction and Safety Training Services for confined space monitoring and rescue assistance. CTLGroup also performed laboratory examination of concrete core samples removed from slab topside and upper exterior regions of the east wall.

## BACKGROUND

The Finished Water Reservoir was constructed in 1934 of cast-in-place reinforced concrete and is located beneath a parking lot owned by Northwestern University. According to the drawings, the reservoir walls vary in thickness from 2 ft. at the base slab to 1 ft. at the top. The roof slab is 8-1/2-in. thick, and the bottom slab is 6 in. thick. Interior columns are 20-in. diameter and spaced 12 ft. apart throughout the structure.

CTLGroup was retained by the City of Evanston to perform inspection and evaluation of the Finished Water Reservoir in November of 2012. Results of the inspection were documented in a report to the City of Evanston dated December 21, 2012. Findings from the inspection and subsequent laboratory studies performed on representative material samples indicated that the roof slab of the Finished Water Reservoir was in poor condition. Visible surface cracking is extensive in some areas, particularly in the southeast quadrant. Numerous areas of exposed reinforcing steel and/or inadequate concrete cover were noted. Extensive internal surface-parallel cracking was observed throughout all core samples drilled from the interior side of the roof slab. Associated concrete delaminations and spalling due to freeze-thaw damage were also observed. The poor condition of the roof slab was attributed to the abundance of available moisture inside the Finished Water Reservoir, combined with minimal earth cover above, likely creating an aggressive environment with respect to freeze-thaw exposure for concrete that does not incorporate entrained air. Based on extensive internal surface-parallel cracking throughout the roof slab, CTLGroup recommended extensive repairs or complete replacement. It was recommended that loads on the slab should be limited. CTLGroup also recommended that internal inspection of the roof slab be performed annually until either 1) sufficient additional data is generated to justify decreasing the inspection frequency, 2) the recommended repair measures are implemented, or 3) the structure is removed from service.

CTLGroup also recommended that, if the Evanston Water Utility anticipated future long-term use of this structure, complete removal and replacement of the roof slab and associated manholes would be warranted. A cost estimate provided in our 2012 report by Hatcher Family Construction, Inc. utilizing the services of Zera Construction and Plote Construction placed an estimate for roof slab removal and replacement to be on the order of $4,000,000. This cost included provisions for in-kind removal and replacement of both the roof slab and parking lot but did not include allowance for re-design, development of plans, specifications and bid documents, costs associated with selection of contractors, permit costs, construction observation services, and costs associated with loss of use.

## 2013 INSPECTION FINDINGS

On Tuesday, November 12, 2013, Alexis Brackney, Eric VanDuyne and Carlton Olson of CTLGroup performed visual inspection and limited hammer sounding in the Finished Water Reservoir. The inspection was performed from an inflatable raft with the water level in the reservoir dropped to approximately 8 ft. below the roof slab soffit.

In general, visual observations from the 2013 inspection appear consistent with observations from the 2102 inspection. Significant findings are as follows:

1. Concrete roof slab underside is in poor condition. Significant evidence of extensive freeze-thaw damage is present in addition to other deterioration described below.
2. Condensation is present on most areas of the slab underside.
3. Numerous cracks are present in the roof slab, typically coincident with efflorescence. Visible surface cracking is extensive in some areas, particularly in the southeast quadrant where many efflorescence stalactites are present. Crack patterns observed on the interior surface of the slab appear somewhat random and not consistent with damage from excessive gravity loads.
4. Cracks with efflorescence were also observed on column drop panels and a few column capitals.
5. Corrosion of the reinforcing steel and spalling with exposed reinforcement was observed in several areas. Observed corrosion coincides with locations where reinforcement was at the surface of the concrete with inadequate concrete cover.
6. Localized corrosion-product nodules were observed on the slab underside in multiple locations. These nodules were likely caused by corrosion in localized areas of exposed steel or shallow concrete cover over embedded steel elements.
7. No evidence of excessive slab deflection, wide cracking or other distress indicative of an immediate structural integrity concern was observed.
8. Inspection of the upper portions of the concrete walls revealed few cracks and no delaminations of cover concrete identified through hammer sounding.

## CONCRETE CORE SAMPLES

Four concrete core samples, EWC-1, EWC-2, EWC-3, and EWC-4, were extracted from the exterior east wall of the Finished Water Reservoir on November 19, 2013 by Roughneck Coring. Locations of these core samples are included on the condition survey drawing in Appendix A. Cores were cut and lapped and examined using a stereomicroscope. In general, all core

samples appear to be in overall good condition with no evidence of significant deterioration or distress. Photographs of the cut and lapped core samples are included in Appendix B.

Walker Restoration Consultants removed four concrete core samples, C1, C2, C3, and C4, from the topside of the Finished Water Reservoir. Locations of these core samples are shown on the condition survey drawing included in Appendix A. CTLGroup obtained the core samples from Walker and cut, lapped, and examined the samples. All four core samples exhibit extensive surface-parallel cracking. Photographs of the cut and lapped core samples are included in Appendix B.

## CONCLUSIONS AND RECOMMENDATIONS

Our 2013 slab underside inspection did not identify any significant change from conditions observed in 2012. Our 2013 inspection also did not identify evidence of any immediate structural integrity concern. Previous inspection findings and laboratory studies performed on representative material samples indicate that the roof slab of the Finished Water Reservoir is in poor condition, due primarily to extensive internal surface-parallel cracking throughout the roof slab. Additional core samples removed from the slab topside in 2013 provided further confirmation of this condition. Cores removed from the upper region of the east wall revealed that the concrete is in generally good condition.

As stated in our 2012 report, the extensive internal surface parallel cracking has likely compromised the load carrying capacity of the roof slab to an extent that is variable and indeterminate. In order to restore the roof slab to a serviceable state, extensive (near full-depth) repairs or complete replacement is recommended. Per recommendations in our 2012 report, the next scheduled slab underside inspection should be performed in Fall 2014 if the reservoir structure is to remain in service. Loads on the top of the slab should be limited to passenger vehicles only, as previously recommended in the 2012 report. No effort to quantify the current load carrying capacity of the slab in the deteriorated condition through calculations and analyses has been made to date.

If you have any questions, please call.

Very truly yours,

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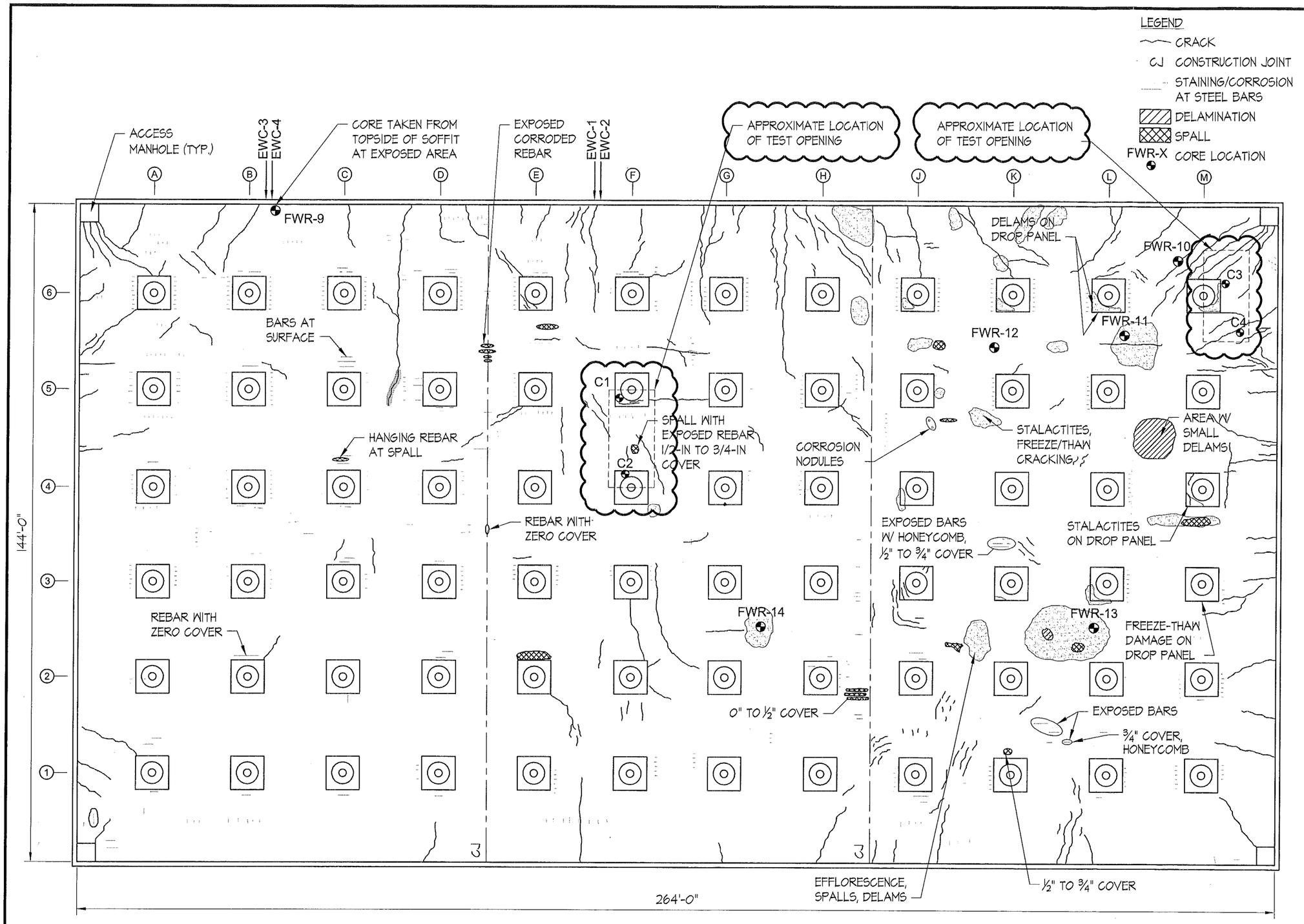
ABrackney@CTLGroup.com

Attachments: Appendix A and B

COA# 184-001246

# APPENDIX A

Condition Survey Drawings




N

## 1 REFLECTED CEILING PLAN

NTS


CTLGroup

CONSTRUCTION TECHNOLOGY LABORATORIES

ENGINEERS & CONSTRUCTION TECHNOLOGY CONSULTANTS

CTLGroup COA No.: 184-001246

5400 OLD ORCHARD ROAD
SKOKIE, ILLINOIS 60077-1030
PHONE: 847-965-7500
FAX: 847-965-6541
www.CTLGroup.com


# Evanston Water Utility Water Treatment Plant

555 Lincoln Street
Evanston, IL 60201

ISSUE

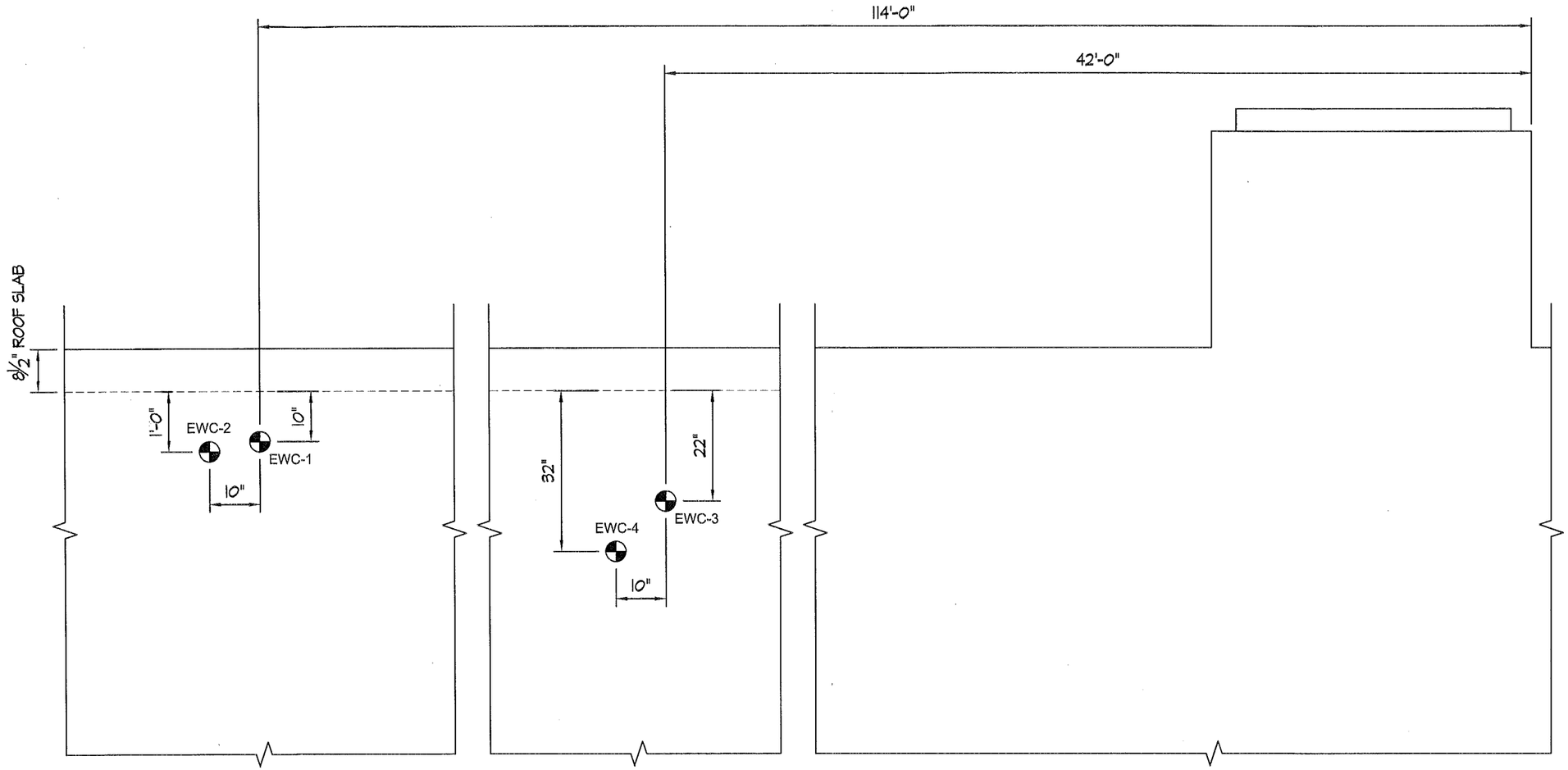
| No. | Description | Date |
|---|---|---|
| 1 | 2012 Condition Survey | 12-21-12 |
| 2 | 2013 Update | 11-20-13 |

CTLGroup No.: **262675**
Drawn: **ASB**
Checked: **CAO**
Date: **21DEC12**
Scale: **NTS**

# Finished Water Reservoir Reflected Ceiling Plan

Sheet No.:

# FWR-2




**1** **PARTIAL ELEVATION - EAST WALL**
NTS

CTLGROUP
CONSTRUCTION TECHNOLOGY LABORATORIES
ENGINEERS & CONSTRUCTION TECHNOLOGY CONSULTANTS
CTLGroup COA No.: 184-001246

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www.CTLGroup.com

# Evanston Water Utility Water Treatment Plant

555 Lincoln Street
Evanston, IL 60201

ISSUE

| No. | Description | Date |
|---|---|---|
| 1 | - | 11-20-13 |

CTLGroup No.: **262675**
Drawn: **ASB**
Checked: **CAO**
Date: **20NOV13**
Scale: **NTS**

## Finished Water Reservoir East Wall Elevation

Sheet No.:

**SK-1**

# APPENDIX B

Concrete Core Samples

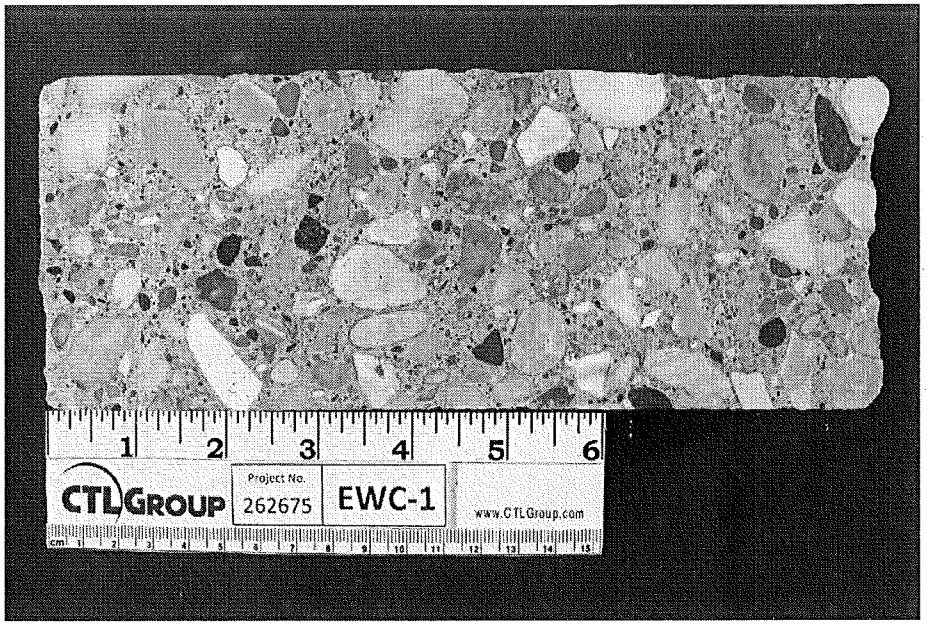


**Fig. 1 Cut and lapped section of Core EWC-1. Top surface at left. No apparent cracks/microcracks are observed in the core.**

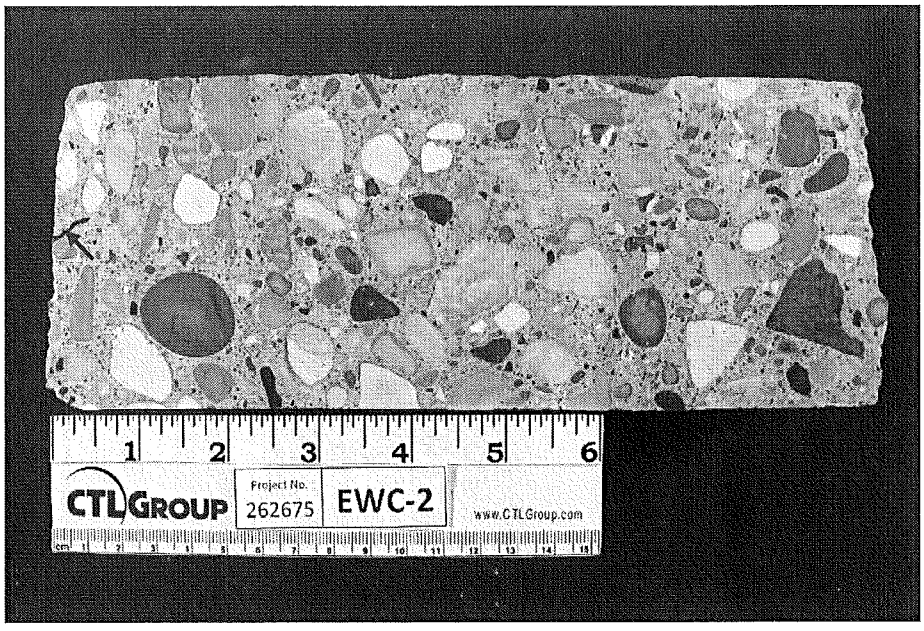


**Fig. 2 Cut and lapped section of Core EWC-2. Top surface at left. A single subvertical microcrack, marked with black marker and indicated with a red arrow, is observed extending from the surface of the core to a depth of 10 mm (0.4 in.).**

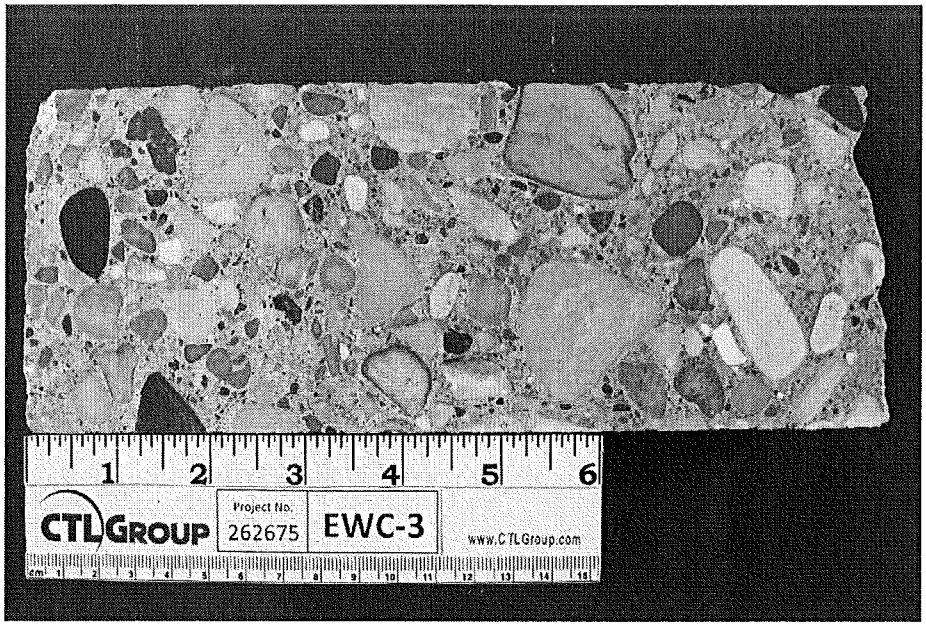


**Fig. 3 Cut and lapped section of Core EWC-3. Top surface at left. No apparent cracks/microcracks are observed in the core.**

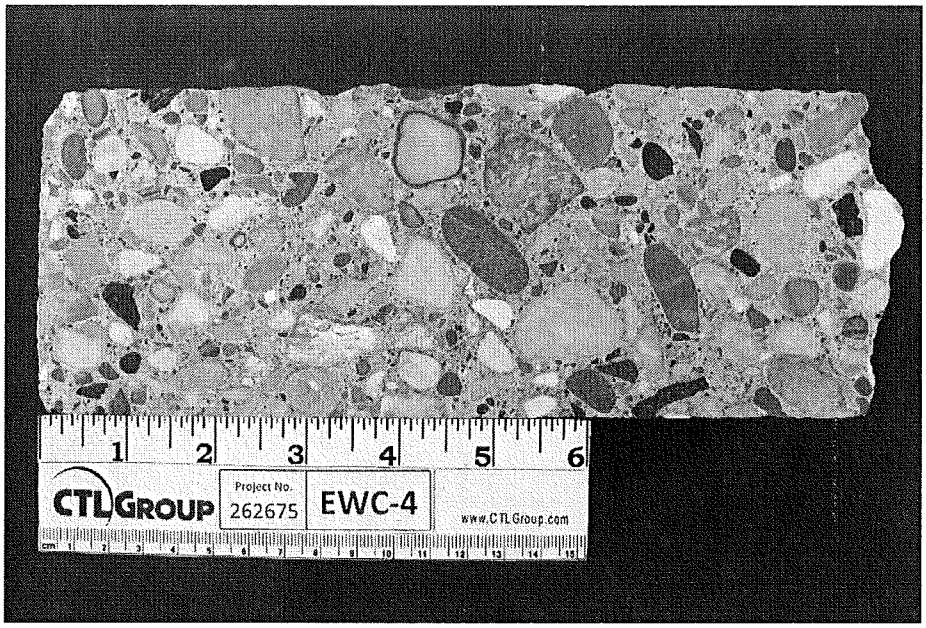


**Fig. 4 Cut and lapped section of Core EWC-4. Top surface at left. No apparent cracks/microcracks are observed in the core.**

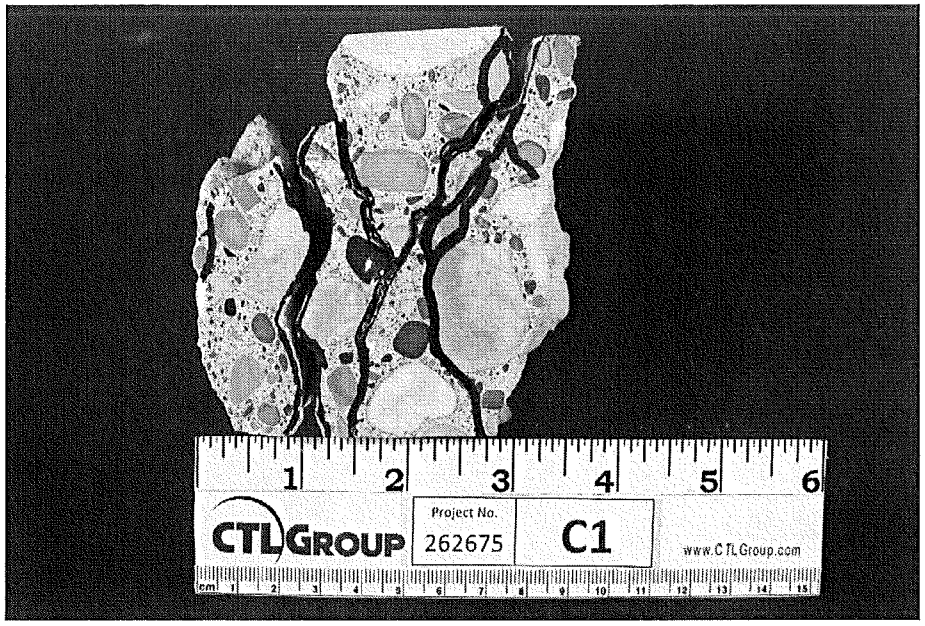


**Fig. 5** Cut and lapped section of Core C1. Top surface at left. Surface-parallel microcracks are tracked with black pen to better show their pattern. Thickness of actual cracks, in general, is much smaller than the thickness of the tracings.

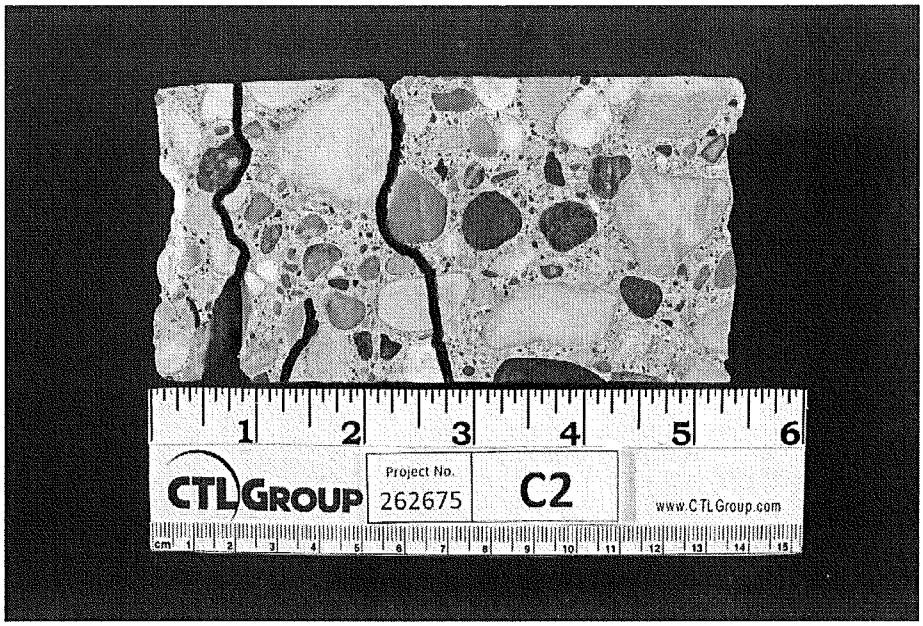


**Fig. 6** Cut and lapped section of Core C2. Top surface at left. Surface-parallel microcracks are tracked with black pen to better show their pattern. Thickness of actual cracks, in general, is much smaller than the thickness of the tracings.

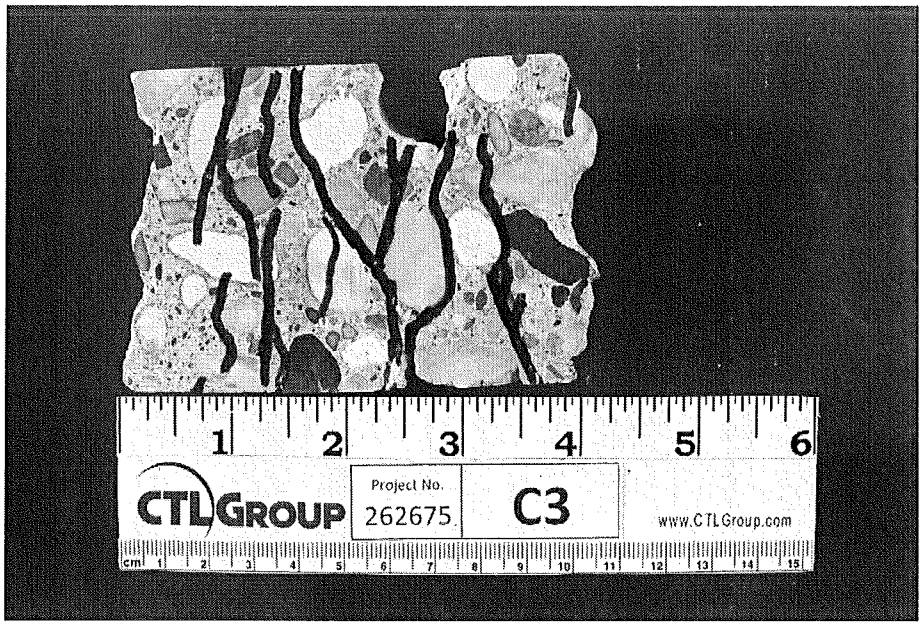


**Fig. 7 Cut and lapped section of Core C3. Top surface at left. Surface-parallel microcracks are tracked with black pen to better show their pattern. Thickness of actual cracks, in general, is much smaller than the thickness of the tracings.**

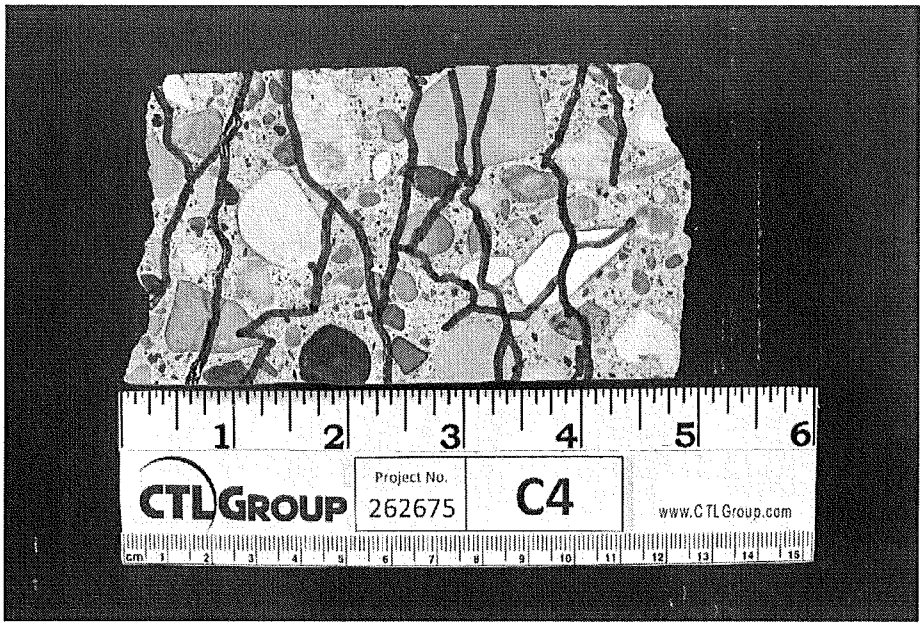


**Fig. 8 Cut and lapped section of Core C4. Top surface at left. Surface-parallel microcracks are tracked with black pen to better show their pattern. Thickness of actual cracks, in general, is much smaller than the thickness of the tracings.**

# TREATED WATER STORAGE IMPROVEMENTS
# L17-5108

# APPENDIX C

## TREATED WATER STORAGE PLANNING STUDY
## CDM SMITH, 2014

REPORT

# City of Evanston
# Treated Water Storage Planning Study

## Summary of Findings

December 17, 2014 Update

CDM Smith

# Table of Contents

# Figures



# Tables



# Appendices

# Section 1
# Introduction

## 1.1 Purpose and Introduction

CDM Smith is assisting the City of Evanston (Evanston) with the Treated Water Storage Planning Study. The purpose of this study is to identify a feasible, cost-effective, and reliable strategy to address long-term finished water storage for the Evanston system. The scope of this project includes:

- An evaluation of the finished water storage needs of the Evanston Water Treatment Plant (WTP);
- An evaluation of six alternatives to address finished water storage at the Evanston WTP
- A life-cycle cost evaluation of the finished water storage alternatives

## 1.2 Report Organization

This report presents a summary of the results of the Finished Water Storage Planning Study. This report is organized into four sections, and the following gives a brief overview of what is included in each section:

- **Section 1 – Introduction**
- **Section 2 – Summary of Finished Water Storage Needs Assessment**
- **Section 3 – Summary of Finished Water Storage Alternatives Evaluation**
- **Section 4 – Life-Cycle Cost Analyses**

# Section 2
# Summary of Finished Water Storage Needs Assessment

The initial step in the Treated Water Storage Planning Study was to conduct a Finished Water Storage Needs Assessment for the Evanston drinking water production and distribution system. This assessment included the following:

- review of existing finished water storage
- review of applicable regulatory requirements for finished water storage
- review of industry guidance on the sizing of finished water storage
- comparison to finished water storage of other Lake Michigan water utilities

A technical memorandum was prepared that provides a detailed discussion of the findings of the Finished Water Storage Needs Assessment. This memorandum is included as **Appendix A** to this report.

Key conclusions of this assessment include the following:

- The existing total volume of clearwell water storage at the Evanston WTP meets all applicable regulatory requirements for sizing of finished water storage facilities.
- The existing finished water reservoir and standpipes in the Evanston and Skokie distribution systems meet the recommended sizing criteria of AWWA M32 for equalization and fire flow storage.
- Evanston's share of emergency water storage volume at the Evanston WTP and within the Evanston/Skokie distribution system can provide up to the average daily water demand (ADD) volume of storage. Unless an Evanston risk management assessment recommends emergency water storage in excess of the ADD volume, the existing storage volumes appear to be appropriately sized for Evanston's current demands.
- Evanston's current volume of finished water storage follows similar sizing percentages to the storage facilities owned by similarly-sized Lake Michigan water utilities.

**Table 2-1** provides a summary of the existing finished water storage facilities for the Evanston water system. Clearwells 1 thru 4 and the 1934 clearwell have reached an age that is often considered the end of the anticipated design life for concrete structures. In addition, previous evaluations have identified the need for significant structural improvements to the 1934 Clearwell and the need for improvements to Clearwells 1 thru 4.

**Table 2-1. Existing Finished Water Storage Facilities**

| Existing Facility | Gross Storage Volume (MG) | Usable Storage Volume (MG)[1] | Year of Construction | Reported Condition |
|---|---|---|---|---|
| **Finished Water Storage at the Evanston WTP** | | | | |
| Clearwells 1 & 2 | 1.75 | 0.875 | 1913 | Aging structures in need of crack repair |
| Clearwells 3 & 4 | 0.65 | 0.325 | 1923 | Aging structures in need of crack repair |
| Clearwells 5 & 6 | 1.0 | 0.5 | 1948 | Good condition |
| Clearwells 7 & 8 | 1.0 | 0.5 | 1964 | Good condition |
| Existing 1934 Clearwell | 5.0 | 3.0 | 1934 | In need of significant repair/replacement |
| **WTP Clearwell Totals** | **9.4** | **5.2** | | |
| **Finished Water Storage within the Evanston Distribution System** | | | | |
| South Standpipe | 5.0 | 4.0 | 1984 | Good condition |
| North Standpipe | 7.5 | 6.0 | 1986 | Good condition |
| **Evanston Distribution System Totals** | **12.5** | **10.0** | | |
| **Finished Water Storage within the Skokie Distribution System** | | | | |
| South Reservoir | 4.9 | 4.6 | Unknown | |
| North Standpipe | 4.9 | 4.1 | Unknown | |
| **Skokie Distribution System Totals** | **9.8** | **8.7** | | |

**Notes:**
[1]Usable storage volume estimated by Evanston.

# Section 3
# Summary of Finished Water Storage Alternatives Evaluation

A finished water storage alternatives evaluation was conducted for the Evanston WTP. This assessment included the following:

- review of the condition assessments of the existing Evanston WTP clearwell facilities
- review of applicable regulatory requirements for the design and construction of finished water storage facilities
- review of proposed repairs to existing Clearwells 1 thru 4
- review of five alternatives for improving or expanding Evanston finished water storage facilities

The finished water storage alternatives that were evaluated are those that were identified within the Request for Proposals and in the Kick-Off meeting for this project. These five alternatives include:

- repair existing 1934 Clearwell per recommendations of previous engineering studies (Alternative A)
- rehabilitate existing 1934 Clearwell roof slab in place (Alternative B)
- replace 1934 Clearwell near existing footprint (Alternative C)
- construct new clearwell on east side of Sheridan Road (Alternative D)
- construct new finished water reservoir at Leahy Park (Alternative E)

A technical memorandum was prepared that provides a detailed discussion of the findings of the Finished Water Storage Alternatives Evaluation. This memorandum is included as **Appendix B** to this report. A summary of each of these alternatives is provided below.

## 3.1 Repair Existing 1934 Clearwell per Recommendations of Previous Engineering Studies (Alternative A)

### 3.1.1 Description of Alternative

The existing clearwell structures at the Evanston WTP include a standalone 5 MG below-ground cast-in-place reinforced concrete structure located to the southeast of the WTP site that was constructed in 1934. The roof slab of the clearwell is currently being used as a parking lot by Northwestern University. Structural inspections of this clearwell conducted in 2012 and 2013 identified the need for significant repairs to this structure.

Recommended improvements to the 1934 Clearwell under this alternative include the following:

- Demolish and replace entire roof slab and column drop panels.
- Repair all the cracks in the interior wall and floor slab surfaces by injection of an appropriate NSF61-approved resin material.
- Clean, paint, and patch all exposed rebars in the walls and floor slab.
- Install new FRP baffles and demolish interior 42-inch piping.

- Install new clearwell overflow.
- Install new clearwell venting.
- Install new personnel and equipment access hatches.
- Install new emergency water pumping system.

### 3.1.2 Estimated Remaining Service Life Following Repairs

After the repair/replacement is completed, it is estimated that the tank structure will have an approximate remaining service life of 30 years before any major repairs are required.

It is recommended that the 1934 Clearwell be inspected for cracks, spalls, exposed rebars and other defects every 5 years. All defects identified in the inspection shall be repaired. Records of each inspection should be maintained to allow for evaluation of rate of crack development that would provide the ability to make more accurate predictions of remaining service life of this structure.

### 3.1.3 Construction Duration

The duration of construction is estimated to be approximately 15 months. The electrical improvements associated with the emergency pumping system are expected to govern the overall schedule duration. Additional time would be required for design, bidding, and project administration. The recommended repairs to the 1934 Clearwell will require the structure to be taken out of service and drained. The clearwell would be expected to remain out of service for approximately ten months.

### 3.1.4 Opinion of Capital Construction Costs

An opinion of probable construction cost was developed for the improvements recommended for this alternative. This cost estimate considers general condition costs, conceptual costs; undeveloped design detail costs; contractor fees, overhead, and profit costs; construction contingencies for change orders; and engineering and administration related costs. This is a preliminary design level cost opinion and has a corresponding level of uncertainty relative to the future bidding environment and future equipment costs, as well as the inherent uncertainty that exists at the preliminary stage of a project associated with design details to be developed during final design. The costs are presented in 2014 dollars. Escalation of this cost for inflation to an estimated midpoint of construction in 2016 is included in the life-cycle cost analysis presented in **Appendix E**.

The opinion of probable construction cost for the repair of the existing 1934 Clearwell and associated improvements discussed herein is **$5,300,000 (2014 dollars)**. A detailed breakdown of this cost estimate is provided in **Appendix C**.

## 3.2 Rehabilitate Existing 1934 Clearwell Roof in Place (Alternative B)

### 3.2.1 Description of Alternative

Rehabilitation of the existing roof of the 1934 Clearwell is proposed as an alternative to replacement. Rehabilitation would generally consist of constructing a new structural slab above the existing roof slab to eliminate the external loads applied to the existing slab. This would eliminate the cost of demolition of the existing structures and reduce the impact on operations of the Evanston WTP during construction.

Recommended improvements to the 1934 Clearwell under this alternative include the following:

- Construct a new structural slab above the existing 1934 Clearwell roof slab.
- Repair all the cracks in the interior wall and floor slab surfaces by injection of an appropriate NSF61-approved resin material.
- Install new FRP baffles and demolish interior 42-inch piping.
- Install new clearwell overflow.
- Install new clearwell venting.
- Install new personnel and equipment access hatches.
- Install new emergency water pumping system.

### 3.2.2 Estimated Remaining Service Life Following Repairs

After the repair/replacement is completed, it is estimated that the tank structure will have an approximate remaining service life of 30 years before any major repairs are required.

It is recommended that the 1934 Clearwell be inspected for cracks, spalls, exposed rebars and other defects every 5 years. All defects identified in the inspection shall be repaired. Records of each inspection should be maintained to allow for evaluation of rate of crack development that would provide the ability to make more accurate predictions of remaining service life of this structure.

### 3.2.3 Construction Duration

The duration of construction is estimated to be approximately 15 months. The electrical improvements associated with the emergency pumping system are expected to govern the overall schedule duration. Additional time would be required for design, bidding, and project administration. The recommended repairs to the 1934 Clearwell will require the structure to be taken out of service and drained. The clearwell would be expected to remain out of service for approximately 3 to 4 months.

### 3.2.4 Opinion of Capital Construction Costs

An opinion of probable construction cost was developed for the improvements recommended for this alternative. This cost estimate considers general condition costs, conceptual costs; undeveloped design detail costs; contractor fees, overhead, and profit costs; construction contingencies for change orders; and engineering and administration related costs. This is a preliminary design level cost opinion and has a corresponding level of uncertainty relative to the future bidding environment and future equipment costs, as well as the inherent uncertainty that exists at the preliminary stage of a project associated with design details to be developed during final design. The costs are presented in 2014 dollars. Escalation of this cost for inflation to an estimated midpoint of construction in 2016 is included in the life-cycle cost analysis presented in **Appendix E**.

The opinion of probable construction cost for the rehabilitation of the existing 1934 Clearwell roof and associated improvements discussed herein is **$4,400,000 (2014 dollars)**. A detailed breakdown of this cost estimate is provided in **Appendix C**.

# 3.3 Replace 1934 Clearwell near Existing Footprint (Alternative C)

## 3.3.1 Description of Alternative

This alternative consists of the replacement of the existing 1934 Clearwell with a similarly sized new clearwell in approximately the same location. The new clearwell is proposed to be located slightly east of the existing clearwell to allow for the desired relocation of North Campus Drive to the west of the new clearwell. The new clearwell would match roughly the same hydraulic conditions of the existing clearwell.

Recommended improvements under this alternative include the following:

- Demolish existing 1934 Clearwell structure.
- Construct new 5.0 MG clearwell structure slightly to the east of the existing structure. The new clearwell will include vents, overflow, access hatches and underdrains as required by the IEPA.
- Install emergency water pumps with the new structure.
- Use of sheet piling is assumed to protect adjacent structures during demolition of the existing clearwell and construction of the new clearwell. (A feasibility study is required prior to the start of detailed design, as discussed in **Appendix B**.)
- Install a new sump pump station and sediment separator to allow for discharge of the underdrain water to the sewer system.

## 3.3.2 Estimated Service Life of New Clearwell

It is estimated that the new clearwell tank structure will have an approximate service life of 100 years or longer.

## 3.3.3 Construction Duration

The duration of demolition and construction of the new facilities is estimated to be approximately 15 months. The electrical improvements associated with the emergency pumping system are expected to govern the overall schedule duration. Additional time would be required for design, bidding, and project administration. It is expected that the new clearwell facilities could be put into use within 12 months of the start of construction in advance of the completion of the emergency pumping system.

## 3.3.4 Opinion of Capital Construction Costs

An opinion of probable construction cost was developed for the improvements recommended for this alternative. This cost estimate considers general condition costs, conceptual costs; undeveloped design detail costs; contractor fees, overhead, and profit costs; construction contingencies for change orders; and engineering and administration related costs. This is a preliminary design level cost opinion and has a corresponding level of uncertainty relative to the future bidding environment and future equipment costs, as well as the inherent uncertainty that exists at the preliminary stage of a project associated with design details to be developed during final design. The costs are presented in 2014 dollars. Escalation of this cost for inflation to an estimated midpoint of construction in 2016 is included in the life-cycle cost analysis presented in **Appendix E**. The relocation of North Campus Drive and any associated utilities are assumed to be completed under a separate project. These costs are not reflected in the opinion of probable construction cost shown below.

The opinion of probable construction cost for replacing the 1934 Clearwell and associated improvements discussed herein is **$19,000,000 (2014 dollars)**. A detailed breakdown of this cost estimate is provided in **Appendix C**.

# 3.4 Construct New Clearwell on East Side of Sheridan Road (Alternative D)

## 3.4.1 Description of Alternative

This alternative consists of the construction of a new clearwell that would be located at the southeast corner of Sheridan Road and Milburn Street. The new clearwell would be hydraulically connected to the existing Evanston clearwells.

Recommended improvements under this alternative include the following:

- Construct new 5.0 MG clearwell structure on the east side of Sheridan Road. The new clearwell will include vents, overflow, access hatches and underdrains as required by the IEPA.
- Install emergency water pumps with the new structure.
- Use of sheet piling is assumed to protect Sheridan Road and adjacent structures during construction of the new clearwell. (A feasibility study is required prior to the start of detailed design, as discussed in **Appendix B**.)
- Install a new sump pump station and sediment separator to allow for discharge of the underdrain water to the storm sewer system.

## 3.4.2 Estimated Service Life of New Clearwell

It is estimated that the new clearwell tank structure will have an approximate service life of 100 years or longer.

## 3.4.3 Construction Duration

The duration of construction of the new facilities is estimated to be approximately 15 months. The electrical improvements associated with the emergency pumping system are expected to govern the overall schedule duration. Additional time would be required for design, bidding, and project administration. It is expected that the new clearwell facilities could be put into use within 11 months of the start of construction in advance of the completion of the emergency pumping system.

## 3.4.4 Opinion of Capital Construction Costs

An opinion of probable construction cost was developed for the improvements recommended for this alternative. This cost estimate considers general condition costs, conceptual costs; undeveloped design detail costs; contractor fees, overhead, and profit costs; construction contingencies for change orders; and engineering and administration related costs. This is a preliminary design level cost opinion and has a corresponding level of uncertainty relative to the future bidding environment and future equipment costs, as well as the inherent uncertainty that exists at the preliminary stage of a project associated with design details to be developed during final design. The costs are presented in 2014 dollars. Escalation of this cost for inflation to an estimated midpoint of construction in 2016 is included in the life-cycle cost analysis presented in **Appendix E**. Property acquisition and demolition of the single family residence at 2437 Sheridan Road are assumed to be completed under a separate project. These costs are not reflected in the opinion of probable construction cost shown below.

The opinion of probable construction cost for constructing a new clearwell on the east side of Sheridan Road and associated improvements discussed herein is **$20,000,000 (2014 dollars)**. A detailed breakdown of this cost estimate is provided in **Appendix C**.

# 3.5 Construct New Reservoir at Leahy Park (Alternative E)

## 3.5.1 Description of Alternative

This alternative consists of the construction of a new 7.0 MG finished water storage reservoir within Leahy Park in Evanston. The new reservoir would be filled from a new connection to the existing 36-inch finished water main that runs through Leahy Park. A new pump station would be constructed adjacent to the new reservoir to pump water from the reservoir back into the distribution system piping.

Recommended improvements under this alternative include the following:

- Construct new 7.0 MG above-ground reservoir structure within Leahy Park. The structure will be supported on drilled caissons. The new reservoir will include vents, overflow, and access hatches as required by the IEPA.
- Construct a new 7.5 MGD pump station adjacent to the reservoir.
- Tennis court facilities are assumed to be constructed above the new reservoir structure.
- Construct new stormwater detention system underneath Leahy Park.

## 3.5.2 Estimated Service Life of New Reservoir

It is estimated that the new reservoir tank structure will have an approximate service life of 100 years or longer.

## 3.5.3 Construction Duration

The duration of construction for demolition and construction of the new facilities is estimated to be approximately 15 months. The electrical improvements associated with the new pumping system are expected to govern the overall schedule duration.

## 3.5.4 Opinion of Capital Construction Costs

An opinion of probable construction cost was developed for the improvements recommended for this alternative. This cost estimate considers general condition costs, conceptual costs; undeveloped design detail costs; contractor fees, overhead, and profit costs; construction contingencies for change orders; and engineering and administration related costs. This is a preliminary design level cost opinion and has a corresponding level of uncertainty relative to the future bidding environment and future equipment costs, as well as the inherent uncertainty that exists at the preliminary stage of a project associated with design details to be developed during final design. The costs are presented in 2014 dollars. Escalation of this cost for inflation to an estimated midpoint of construction in 2016 is included in the life-cycle cost analysis presented in **Appendix E**.

The opinion of probable construction cost for constructing a new reservoir at Leahy Park and associated improvements discussed herein is **$22,000,000 (2014 dollars)**. A detailed breakdown of this cost estimate is provided in **Appendix C**.

# 3.6 Repair Existing Clearwells 1 thru 4

## 3.6.1 Description

Repair of Clearwells 1 thru 4 is assumed to be conducted under each of the alternative strategies discussed above.

Clearwells 1 & 2, located beneath filter basins 1 thru 6, were constructed in 1913. Clearwells 3 & 4, located beneath filter basins 7 thru 12, were constructed in 1923. Inspections of Clearwells 1 & 2, conducted by the CTL Group in 2010 and 2014, identified need for structural repairs of these clearwells. Due to their similar age, it is expected that Clearwells 3 &4 are in a similar condition to Clearwells 1 & 2.

Clearwells 5 & 6, located beneath filter basins 13 thru 18, were constructed in 1948. Clearwells 7 & 8, located beneath filter basins 19 thru 24, were constructed in 1964. An inspection of Sedimentation Basins 1 & 2, by the CTL Group in 2012, found these structures to be in good condition. Since Clearwells 5 & 6 were constructed at the same time as Sedimentation Basins 1 & 2, these structures are expected to be in similar condition. Clearwells 7 & 8 are the newest clearwell structures and are assumed to also be in good condition.

Recommended improvements to Clearwells 1 thru 4 include repair all of the cracks in the interior wall surfaces and interior ceiling surfaces exhibiting current or previous infiltration by injection of an appropriate NSF61- approved resin material. No improvements are recommended for Clearwells 5 thru 8 at this time.

## 3.6.2 Estimated Remaining Service Life Following Repairs

- Clearwells 1 & 2: 30 years
- Clearwells 3 & 4: 40 years
- Clearwells 5 & 6: 50 years
- Clearwells 7 & 8: 70 years

It is recommended that Clearwells 1 thru 8 be inspected for cracks, spalls, exposed rebars and other defects every 5 years. All defects identified in the inspection shall be repaired. Records of each inspection should be maintained to allow for evaluation of rate of crack development that would provide the ability to make more accurate predictions of remaining service life of these structures.

## 3.6.3 Estimated Construction Duration

The recommended repairs to Clearwells 1 thru 4 will require the clearwells to be taken out of service and drained. The duration of construction is estimated to be approximately 1 month per clearwell. Assuming the repairs are completed sequentially, the total repair duration is estimated to be 4 months. Additional time would be required for design, bidding, and project administration.

## 3.6.4 Opinion of Probable Construction Costs

An opinion of probable construction cost was developed for the improvements recommended for this alternative. This cost estimate considers general condition costs, conceptual costs; undeveloped design detail costs; contractor fees, overhead, and profit costs; construction contingencies for change orders; and engineering and administration related costs. This is a preliminary design level cost opinion and has a corresponding level of uncertainty relative to the future bidding environment and future equipment costs, as well as the inherent uncertainty that exists at the preliminary stage of a project associated with design details to be developed during final design. The costs are presented in 2014 dollars. Escalation of this cost

for inflation to an estimated midpoint of construction in 2015 is included in the life-cycle cost analyses presented in **Appendix E**.

The opinion of probable construction cost for the repair of existing Clearwells 1 thru 4 is **$470,000 (2014 dollars)**. A detailed breakdown of this cost estimate is provided in **Appendix C**.

## 3.7 Summary of Alternatives

**Table 3-1** presents a summary of the six finished water storage alternatives discussed above.

**Table 3-1. Summary of Proposed Finished Water Storage Alternatives**

| Proposed Alternative | Estimated Service Life | Opinion of Probable Construction Cost (2014 Dollars)[1,2] |
|---|---|---|
| Alternative A: Repair Existing 1934 Clearwell per Recommendations of Previous Engineering Studies | 30 years | $5,300,000 |
| Alternative B: Rehabilitate Existing 1934 Clearwell Roof in Place | 30 years | $4,400,000 |
| Alternative C: Replace 1934 Clearwell near Existing Footprint | 100 years | $19,000,000 |
| Alternative D: Construct New Clearwell on East Side of Sheridan Road | 100 years | $20,000,000 |
| Alternative E: Construct New Reservoir at Leahy Park | 100 years | $22,000,000 |
| Repair Clearwells 1 thru 4 (Common to Alternatives A thru E) | CW 1&2: 30 years<br>CW 3&4: 40 years<br>CW 5&6: 50 years<br>CW 7&8: 70 years | $470,000 |

**Notes:**

[1] Construction cost estimates should be updated to anticipated midpoint of construction for planning purposes.

[2] Costs presented are preliminary design level cost opinions that have a corresponding level of uncertainty relative to the future bidding environment and future equipment costs, as well as the inherent uncertainty that exists at the preliminary stage of a project associated with design details to be developed during final design.

# Section 4
# Life-Cycle Cost Analyses

## 4.1 Strategies for Implementing Finished Water Storage Facility Improvements

Five alternative strategies were identified for managing and implementing finished water storage facilities for the Evanston WTP over the 50-year time frame from the year 2015 to 2065. These are summarized in **Table 4-1**.

## 4.2 Life-Cycle Cost Analyses

A life-cycle cost analysis was conducted to evaluate the present-worth equivalent costs of alternative strategies for implementing finished water storage facilities for Evanston. Key components of the life-cycle cost analysis include the following:

- Life-cycle costs include the capital cost of facility improvements as discussed in Section 3 of this report as well as an allowance for the inspection and crack repair of clearwell structures over 50 years old every five years. The life-cycle costs were developed from preliminary design level cost opinions and have a corresponding level of uncertainty relative to the future bidding environment and future equipment costs, as well as the inherent uncertainty that exists at the preliminary stage of a project associated with design details to be developed during final design.
- The life-cycle costs presented for rehabilitation of the aging existing clearwells are worst case scenarios where full replacement of the clearwells is assumed to be required at the end of the life-cycle. This is a conservative assumption. It is possible, however, that rather than replacement at the end of that life-cycle another rehabilitation project could be implemented to further extend the life of these existing structures. It is also possible that the structures could last longer than the projected life. The recommended repeated inspections of these existing structures every five years will allow for reassessment of these structures over time.
- In 2045, Clearwells 1 thru 4 are assumed to be abandoned and a new 3 MG clearwell is proposed to be constructed on the Evanston WTP site. The cost for the future abandonment of Clearwells 1 thru 4 has not been included in the Life-Cycle Cost Analyses. This is because the filters which are constructed over the clearwells may also be near the end of their life-cycle at that time. The treatment technology to replace those filters is unknown at this time and it is assumed that the costs for abandonment would be part of the greater filter replacement project which is beyond the scope of this project. As the abandonment of these clearwells is assumed for each of the considered alternatives, the cost for abandonment would not affect the relative outcome of this analysis.
- The real value of future costs were inflated at a rate of 4.0 percent. This is the current 30 year average annual increase in construction costs for the Chicago area, as published by the Engineering News Record (**Appendix D**).
- The present worth value of future payments were discounted to 2015 dollars for a variety of discount rates, ranging from 2.0 percent to 7.0 percent.

**Table 4-2** presents a summary of the life-cycle cost analyses for each of the implementation strategies listed in **Table 4-1**. The lowest life cycle cost alternative for each discount rate are shown in bold text. The detailed life-cycle cost breakdowns are included in **Appendix E**.

**Table 4-1. Finished Water Storage Management Strategies**

| Alternative | Years 1 – 5 | Years 5 – 30 | Years 30-40 | Years 40-50 |
|---|---|---|---|---|
| **Alternative A** | ▪ Demolish and replace 1934 Clearwell roof<br>▪ Repair Clearwells 1 - 4<br>***WTP Storage: 9.4 MG***<br>***Distribution Storage: 12.5 MG*** | ▪ Inspect and repair cracks of 1934 Clearwell every 5 years<br>▪ Inspect and repair cracks of Clearwells 1 thru 8 every 5 years<br>***WTP Storage: 9.4 MG***<br>***Distribution Storage: 12.5 MG*** | ▪ Demolish 1934 Clearwell and replace<br>▪ Decommission Clearwells 1 – 4 and construct new 3.0 MG Clearwell east of Sheridan Road<br>▪ Inspect and repair cracks of Clearwells 5 thru 8 every 5 years<br>***WTP Storage: 10.0 MG***<br>***Distribution Storage: 12.5 MG*** | ▪ Inspect and repair cracks of Clearwells 5 thru 8 every 5 years<br>***WTP Storage: 10.0 MG***<br>***Distribution Storage: 12.5 MG*** |
| **Alternative B** | ▪ Rehabilitated 1934 Clearwell roof in place<br>▪ Repair Clearwells 1 - 4<br>***WTP Storage: 9.4 MG***<br>***Distribution Storage: 12.5 MG*** | ▪ Inspect and repair cracks of 1934 Clearwell every 5 years<br>▪ Inspect and repair cracks of Clearwells 1 thru 8 every 5 years<br>***WTP Storage: 9.4 MG***<br>***Distribution Storage: 12.5 MG*** | ▪ Demolish 1934 Clearwell and replace<br>▪ Decommission Clearwells 1 – 4 and construct new 3.0 MG Clearwell east of Sheridan Road<br>▪ Inspect and repair cracks of Clearwells 5 thru 8 every 5 years<br>***WTP Storage: 10.0 MG***<br>***Distribution Storage: 12.5 MG*** | ▪ Inspect and repair cracks of Clearwells 5 thru 8 every 5 years<br>***WTP Storage: 10.0 MG***<br>***Distribution Storage: 12.5 MG*** |
| **Alternative C** | ▪ Demolish entire 1934 Clearwell and replace<br>▪ Repair Clearwells 1 - 4<br>***WTP Storage: 9.4 MG***<br>***Distribution Storage: 12.5 MG*** | ▪ Inspect and repair cracks of Clearwells 1 thru 8 every 5 years<br>***WTP Storage: 9.4 MG***<br>***Distribution Storage: 12.5 MG*** | ▪ Decommission Clearwells 1 – 4 and construct new 3.0 MG Clearwell east of Sheridan Road<br>▪ Inspect and repair cracks of Clearwells 5 thru 8 every 5 years<br>***WTP Storage: 10.0 MG***<br>***Distribution Storage: 12.5 MG*** | ▪ Inspect and repair cracks of Clearwells 5 thru 8 every 5 years<br>***WTP Storage: 10.0 MG***<br>***Distribution Storage: 12.5 MG*** |
| **Alternative D** | ▪ Decommission 1934 Clearwell and construct new clearwell east of Sheridan Road<br>▪ Repair Clearwells 1 - 4<br>***WTP Storage: 9.4 MG***<br>***Distribution Storage: 12.5 MG*** | ▪ Inspect and repair cracks of Clearwells 1 thru 8 every 5 years<br>***WTP Storage: 9.4 MG***<br>***Distribution Storage: 12.5 MG*** | ▪ Decommission Clearwells 1 – 4 and construct new 3.0 MG Clearwell in place of Clearwells 1 - 4<br>▪ Inspect and repair cracks of Clearwells 5 thru 8 every 5 years<br>***WTP Storage: 10.0 MG***<br>***Distribution Storage: 12.5 MG*** | ▪ Inspect and repair cracks of Clearwells 5 thru 8 every 5 years<br>***WTP Storage: 10.0 MG***<br>***Distribution Storage: 12.5 MG*** |
| **Alternative E** | ▪ Decommission 1934 Clearwell and construct new reservoir in Leahy Park<br>▪ Repair Clearwells 1 - 4<br>***WTP Storage: 4.4 MG[1]***<br>***Distribution Storage: 19.5 MG*** | ▪ Inspect and repair cracks of Clearwells 1 thru 8 every 5 years<br>***WTP Storage: 4.4 MG[1]***<br>***Distribution Storage: 19.5 MG*** | ▪ Decommission Clearwells 1 – 4 and construct new 3.0 MG Clearwell east of Sheridan Road<br>▪ Inspect and repair cracks of Clearwells 5 thru 8 every 5 years<br>***WTP Storage: 5.0 MG***<br>***Distribution Storage: 19.5 MG*** | ▪ Inspect and repair cracks of Clearwells 5 thru 8 every 5 years<br>***WTP Storage: 5.0 MG***<br>***Distribution Storage: 19.5 MG*** |

**Notes:**

1. A minimum Clearwell storage volume of 4.5 MGD is required to maintain 108 MGD rated capacity of the Evanston WTP. Further investigation would be required to see if the existing storage could provide 4.5 MG capacity. 4.5 MG clearwell capacity is sufficient to maintain 105.6 MGD rated capacity of the Evanston WTP.

**Table 4-2. Evanston Treated Water Storage Alternatives Life-Cycle Cost Summary**

| Alternative | Life-Cycle Cost (2015 dollars) for Various Discount Rate Factors | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2.0% | 2.5% | 3.0% | 3.5% | 4.0% | 4.5% | 5.0% | 5.5% | 6.0% | 6.5% | 7.0% |
| **Alternative A** | $73,000,000 | $64,000,000 | $56,000,000 | $49,000,000 | $43,000,000 | $38,000,000 | $34,000,000 | $30,000,000 | $27,000,000 | $24,000,000 | $22,000,000 |
| **Alternative B** | $72,000,000 | $63,000,000 | $55,000,000 | $48,000,000 | $42,000,000 | $37,000,000 | **$33,000,000** | **$29,000,000** | **$26,000,000** | **$23,000,000** | **$21,000,000** |
| **Alternative C** | **$51,000,000** | **$47,000,000** | **$43,000,000** | **$40,000,000** | **$37,000,000** | **$35,000,000** | **$33,000,000** | $31,000,000 | $30,000,000 | $28,000,000 | $27,000,000 |
| **Alternative D** | $52,000,000 | $48,000,000 | $44,000,000 | $41,000,000 | $38,000,000 | $36,000,000 | $34,000,000 | $32,000,000 | $31,000,000 | $29,000,000 | $28,000,000 |
| **Alternative E** | $54,000,000 | $50,000,000 | $46,000,000 | $43,000,000 | $40,000,000 | $38,000,000 | $36,000,000 | $34,000,000 | $33,000,000 | $31,000,000 | $30,000,000 |

## 4.3 Impact of Discount Rate Factor on Lowest Life-Cycle Cost Determination

The discount rate factor used in the life-cycle analysis reflects the relative value to Evanston that comes from delaying costs to a future date. Use of a higher discount rate factor indicates a preference to defer costs to the future, while a lower discount rate shows no preference between present and future costs. There is little consistency in government decisions to use or not to use discount rates or in their choice of particular rates when they are used. A survey of 72 cities (Zerbe and Dively, 1993) found a range of discount rates used from 0 to 10 percent. Some utilities use the cost of borrowing money (i.e. bond interest rate) or the rate of return on City investments as the discount rate factor used in life-cycle analyses.

**Figure 4-1** shows the impact of discount rate factor on the life-cycle cost analysis conducted for the Evanston treated water storage alternatives. Alternative C (replace the 1934 Clearwell), which has a relatively high near-term cost, but lower overall costs, has the lowest present-worth life-cycle cost for low discount rate factors. Alternative B (, which has the lowest near-term costs, but defers significant capital cost items to the future, has the lowest present-worth life-cycle cost when higher discount rate factors are used.

The "Breakeven" discount rate factor between Alternative C and Alternative B appears to be approximately 5 percent. Thus, the most favorable life-cycle cost alternative to Evanston will depend upon what discount rate factor best reflects the relative value of future versus near-term costs.

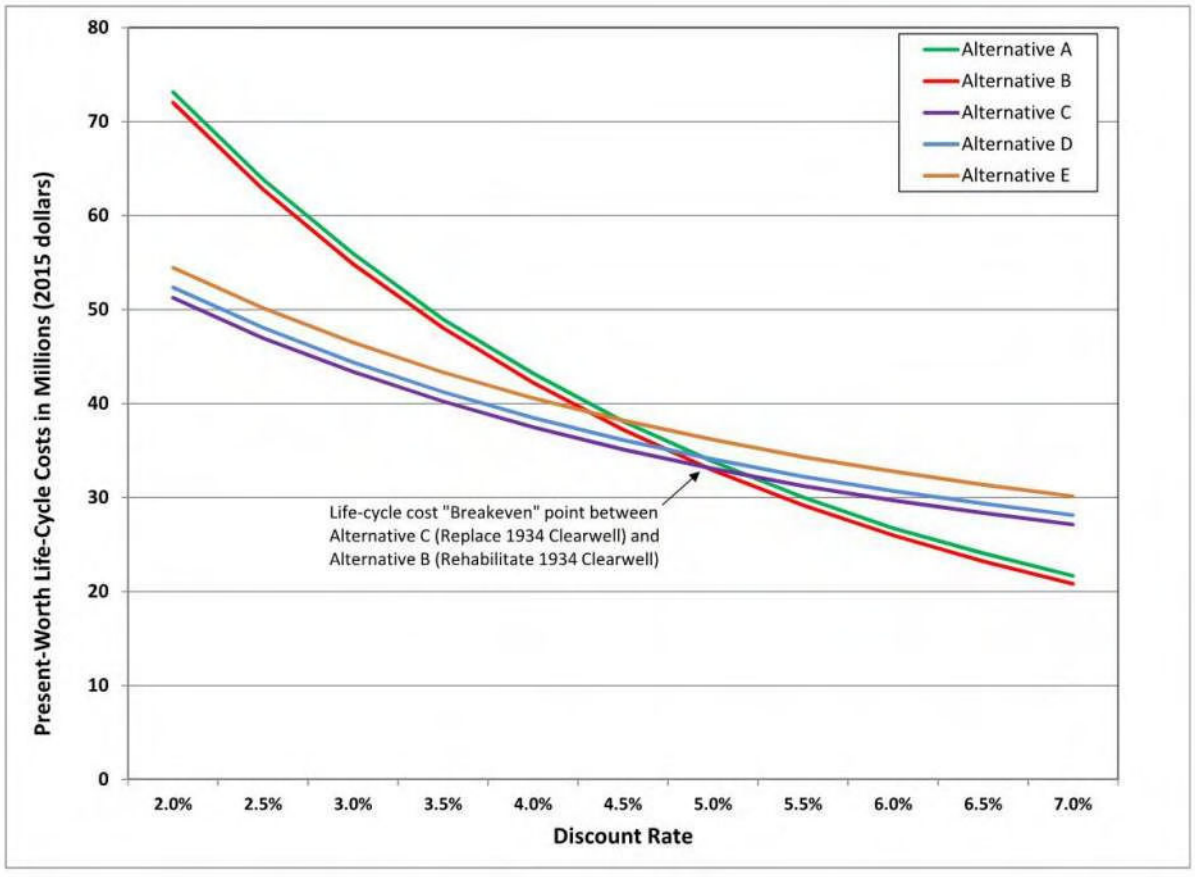


**Figure 4-1. Impact of Discount Rate Factor on Life-Cycle Cost Analysis for Evanston Treated Water Storage Alternatives Analysis**

# Appendix C
# Opinion of Probable Construction Cost Estimates (Vistara Construction Services, Inc., December 10, 2014 Update)

# ESTIMATOR'S STATEMENT OF PROBABLE CONSTRUCTION COST

**CDM Smith**

VISTARA construction services

**City of Evanston**

Water Storage Systems

Evanston, IL

**Conceptual Design Estimate - Alternative A**

*Repair Existing 1934 Clearwell*

**Revised: 10/22/2014 (Update 12/10/2014)**

**Roof Slab (SF)** 38,016

AL = Allowance; CY = Cubic Yard (volume); EA = Each; INST = Instance; LDS = Truck Loads; LF = Linear Foot; LS = Lump Sum; SF = Square Foot Area

| | DESCRIPTION | QTY. | UNIT | UNIT PRICE | BUDGET | SUB-TOTAL |
|---|---|---|---|---|---|---|
| **1000** | **GENERAL REQUIREMENTS** | | | | | **$ 873,760.00** |
| | General Conditions | 1 | LS | $ 406,100.00 | $ 406,100.00 | |
| | Haul & Dispose Debris | 1 | AL | $ 37,500.00 | $ 37,500.00 | |
| | Permits | | | | By Owner | |
| | Scaffolding | 38,016 | SF | $ 10.00 | $ 380,160.00 | |
| | Protect Existing Piping, Adjacent Structures, et. al. | 1 | AL | $ 50,000.00 | $ 50,000.00 | |
| **2000** | **EXISTING CONDITIONS** | | | | | **$ 306,290.00** |
| | Saw cut/ Penetrations for overflow boxes | 2 | EA | $ 5,000.00 | $ 10,000.00 | |
| | Demo existing 42" Dia. Piping (Inside Clear well) | 200 | LF | $ 50.00 | $ 10,000.00 | |
| | Demolish Roof Slab (144' x 264' x 8-1/2" Thick) | 38,016 | SF | $ 6.00 | $ 228,100.00 | |
| | Demo Column Drop Panels (7'-4" x 7'-4") | 72 | EA | $ 808.13 | $ 58,190.00 | |
| **3000** | **CONCRETE** | | | | | **$ 894,180.00** |
| | New 12' Dia.Caisson-type Concrete Housing, 20' Deep | 1 | LS | $ 29,500.00 | $ 29,500.00 | |
| | Replacement Roof Slab (12" Thick, w/ #6 @ 6 EW T&B) | 38,016 | SF | $ 18.00 | $ 684,290.00 | |
| | New Drop Panels at Columns (7'-4" x 7'-4" X 4-1/2") | 72 | EA | $ 1,870.00 | $ 134,640.00 | |
| | Repair Existing Wall Cracks, w/ Resin Injection | 750 | LF | $ 20.00 | $ 15,000.00 | |
| | Repair Existing Floor Cracks, w/ Resin Injection | 250 | LF | $ 17.00 | $ 4,250.00 | |
| | Exposed Rebar; Clean, Paint & Patch | 1 | AL | $ 1,500.00 | $ 1,500.00 | |
| | New Overflow System: | | | | | |
| | 10' x 15' x 9' Deep, CIP Valve Vault (Incl. Excav. & BkFill) | 1 | LS | $ 25,000.00 | $ 25,000.00 | |
| **5000** | **METALS** | | | | | **$ 47,500.00** |
| | Overflow Weir | 54 | LF | $ 250.00 | $ 13,500.00 | |
| | Fabricated Overflow Boxes x 2 | 108 | LF | $ 250.00 | $ 27,000.00 | |
| | Ladders for Access at Roof, Galv. Or St. Stl. | 2 | EA | $ 3,500.00 | $ 7,000.00 | |
| **6000** | **WOOD, PLASTICS & COMPOSITES** | | | | | **$ 131,630.00** |
| | New Fiberglass Panels (Baffles), 18' D. | 5,265 | SF | $ 25.00 | $ 131,630.00 | |
| **7000** | **THERMAL & MOISTURE PROTECTION** | | | | | **$ -** |
| **8000** | **OPENINGS** | | | | | **$ 69,000.00** |
| | New Manway and Equipment Access Hatches | | | | | |
| | Manway Hatches, 3' x 3' | 1 | EA | $ 1,500.00 | $ 1,500.00 | |
| | Equipment Hatch, 15' x 20' | 1 | EA | $ 7,500.00 | $ 7,500.00 | |
| | New Air Vents at new roof structure | 6 | EA | $ 10,000.00 | $ 60,000.00 | |

**City of Evanston** | Roof Slab (SF) | 38,016

Water Storage Systems

Evanston, IL

**Conceptual Design Estimate - Alternative A**

*Repair Existing 1934 Clearwell*

**Revised: 10/22/2014 (Update 12/10/2014)**

AL = Allowance; CY = Cubic Yard (volume); EA = Each; INST = Instance; LDS = Truck Loads; LF = Linear Foot; LS = Lump Sum; SF = Square Foot Area

| | DESCRIPTION | QTY. | UNIT | UNIT PRICE | BUDGET | SUB-TOTAL |
|---|---|---|---|---|---|---|
| **22000** | **PLUMBING** | | | | | **$ 310,500.00** |
| | Submersible 340 HP Pump | 1 | EA | $ 108,450.00 | $ 108,500.00 | |
| | Suction Pipe, 36" Dia. (C/L at ~15' Deep) | 150 | LF | $ 300.00 | $ 45,000.00 | |
| | Discharge Pipe, 24" Dia. (C/L at ~15' Deep) | 100 | LF | $ 160.00 | $ 16,000.00 | |
| | 36" Butterfly Valve | 1 | EA | $ 45,000.00 | $ 45,000.00 | |
| | 24" Butterfly Valve | 1 | EA | $ 32,000.00 | $ 32,000.00 | |
| | 24" Check Valve | 1 | EA | $ 31,000.00 | $ 31,000.00 | |
| | Connect 24" DIP to Existing 42" Pipe, Incl Disinfection | 1 | AL | $ 8,000.00 | $ 8,000.00 | |
| | Excavation and Backfill | 1 | AL | $ 25,000.00 | $ 25,000.00 | |
| **26000** | **ELECTRICAL** | | | | | **$ 394,250.00** |
| | Switch Gear & VFD for Sub. Pump (200 LF wiring) | 1 | LS | $ 376,250.00 | $ 376,250.00 | |
| | Conduit / Wire | 200 | LF | $ 40.00 | $ 8,000.00 | |
| | Misc. Conduit, Infrastructure and Wiring | 1 | AL | $ 10,000.00 | $ 10,000.00 | |
| **31000** | **EARTHWORK** | | | | | |
| **32000** | **EXTERIOR IMPROVEMENTS** | | | | | **$ 50,000.00** |
| | New concrete splash pads | 2 | EA | $ 2,500.00 | $ 5,000.00 | |
| | 2 New Retaining Wing-walls at overflow location | 150 | SF | $ 150.00 | $ 22,500.00 | |
| | New Decorative Fence at overflow location (30' x 15' H.) | 450 | SF | $ 50.00 | $ 22,500.00 | |
| **40000** | **PROCESS INTERCONNECTIONS** | | | | | **$ 36,380.00** |
| | New level transmitter and level switches | 2 | AL | $ 3,500.00 | $ 7,000.00 | |
| | Mag Meter (12" Dia w/ remote display) and Vault | 1 | AL | $ 29,375.00 | $ 29,380.00 | |
| | **CONSTRUCTION SUB-TOTAL** | | | | | **$ 3,113,500.00** |
| | BOND AND INSURANCE | 2.0% | | | | $ 62,300.00 |
| | CONTRACTOR FEE | 10% | | | | $ 317,600.00 |
| | PHASING | 0% | | | | $ - |
| | DESIGN CONTINGENCY | 25% | | | | $ 873,400.00 |
| | **CONSTRUCTION TOTAL** | | | | | **$ 4,366,800.00** |
| | CONSTRUCTION CONTINGENCY | 5% | | | | $ 218,300.00 |
| | ENGINEERING | 15% | | | | $ 687,800.00 |
| | **PROJECT TOTAL** | | | | | **$ 5,272,900.00** |

**Notes and Assumptions:**

1) Estimate is based on drawings/ narrative received from CDM Smith, via E-Mail on 9/30/2014
2) Costs are in 2014 Dollars. Escalation is excluded
3) Winter Conditions/ Premium Time is excluded. All work is straight time @ prevailing wages.
4) Environmental Remediation - excluded
5) Traffic control is excluded

# ESTIMATOR'S STATEMENT OF PROBABLE CONSTRUCTION COST

**CDM Smith**

VISTARA construction services

**City of Evanston**

Water Storage Systems

Evanston, IL

**Conceptual Design Estimate - Alternative B**

*Rehabilitate Existing 1934 Clearwell Roof in Place*

**Revised: 10/22/2014 (Update 12/10/2014)**

**Roof Slab (SF)** 38,016

AL = Allowance; CY = Cubic Yard (volume); EA = Each; INST = Instance; LDS = Truck Loads; LF = Linear Foot; LS = Lump Sum; SF = Square Foot Area

| | DESCRIPTION | QTY. | UNIT | UNIT PRICE | BUDGET | SUB-TOTAL |
|---|---|---|---|---|---|---|
| **1000** | **GENERAL REQUIREMENTS** | | | | | **$ 390,600.00** |
| | General Conditions | 1 | LS | $ 340,600.00 | $ 340,600.00 | |
| | Permits | | | | By Owner | |
| | Scaffolding | | | | N/A | |
| | Protect Existing Piping, Adjacent Structures, et. al. | 1 | AL | $ 50,000.00 | $ 50,000.00 | |
| **2000** | **EXISTING CONDITIONS** | | | | | **$ 20,000.00** |
| | Saw cut/ Penetrations for overflow boxes | 2 | EA | $ 5,000.00 | $ 10,000.00 | |
| | Demo existing 42" Dia. Piping (Inside Clear well) | 200 | LF | $ 50.00 | $ 10,000.00 | |
| | Demolish Roof Slab (144' x 264' x 8-1/2" Thick) | 38,016 | SF | | N/A | |
| | Demo Column Drop Panels (7'-4" x 7'-4") | 72 | EA | | N/A | |
| | Demo Ex. Access Hatches | 3 | EA | | N/A | |
| **3000** | **CONCRETE** | | | | | **$ 1,124,840.00** |
| | Replacement Roof Slab | | | | | |
| | Styrofoam blocking, 4" thick, between New and Ex. | 34,148 | SF | $ 4.50 | $ 153,660.00 | |
| | New Roof atop existing; 12" Thick, w/ #6 @ 6 EW T&B | 38,016 | SF | $ 18.00 | $ 684,290.00 | |
| | "Extended" Drop Panels at Columns (7'-4" x 7'-4" X 4-1/2") | 72 | EA | $ 1,870.00 | $ 134,640.00 | |
| | Drill & Epoxy #5 Dwls @ 16" at perimeter and panels | 2,130 | EA | $ 50.00 | $ 106,500.00 | |
| | Repair Existing Wall Cracks, w/ Resin Injection | 750 | LF | $ 20.00 | $ 15,000.00 | |
| | Repair Existing Floor Cracks, w/ Resin Injection | 250 | LF | $ 17.00 | $ 4,250.00 | |
| | Exposed Rebar; Clean, Paint & Patch | 1 | AL | $ 1,500.00 | $ 1,500.00 | |
| | 10' x 15' x 9' Deep, CIP Valve Vault | 1 | EA | $ 25,000.00 | $ 25,000.00 | |
| **5000** | **METALS** | | | | | **$ 47,500.00** |
| | Overflow Weir | 54 | LF | $ 250.00 | $ 13,500.00 | |
| | Fabricated Overflow Boxes x 2 | 108 | LF | $ 250.00 | $ 27,000.00 | |
| | Ladders for Access at Roof, Galv. Or St. Stl. | 2 | EA | $ 3,500.00 | $ 7,000.00 | |
| **6000** | **WOOD, PLASTICS & COMPOSITES** | | | | | **$ 131,630.00** |
| | New Fiberglass Panels (Baffles), 18' D. | 5,265 | SF | $ 25.00 | $ 131,630.00 | |
| **8000** | **OPENINGS** | | | | | **$ 69,000.00** |
| | New Manway and Equipment Access Hatches: | | | | | |
| | Manway Hatches, 3' x 3' | 1 | EA | $ 1,500.00 | $ 1,500.00 | |
| | Equipment Hatch, 15' x 20' | 1 | EA | $ 7,500.00 | $ 7,500.00 | |
| | New Air Vents at new roof structure | 6 | EA | $ 10,000.00 | $ 60,000.00 | |

**City of Evanston** | Roof Slab (SF) | 38,016

Water Storage Systems

Evanston, IL

**Conceptual Design Estimate - Alternative B**

*Rehabilitate Existing 1934 Clearwell Roof in Place*

**Revised: 10/22/2014 (Update 12/10/2014)**

AL = Allowance; CY = Cubic Yard (volume); EA = Each; INST = Instance; LDS = Truck Loads; LF = Linear Foot; LS = Lump Sum; SF = Square Foot Area

| | DESCRIPTION | QTY. | UNIT | UNIT PRICE | BUDGET | SUB-TOTAL |
|---|---|---|---|---|---|---|
| **22000** | **PLUMBING** | | | | | **$ 346,950.00** |
| | New Emergency Volume Pumping System: | | | | | |
| | New 12' Dia.Caisson-type Concrete Housing, 20' Deep | 1 | LS | $ 29,500.00 | $ 29,500.00 | |
| | Submersible 400 HP Pump | 1 | EA | $ 115,450.00 | $ 115,450.00 | |
| | Suction Pipe, 36" Dia. | 150 | LF | $ 300.00 | $ 45,000.00 | |
| | Discharge Pipe, 24" Dia. | 100 | LF | $ 160.00 | $ 16,000.00 | |
| | 36" Butterfly Valve | 1 | EA | $ 45,000.00 | $ 45,000.00 | |
| | 24" Butterfly Valve | 1 | EA | $ 32,000.00 | $ 32,000.00 | |
| | 24" Check Valve | 1 | EA | $ 31,000.00 | $ 31,000.00 | |
| | Connect 24" DIP to Existing 42" Pipe, Incl Disinfection | 1 | AL | $ 8,000.00 | $ 8,000.00 | |
| | Excavation and Backfill | 1 | AL | $ 25,000.00 | $ 25,000.00 | |
| | | | | | | |
| **26000** | **ELECTRICAL** | | | | | **$ 394,250.00** |
| | Switch Gear & VFD for Sub. Pump (200 LF wiring) | 1 | LS | $ 376,250.00 | $ 376,250.00 | |
| | Conduit / Wire | 200 | LF | $ 40.00 | $ 8,000.00 | |
| | Misc. Conduit, Infrastructure and Wiring | 1 | AL | $ 10,000.00 | $ 10,000.00 | |
| | | | | | | |
| **32000** | **EXTERIOR IMPROVEMENTS** | | | | | **$ 50,000.00** |
| | New concrete splash pads | 2 | EA | $ 2,500.00 | $ 5,000.00 | |
| | New Retaining Wing-walls at overflow location | 150 | SF | $ 150.00 | $ 22,500.00 | |
| | New Decorative Fence at overflow location (30' x 15' H.) | 450 | SF | $ 50.00 | $ 22,500.00 | |
| | | | | | | |
| **40000** | **PROCESS INTERCONNECTIONS** | | | | | **$ 36,380.00** |
| | New level transmitter and level switches | 2 | AL | $ 3,500.00 | $ 7,000.00 | |
| | Mag Meter (12" Dia w/ remote display) and Vault | 1 | AL | $ 29,375.00 | $ 29,380.00 | |
| | | | | | | |
| | **CONSTRUCTION SUB-TOTAL** | | | | | **$ 2,611,200.00** |
| | BOND AND INSURANCE | 2.0% | | | | $ 52,200.00 |
| | CONTRACTOR FEE | 10% | | | | $ 266,300.00 |
| | PHASING | 0% | | | | $ - |
| | DESIGN CONTINGENCY | 25% | | | | $ 732,400.00 |
| | **CONSTRUCTION TOTAL** | | | | | **$ 3,662,100.00** |
| | CONSTRUCTION CONTINGENCY | 5% | | | | $ 183,100.00 |
| | ENGINEERING | 15% | | | | $ 576,800.00 |
| | **PROJECT TOTAL** | | | | | **$ 4,422,000.00** |

**Notes and Assumptions:**

1) Estimate is based on drawings/ narrative received from CDM Smith, via E-Mail on 9/30/2014
2) Costs are in 2014 Dollars. Escalation is excluded
3) Winter Conditions/ Premium Time is excluded. All work is straight time @ prevailing wages.
4) Environmental Remediation - excluded
5) Traffic control is excluded

# ESTIMATOR'S STATEMENT OF PROBABLE CONSTRUCTION COST

**CDM Smith**

VISTARA construction services

**City of Evanston**
Water Storage Systems
Evanston, IL
**Conceptual Design Estimate - Alternative C**
*Replace 1934 Clearwell near Existing Footprint*
**Revised: 10/22/2014 (Update 12/10/2014)**

| | |
|---|---|
| **Floor Slab (SF)** | **38,016** |
| **Roof Slab (SF)** | **38,836** |

AL = Allowance; CY = Cubic Yard (volume); EA = Each; INST = Instance; LDS = Truck Loads; LF = Linear Foot; LS = Lump Sum; SF = Square Foot Area

| | DESCRIPTION | QTY. | UNIT | UNIT PRICE | BUDGET | SUB-TOTAL |
|---|---|---|---|---|---|---|
| **1000** | **GENERAL REQUIREMENTS** | | | | | **$ 1,966,760.00** |
| | General Conditions | 1 | LS | $ 1,436,600.00 | $ 1,436,600.00 | |
| | Permits | | | | By Owner | |
| | Scaffolding | 38,016 | SF | $ 10.00 | $ 380,160.00 | |
| | Dewatering | 1 | AL | $ 100,000.00 | $ 100,000.00 | |
| | Protect Existing Piping, Adjacent Structures, et. al. | 1 | AL | $ 50,000.00 | $ 50,000.00 | |
| **2000** | **EXISTING CONDITIONS** | | | | | **$ 924,880.00** |
| | Remove Existing Clear well (146' x 266' x 20.5' Deep) | 1 | LS | $ 670,000.00 | $ 670,000.00 | |
| | Demo Ex. Columns & Drop Panels (7'-4" x 7'-4") | 72 | EA | $ 3,540.00 | $ 254,880.00 | |
| **3000** | **CONCRETE** | | | | | **$ 3,783,890.00** |
| | New Reservoir Tank: | | | | | |
| | Perimeter Walls, 144' x 264' at 22'-6" H. & 2' Thick | 1,360 | CY | $ 800.00 | $ 1,088,000.00 | |
| | Columns; 20" Dia.x 22'-6" H. (1.9 CY) | 72 | EA | $ 7,670.00 | $ 552,240.00 | |
| | Column Drop Panels (7'-4"x7'-4"x4.5"), Top & Bottom | 144 | EA | $ 1,870.00 | $ 269,280.00 | |
| | Roof Slab, 12" Thick, Rebar #7 @ 6 EW T&B | 38,016 | SF | $ 18.00 | $ 684,290.00 | |
| | Floor Slab, 24" Thick, Rebar #8 @ 8 EW T&B | 38,836 | SF | $ 30.00 | $ 1,165,080.00 | |
| | 10' x 10' x 7' Deep Sump Pit | 1 | AL | $ 25,000.00 | $ 25,000.00 | |
| **4000** | **MASONRY** | | | | | **$ -** |
| **5000** | **METALS** | | | | | **$ 7,000.00** |
| | Ladders for Access at Roof, Galv. Or St. Stl. | 2 | EA | $ 3,500.00 | $ 7,000.00 | |
| **6000** | **WOOD, PLASTICS & COMPOSITES** | | | | | **$ 131,630.00** |
| | New Fiberglass Panels (Baffles) 18' D. | 5,265 | SF | $ 25.00 | $ 131,630.00 | |
| **7000** | **THERMAL & MOISTURE PROTECTION** | | | | | **$ -** |
| **8000** | **OPENINGS** | | | | | **$ 69,000.00** |
| | New Manway and Equipment Access Hatches | | | | | |
| | Manway Hatches, 3' x 3' | 1 | EA | $ 1,500.00 | $ 1,500.00 | |
| | Equipment Hatch, 15' x 20' | 1 | EA | $ 7,500.00 | $ 7,500.00 | |
| | New Air Vents at roof structure | 6 | EA | $ 10,000.00 | $ 60,000.00 | |

**City of Evanston**
Water Storage Systems
Evanston, IL
**Conceptual Design Estimate - Alternative C**
*Replace 1934 Clearwell near Existing Footprint*
**Revised: 10/22/2014 (Update 12/10/2014)**

| | |
|---|---|
| **Floor Slab (SF)** | **38,016** |
| **Roof Slab (SF)** | **38,836** |

**AL = Allowance; CY = Cubic Yard (volume); EA = Each; INST = Instance; LDS = Truck Loads; LF = Linear Foot; LS = Lump Sum; SF = Square Foot Area**

| | DESCRIPTION | QTY. | UNIT | UNIT PRICE | BUDGET | SUB-TOTAL |
|---|---|---|---|---|---|---|
| **22000** | **PLUMBING** | | | | | **$ 914,370.00** |
| | 48" Gate Valve | 4 | EA | $ 100,000.00 | $ 400,000.00 | |
| | 48" DIP | 220 | LF | $ 400.00 | $ 88,000.00 | |
| | 36" DIP discharge pipe (~15' Deep) | 75 | LF | $ 300.00 | $ 22,500.00 | |
| | 36" Check Valve | 1 | EA | $ 35,000.00 | $ 35,000.00 | |
| | 36" Gate Valves | 2 | EA | $ 45,000.00 | $ 90,000.00 | |
| | Connections/ Tie-ins to Existing Pipe Mains/ Disinfection (x4) | 1 | AL | $ 100,000.00 | $ 100,000.00 | |
| | 48" DIP Overflow | 30 | LF | $ 400.00 | $ 12,000.00 | |
| | Groundwater Sump Pump & Separator | 1 | LS | $ 30,000.00 | $ 30,000.00 | |
| | Submersible 400 HP Pump | 1 | EA | $ 115,450.00 | $ 115,450.00 | |
| | 8" Dia. Perforated Drain Pipe (Groundwater Control) | 857 | LF | $ 25.00 | $ 21,420.00 | |
| **26000** | **ELECTRICAL** | | | | | **$ 394,250.00** |
| | Switch Gear & VFD for Sub. Pump (200 LF wiring) | 1 | LS | $ 376,250.00 | $ 376,250.00 | |
| | Conduit & Wiring | 200 | LF | $ 40.00 | $ 8,000.00 | |
| | Misc. Conduit/ Wire/ Electrical | 1 | AL | $ 10,000.00 | $ 10,000.00 | |
| **31000** | **EARTHWORK** | | | | | **$ 2,637,410.00** |
| | PZC 18 Structural Steel Sheet Pile Wall, 35' High | 29,680 | SF | $ 50.00 | $ 1,484,000.00 | |
| | Secondary Sheet Pile Wall for New Footprint | 11,130 | SF | $ 50.00 | $ 556,500.00 | |
| | Excavation Between Sheet Pile and Existing Perimeter | 4,805 | CY | $ 35.00 | $ 168,190.00 | |
| | Secondary Excavation @ New Footprint | 412 | CY | $ 35.00 | $ 14,430.00 | |
| | Backfill at Perimeter | 5,286 | CY | $ 50.00 | $ 264,290.00 | |
| | Haul/ Dispose (10 mile round trip) | 1 | LS | $ 150,000.00 | $ 150,000.00 | |
| **32000** | **EXTERIOR IMPROVEMENTS** | | | | | **$ 151,810.00** |
| | Campus Drive Road Relocation - By Others | | | | N/A | |
| | Riprap - Erosion Control at Overflow (15' x 10' Area, Class 50) | 1 | AL | $ 18,750.00 | $ 18,750.00 | |
| | New Sod & Berm, 12" Deep / Grass Cover | 38,016 | SF | $ 3.50 | $ 133,060.00 | |
| **40000** | **PROCESS INTERCONNECTIONS** | | | | | **$ 32,880.00** |
| | New level transmitter and level switches | 1 | AL | $ 3,500.00 | $ 3,500.00 | |
| | Mag Meter (12" Dia w/ remote display) and Vault | 1 | AL | $ 29,375.00 | $ 29,380.00 | |
| | **CONSTRUCTION SUB-TOTAL** | | | | | **$ 11,013,900.00** |
| | BOND AND INSURANCE | 2.0% | | | | $ 220,300.00 |
| | CONTRACTOR FEE | 10% | | | | $ 1,123,400.00 |
| | PHASING | 0% | | | | $ - |
| | DESIGN CONTINGENCY | 25% | | | | $ 3,089,400.00 |
| | **CONSTRUCTION TOTAL** | | | | | **$ 15,447,000.00** |
| | CONSTRUCTION CONTINGENCY | 5% | | | | $ 772,400.00 |
| | ENGINEERING | 15% | | | | $ 2,432,900.00 |
| | **PROJECT TOTAL** | | | | | **$ 18,652,300.00** |

**City of Evanston**
Water Storage Systems
Evanston, IL
**Conceptual Design Estimate - Alternative C**
*Replace 1934 Clearwell near Existing Footprint*
**Revised: 10/22/2014 (Update 12/10/2014)**

| | |
|---|---|
| **Floor Slab (SF)** | **38,016** |
| **Roof Slab (SF)** | **38,836** |

**AL = Allowance; CY = Cubic Yard (volume); EA = Each; INST = Instance; LDS = Truck Loads; LF = Linear Foot; LS = Lump Sum; SF = Square Foot Area**

| DESCRIPTION | QTY. | UNIT | UNIT PRICE | BUDGET | SUB-TOTAL |
|---|---|---|---|---|---|

**Notes and Assumptions:**

1) Estimate is based on drawings/ narrative received from CDM Smith, via E-Mail on 9/30/2014
2) Costs are in 2014 Dollars. Escalation is excluded
3) Winter Conditions/ Premium Time is excluded. All work is straight time @ prevailing wages.
4) Environmental Remediation - excluded
5) Traffic control is excluded

# ESTIMATOR'S STATEMENT OF PROBABLE CONSTRUCTION COST

**CDM Smith**

VISTARA construction services

**City of Evanston**
Water Storage Systems
Evanston, IL
**Conceptual Design Estimate - Alternative D**
*Construct New Clearwell on East Side of Sheridan Road*
**Revised: 10/22/2014 (Update 12/10/2014)**

| | |
|---|---|
| **Floor Slab (SF)** | **28,275** |
| **Roof Slab (SF)** | **27,599** |

AL = Allowance; CY = Cubic Yard (volume); EA = Each; INST = Instance; LDS = Truck Loads; LF = Linear Foot; LS = Lump Sum; SF = Square Foot Area

| | DESCRIPTION | QTY. | UNIT | UNIT PRICE | BUDGET | SUB-TOTAL |
|---|---|---|---|---|---|---|
| **1000** | **GENERAL REQUIREMENTS** | | | | | **$ 1,725,900.00** |
| | General Conditions | 1 | LS | $ 1,575,900.00 | $ 1,575,900.00 | |
| | Permits | | | | By Owner | |
| | Dewatering | 1 | AL | $ 100,000.00 | $ 100,000.00 | |
| | Protect Existing Piping, Adjacent Structures, et. al. | 1 | AL | $ 50,000.00 | $ 50,000.00 | |
| **2000** | **EXISTING CONDITIONS** | | | | | **$ 5,000.00** |
| | Core/ Penetration of Ex. Clear well for connectivity | 1 | AL | $ 5,000.00 | $ 5,000.00 | |
| **3000** | **CONCRETE** | | | | | **$ 3,987,780.00** |
| | New Clear well Structure: | | | | | |
| | Perimeter, CIP Wall | 1,511 | CY | $ 800.00 | $ 1,208,890.00 | |
| | Floor Slab, 3'-0" Thick, CIP | 28,275 | SF | $ 46.00 | $ 1,300,650.00 | |
| | Columns; 24" Dia.x 30' H. | 54 | EA | $ 13,490.00 | $ 728,460.00 | |
| | Roof Slab, 12" Thick, CIP | 27,599 | SF | $ 18.00 | $ 496,780.00 | |
| | Sump Pit (10'x10'x7') | 1 | AL | $ 25,000.00 | $ 25,000.00 | |
| | CIP Concrete Vault, 15' x 8' x 9' (Incl. Excav. & Backfill) | 1 | AL | $ 32,000.00 | $ 32,000.00 | |
| | Integral Weir | | | | Included | |
| | 3' x 6' Box Culvert | 700 | LF | $ 200.00 | $ 140,000.00 | |
| | Excavation/ Backfill for Culvert | 622 | CY | $ 90.00 | $ 56,000.00 | |
| **5000** | **METALS** | | | | | **$ 7,000.00** |
| | Ladders for Access at Roof, Galv. Or St. Stl. | 2 | EA | $ 3,500.00 | $ 7,000.00 | |
| **6000** | **WOOD, PLASTICS & COMPOSITES** | | | | | **$ 144,450.00** |
| | New Fiberglass Panels (Baffles), 18' D. | 5,778 | SF | $ 25.00 | $ 144,450.00 | |
| **7000** | **THERMAL & MOISTURE PROTECTION** | | | | | **$ -** |
| **8000** | **OPENINGS** | | | | | **$ 69,000.00** |
| | New Manway and Equipment Access Hatches: | | | | | |
| | Manway Hatches, 3' x 3' | 1 | EA | $ 1,500.00 | $ 1,500.00 | |
| | Equipment Hatch, 15' x 20' | 1 | EA | $ 7,500.00 | $ 7,500.00 | |
| | New Air Vents at new roof structure | 6 | EA | $ 10,000.00 | $ 60,000.00 | |

**City of Evanston**
Water Storage Systems
Evanston, IL
**Conceptual Design Estimate - Alternative D**
*Construct New Clearwell on East Side of Sheridan Road*
**Revised: 10/22/2014 (Update 12/10/2014)**

| | |
|---|---|
| **Floor Slab (SF)** | **28,275** |
| **Roof Slab (SF)** | **27,599** |

**AL = Allowance; CY = Cubic Yard (volume); EA = Each; INST = Instance; LDS = Truck Loads; LF = Linear Foot; LS = Lump Sum; SF = Square Foot Area**

| | DESCRIPTION | QTY. | UNIT | UNIT PRICE | BUDGET | SUB-TOTAL |
|---|---|---|---|---|---|---|
| **22000** | **PLUMBING** | | | | | **$ 758,580.00** |
| | Submersible 400 HP Pump | 1 | EA | $ 115,450.00 | $ 115,450.00 | |
| | Sump Pump, supporting perf. Drain pipes at footings | 1 | AL | $ 30,000.00 | $ 30,000.00 | |
| | Discharge Pipe, 30" Dia. | 230 | LF | $ 250.00 | $ 57,500.00 | |
| | 30" Butterfly Valve | 2 | EA | $ 36,000.00 | $ 72,000.00 | |
| | 30" Check Valve | 1 | EA | $ 28,000.00 | $ 28,000.00 | |
| | Connection to Existing 48" Pipe, Incl Disinfection | 1 | AL | $ 100,000.00 | $ 100,000.00 | |
| | PCCP piping, 54" Dia. (C/L at 18' Deep) | 375 | LF | $ 235.00 | $ 88,130.00 | |
| | 54" Gate Valve | 2 | EA | $ 125,000.00 | $ 250,000.00 | |
| | Perf. Drain Pipe, 8" Dia. At Footings | 700 | LF | $ 25.00 | $ 17,500.00 | |
| **26000** | **ELECTRICAL** | | | | | **$ 392,250.00** |
| | Switch Gear & VFD for Sub. Pump (150 LF wiring) | 1 | LS | $ 376,250.00 | $ 376,250.00 | |
| | Duct Bank, Conduit & Wiring | 150 | LF | $ 40.00 | $ 6,000.00 | |
| | Misc. Conduit/ Wire/ Electrical | 1 | AL | $ 10,000.00 | $ 10,000.00 | |
| **31000** | **EARTHWORK** | | | | | **$ 4,958,890.00** |
| | PZC Sheet Piling | 34,040 | SF | $ 50.00 | $ 1,702,000.00 | |
| | Mass/ Structural Excavation, Footprint | 42,771 | CY | $ 45.00 | $ 1,924,680.00 | |
| | Backfill | 4,160 | CY | $ 65.00 | $ 270,430.00 | |
| | Haul/ Dispose (10 mile round trip) | 3,861 | LDS | $ 275.00 | $ 1,061,780.00 | |
| **40000** | **PROCESS INTERCONNECTIONS** | | | | | **$ 32,880.00** |
| | New level transmitter and level switches | 1 | AL | $ 3,500.00 | $ 3,500.00 | |
| | Mag Meter (12" Dia w/ remote display) and Vault | 1 | AL | $ 29,375.00 | $ 29,380.00 | |
| | **CONSTRUCTION SUB-TOTAL** | | | | | **$ 12,081,700.00** |
| | BOND AND INSURANCE | 2.0% | | | | $ 241,600.00 |
| | CONTRACTOR FEE | 10% | | | | $ 1,232,300.00 |
| | PHASING | 0% | | | | $ - |
| | DESIGN CONTINGENCY | 25% | | | | $ 3,388,900.00 |
| | **CONSTRUCTION TOTAL** | | | | | **$ 16,944,500.00** |
| | CONSTRUCTION CONTINGENCY | 5% | | | | $ 847,200.00 |
| | ENGINEERING | 15% | | | | $ 2,668,800.00 |
| | **PROJECT TOTAL** | | | | | **$ 20,460,500.00** |

**Notes and Assumptions:**

1) Estimate is based on drawings/ narrative received from CDM Smith, via E-Mail on 9/30/2014
2) Costs are in 2014 Dollars. Escalation is excluded
3) Winter Conditions/ Premium Time is excluded. All work is straight time @ prevailing wages.
4) Environmental Remediation - excluded
5) Traffic control is excluded

# ESTIMATOR'S STATEMENT OF PROBABLE CONSTRUCTION COST

**CDM Smith**

VISTARA construction services

**City of Evanston**
Water Storage Systems
Evanston, IL
**Conceptual Design Estimate - Alternative E**
*Construct New Reservoir at Leahy Park*
**Revised: 10/22/2014 (Update 12/10/2014)**

| | |
|---|---|
| **Reservoir Slab (SF)** | **53,594** |
| **Roof Slab (SF)** | **52,500** |
| **Pump Building (SF)** | **2,080** |

AL = Allowance; CY = Cubic Yard (volume); EA = Each; INST = Instance; LDS = Truck Loads; LF = Linear Foot; LS = Lump Sum; SF = Square Foot Area

| | DESCRIPTION | QTY. | UNIT | UNIT PRICE | BUDGET | SUB-TOTAL |
|---|---|---|---|---|---|---|
| **1000** | **GENERAL REQUIREMENTS** | | | | | **$ 1,818,900.00** |
| | General Conditions | 1 | LS | $ 1,718,900.00 | $ 1,718,900.00 | |
| | Permits | | | | By Owner | |
| | Dewatering | 1 | AL | $ 50,000.00 | $ 50,000.00 | |
| | Protect Existing Piping, Adjacent Structures, et. al. | 1 | AL | $ 50,000.00 | $ 50,000.00 | |
| **2000** | **EXISTING CONDITIONS** | | | | | **$ 52,500.00** |
| | Demo Existing Tennis Courts ( ~210' x 124' ) | 1 | LS | $ 52,500.00 | $ 52,500.00 | |
| **3000** | **CONCRETE** | | | | | **$ 4,798,400.00** |
| | Reservoir: | | | | | |
| | Exterior Walls, Cast-in-Place, 20'-9" H., 18" Thick | 1,257 | CY | $ 812.50 | $ 1,020,900.00 | |
| | Interior Columns, 20.75' H. x 18" Dia.; Thick at top and btm. | 306 | EA | $ 5,040.00 | $ 1,542,200.00 | |
| | Roof Slab, 10" Thick | 52,500 | SF | $ 14.30 | $ 750,800.00 | |
| | Floor Slab, 18" Thick | 53,594 | SF | $ 23.40 | $ 1,254,100.00 | |
| | Est. 12" compacted Structural Fill | 1,985 | CY | $ 75.00 | $ 148,900.00 | |
| | Pump Building (65' x 32'; 3-sided) | | | | | |
| | Floor Slab, 12" Thick | 2,080 | SF | $ 16.00 | $ 33,300.00 | |
| | Roof Deck/ beams | | | | Incl. below | |
| | Est. 12" compacted Structural Fill | 77 | CY | $ 75.00 | $ 5,800.00 | |
| | Strip Footing, 1' Deep, 3' W. Base | 14 | CY | $ 1,200.00 | $ 17,200.00 | |
| | Foundation Wall, 3' deep, 1' W | 14 | CY | $ 1,200.00 | $ 17,200.00 | |
| | Equipment Pads (4) | 4 | EA | $ 2,000.00 | $ 8,000.00 | |
| **4000** | **MASONRY** | | | | | **$ 54,700.00** |
| | Pump Building (65' x 32'; 3-sided) | | | | | |
| | Exterior Walls, 8" Split-face CMU | 1,926 | SF | $ 24.00 | $ 46,200.00 | |
| | Interior Walls, 8" CMU | 530 | SF | $ 16.00 | $ 8,500.00 | |
| **5000** | **METALS** | | | | | **$ 67,000.00** |
| | Access Ladders to Courts (19' High) | 4 | EA | $ 15,000.00 | $ 60,000.00 | |
| | Ladders for Access at Roof, Galv. Or St. Stl. | 2 | EA | $ 3,500.00 | $ 7,000.00 | |
| **6000** | **WOOD, PLASTICS & COMPOSITES** | | | | | **$ 380,700.00** |
| | New Fiberglass Panels (Baffles) 18" D. | 15,228 | SF | $ 25.00 | $ 380,700.00 | |
| **7000** | **THERMAL & MOISTURE PROTECTION** | | | | | **$ 75,100.00** |
| | Roof Membrane on Stl. Deck, Metal Beams (W16x40) | 2,145 | SF | $ 35.00 | $ 75,100.00 | |
| **8000** | **OPENINGS** | | | | | **$ 64,800.00** |
| | New Manway and Equipment Access Hatches | | | | | |
| | Manway Hatches, 3' x 3' | 3 | EA | $ 750.00 | $ 2,300.00 | |
| | Equipment Hatch, 15' x 20' | 1 | EA | $ 2,500.00 | $ 2,500.00 | |
| | Air Vents | 1 | AL | $ 60,000.00 | $ 60,000.00 | |

**City of Evanston**
Water Storage Systems
Evanston, IL
**Conceptual Design Estimate - Alternative E**
*Construct New Reservoir at Leahy Park*
**Revised: 10/22/2014 (Update 12/10/2014)**

| | |
|---|---|
| **Reservoir Slab (SF)** | **53,594** |
| **Roof Slab (SF)** | **52,500** |
| **Pump Building (SF)** | **2,080** |

AL = Allowance; CY = Cubic Yard (volume); EA = Each; INST = Instance; LDS = Truck Loads; LF = Linear Foot; LS = Lump Sum; SF = Square Foot Area

| | DESCRIPTION | QTY. | UNIT | UNIT PRICE | BUDGET | SUB-TOTAL |
|---|---|---|---|---|---|---|
| **22000** | **PLUMBING** | | | | | **$ 939,500.00** |
| | Split-case, Horizontal Pumps, 100 HP | 4 | EA | $ 41,400.00 | $ 165,600.00 | |
| | Incl. BFV, Check Valves, Reducers, Piping: | | | | | |
| | 12" BFV | 4 | EA | $ 10,000.00 | $ 40,000.00 | |
| | 14" BFV | 4 | EA | $ 12,000.00 | $ 48,000.00 | |
| | 12" Check Valve | 4 | EA | $ 7,520.00 | $ 30,100.00 | |
| | 6 x 12 Reducer | 4 | EA | $ 1,800.00 | $ 7,200.00 | |
| | 14 x 8 Reducer | 4 | EA | $ 2,200.00 | $ 8,800.00 | |
| | 14" and 12" DIP | 32 | LF | $ 58.00 | $ 1,900.00 | |
| | 24" Suction Header | 36 | LF | $ 250.00 | $ 9,000.00 | |
| | 24" DIP yard piping to existing 48" main | 140 | LF | $ 130.00 | $ 18,200.00 | |
| | Storm water detention: | | | | | |
| | 6' Dia. RCP (3 - 300' runs & 'T' Connections) | 1,000 | LF | $ 425.00 | $ 425,000.00 | |
| | Additional Excavation & Backfill (RCP) | 1,780 | CY | $ 65.00 | $ 115,700.00 | |
| | Downspouts from Roof to Detention | 1 | AL | $ 15,000.00 | $ 15,000.00 | |
| | Area Site Drains to Detention | 1 | AL | $ 25,000.00 | $ 25,000.00 | |
| | 12" Dia. Outlet Pipe (Incl Restrictor and MH) | 600 | LF | $ 50.00 | $ 30,000.00 | |
| **26000** | **ELECTRICAL** | | | | | **$ 391,300.00** |
| | Switch Gear & VFD's for Pumps | 1 | LS | $ 376,250.00 | $ 376,300.00 | |
| | Duct Bank, Conduit & Wiring | 1 | LS | $ 5,000.00 | $ 5,000.00 | |
| | Misc. Conduit/ Wire/ Electrical | 1 | AL | $ 10,000.00 | $ 10,000.00 | |
| **31000** | **EARTHWORK** | | | | | **$ 4,123,300.00** |
| | Excavation - Footprint | 10,750 | CY | $ 6.00 | $ 64,500.00 | |
| | Excavation - Spoils from Caissons | 5,188 | CY | $ 30.00 | $ 155,600.00 | |
| | Deep Foundation Caissons, 36" Dia. X 50' Below Gnd. (13.1 CY) | 396 | EA | $ 8,500.00 | $ 3,366,000.00 | |
| | Clear/ Grub Balance of Site ( ~130' x 220' ) | 1 | LS | $ 50,000.00 | $ 50,000.00 | |
| | Haul/ Disposal (10 Mile round trip) | 1,772 | LDS | $ 275.00 | $ 487,200.00 | |
| **32000** | **EXTERIOR IMPROVEMENTS** | | | | | **$ 379,200.00** |
| | Rooftop Tennis Court - Athletic Surfacing | 5,833 | SY | $ 65.00 | $ 379,200.00 | |
| | Netting, Fence, Misc. (See Notes) | | | | Incl. | |
| **40000** | **PROCESS INTERCONNECTIONS** | | | | | **$ 32,900.00** |
| | New level transmitter and level switches | 1 | AL | $ 3,500.00 | $ 3,500.00 | |
| | Mag Meter (12" Dia w/ remote display) and Vault | 1 | AL | $ 29,375.00 | $ 29,400.00 | |
| | **CONSTRUCTION SUB-TOTAL** | | | | | **$ 13,178,300.00** |
| | BOND AND INSURANCE | 2.0% | | | | $ 263,600.00 |
| | CONTRACTOR FEE | 10% | | | | $ 1,344,200.00 |
| | PHASING - N/A | 0% | | | | $ - |
| | DESIGN CONTINGENCY | 25% | | | | $ 3,696,500.00 |
| | **CONSTRUCTION TOTAL** | | | | | **$ 18,482,600.00** |
| | CONSTRUCTION CONTINGENCY | 5% | | | | $ 924,100.00 |
| | ENGINEERING | 15% | | | | $ 2,911,000.00 |
| | **PROJECT TOTAL** | | | | | **$ 22,317,700.00** |

**City of Evanston**
Water Storage Systems
Evanston, IL
**Conceptual Design Estimate - Alternative E**
*Construct New Reservoir at Leahy Park*
**Revised: 10/22/2014 (Update 12/10/2014)**

| | |
|---|---|
| Reservoir Slab (SF) | 53,594 |
| Roof Slab (SF) | 52,500 |
| Pump Building (SF) | 2,080 |

AL = Allowance; CY = Cubic Yard (volume); EA = Each; INST = Instance; LDS = Truck Loads; LF = Linear Foot; LS = Lump Sum; SF = Square Foot Area

| DESCRIPTION | QTY. | UNIT | UNIT PRICE | BUDGET | SUB-TOTAL |
|---|---|---|---|---|---|

**Notes and Assumptions:**

1) Estimate is based on drawings/ narrative received from CDM Smith, via E-Mail on 9/30/2014
2) Costs are in 2014 Dollars. Escalation is excluded
3) Winter Conditions/ Premium Time is excluded. All work is straight time @ prevailing wages.
4) Environmental Remediation - excluded
5) Traffic control is excluded
6) Locker Rooms/ Showers Excluded for Tennis Courts

# ESTIMATOR'S STATEMENT OF PROBABLE CONSTRUCTION COST

## CDM Smith

**City of Evanston**
Water Storage Systems
Evanston, IL
**Conceptual Design Estimate**
*Repair Clearwells 1 thru 4*
**Revised: 10/22/2014 *(Update 12/10/2014)***

**AL = Allowance; CY = Cubic Yard (volume); EA = Each; INST = Instance; LDS = Truck Loads; LF = Linear Foot; LS = Lump Sum; SF = Square Foot Area**

| CSI | DESCRIPTION | QTY. | UNIT | UNIT PRICE | BUDGET | SUB-TOTAL |
|---|---|---|---|---|---|---|
| **1000** | **GENERAL REQUIREMENTS** | | | | | **$ 130,600.00** |
| | General Conditions | 1 | LS | $ 55,600.00 | $ 55,600.00 | |
| | Scaffolding (AL of 6,000SF) | 1 | AL | $ 75,000.00 | $ 75,000.00 | |
| | Permits | | | | By Owner | |
| | | | | | | |
| **3000** | **CONCRETE** | | | | | **$ 147,400.00** |
| | Repair Existing Wall Cracks, w/ Resin Injection | | | | | |
| | Clear wells #1, 2, 3 & 4 | 1,140 | LF | $ 20.00 | $ 22,800.00 | |
| | Repair Existing Ceiling Cracks, w/ Resin Injection | | | | | |
| | Clear wells #1, 2, 3 & 4 | 4,450 | LF | $ 28.00 | $ 124,600.00 | |
| | | | | | | |
| | **CONSTRUCTION SUB-TOTAL** | | | | | **$ 278,000.00** |
| | BOND AND INSURANCE | 2.0% | | | | $ 5,600.00 |
| | CONTRACTOR FEE | 10% | | | | $ 28,400.00 |
| | PHASING | 0% | | | | $ - |
| | DESIGN CONTINGENCY | 25% | | | | $ 78,000.00 |
| | **CONSTRUCTION TOTAL** | | | | | **$ 390,000.00** |
| | CONSTRUCTION CONTINGENCY | 5% | | | | $ 19,500.00 |
| | ENGINEERING | 15% | | | | $ 61,400.00 |
| | **PROJECT TOTAL** | | | | | **$ 470,900.00** |
| | | | | | | |

**Notes and Assumptions:**

1) Estimate is based on drawings/ narrative received from CDM Smith, via E-Mail on 9/30/2014
2) Costs are in 2014 Dollars. Escalation is excluded
3) Winter Conditions/ Premium Time is excluded. All work is straight time @ prevailing wages.
4) Environmental Remediation - excluded
5) Traffic control is excluded

# Appendix D
# Engineering News Record Construction Cost Index (Chicago)

**Table D-1. Engineering News Record Construction Cost Index**

| Year | CCI – National Average | | CCI – City of Chicago | |
|---|---|---|---|---|
| | Index | Annual Increase | Index | Annual Increase |
| 1984 | 4146 | 2.0% | 4319.75 | 2.0% |
| 1985 | 4195 | 1.2% | 4367.28 | 1.1% |
| 1986 | 4295 | 2.4% | 4495.88 | 2.9% |
| 1987 | 4406 | 2.6% | 4686.53 | 4.2% |
| 1988 | 4519 | 2.6% | 4844.48 | 3.4% |
| 1989 | 4615 | 2.1% | 4957.69 | 2.3% |
| 1990 | 4732 | 2.5% | 4998.8 | 0.8% |
| 1991 | 4835 | 2.2% | 5384.16 | 7.7% |
| 1992 | 4985 | 3.1% | 5643.78 | 4.8% |
| 1993 | 5210 | 4.5% | 5962.58 | 5.6% |
| 1994 | 5408 | 3.8% | 6177.81 | 3.6% |
| 1995 | 5471 | 1.2% | 6333.93 | 2.5% |
| 1996 | 5620 | 2.7% | 6743.46 | 6.5% |
| 1997 | 5826 | 3.7% | 6625.83 | -1.7% |
| 1998 | 5920 | 1.6% | 7086.96 | 7.0% |
| 1999 | 6059 | 2.3% | 7464.71 | 5.3% |
| 2000 | 6221 | 2.7% | 7747.96 | 3.8% |
| 2001 | 6343 | 2.0% | 7679.62 | -0.9% |
| 2002 | 6538 | 3.1% | 7965.18 | 3.7% |
| 2003 | 6694 | 2.4% | 8348.45 | 4.8% |
| 2004 | 7115 | 6.3% | 9351.32 | 12.0% |
| 2005 | 7446 | 4.7% | 10125.85 | 8.3% |
| 2006 | 7751 | 4.1% | 10522.78 | 3.9% |
| 2007 | 7966 | 2.8% | 11137.98 | 5.8% |
| 2008 | 8310 | 4.3% | 11857.66 | 6.5% |
| 2009 | 8570 | 3.1% | 12378.76 | 4.4% |
| 2010 | 8799 | 2.7% | 12742.71 | 2.9% |
| 2011 | 9070 | 3.1% | 13179.6 | 3.4% |
| 2012 | 9308 | 2.6% | 13547.07 | 2.8% |
| 2013 | 9547 | 2.6% | 13592.96 | 0.3% |
| **30 Year Average** | **2.9%** | | **4.0%** | |

**Table D-1. Engineering News Record Construction Cost Index**

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|---|---|---|---|---|
| | Index | Annual Increase | Index | Annual Increase |
| 1984 | 4146 | 2.0% | 4319.75 | 2.0% |
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| 1988 | 4519 | 2.6% | 4844.48 | 3.4% |
| 1989 | 4615 | 2.1% | 4957.69 | 2.3% |
| 1990 | 4732 | 2.5% | 4998.8 | 0.8% |
| 1991 | 4835 | 2.2% | 5384.16 | 7.7% |
| 1992 | 4985 | 3.1% | 5643.78 | 4.8% |
| 1993 | 5210 | 4.5% | 5962.58 | 5.6% |
| 1994 | 5408 | 3.8% | 6177.81 | 3.6% |
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| 1996 | 5620 | 2.7% | 6743.46 | 6.5% |
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| 1998 | 5920 | 1.6% | 7086.96 | 7.0% |
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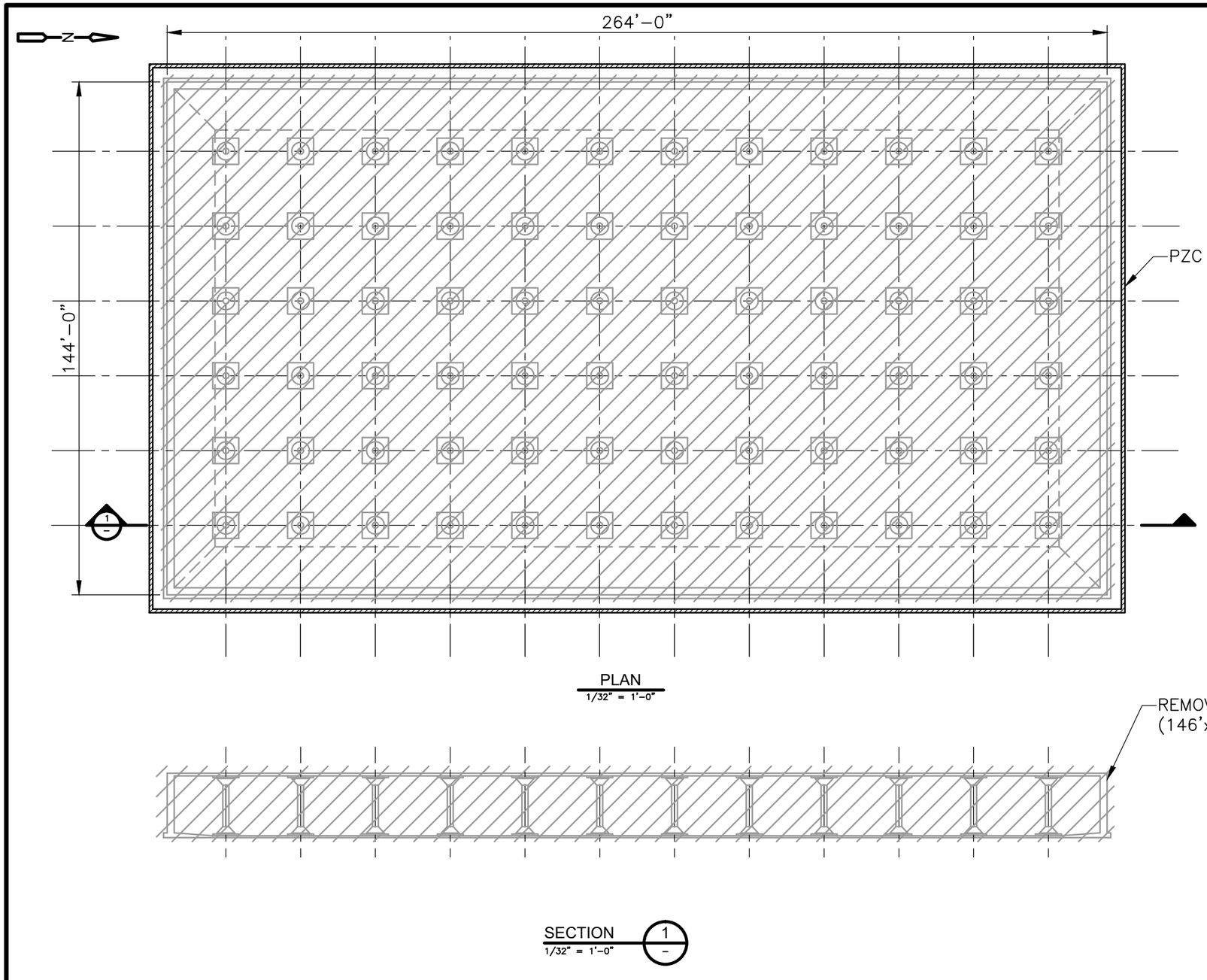
| 2001 | 6343 | 2.0% | 7679.62 | -0.9% |
| 2002 | 6538 | 3.1% | 7965.18 | 3.7% |
| 2003 | 6694 | 2.4% | 8348.45 | 4.8% |
| 2004 | 7115 | 6.3% | 9351.32 | 12.0% |
| 2005 | 7446 | 4.7% | 10125.85 | 8.3% |
| 2006 | 7751 | 4.1% | 10522.78 | 3.9% |
| 2007 | 7966 | 2.8% | 11137.98 | 5.8% |
| 2008 | 8310 | 4.3% | 11857.66 | 6.5% |
| 2009 | 8570 | 3.1% | 12378.76 | 4.4% |
| 2010 | 8799 | 2.7% | 12742.71 | 2.9% |
| 2011 | 9070 | 3.1% | 13179.6 | 3.4% |
| 2012 | 9308 | 2.6% | 13547.07 | 2.8% |
| 2013 | 9547 | 2.6% | 13592.96 | 0.3% |
| **30 Year Average** | **2.9%** | | **4.0%** | |



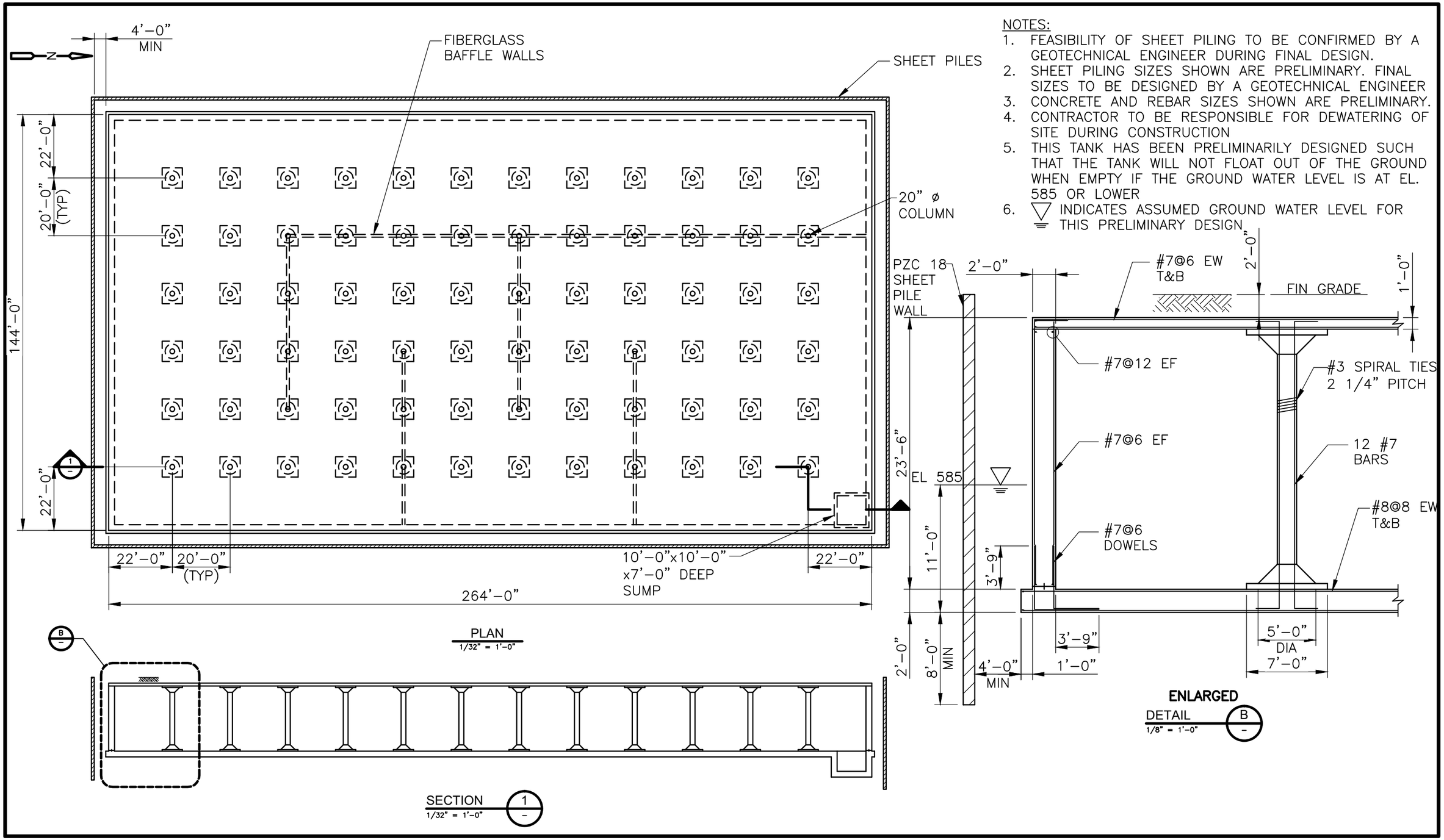

NOTES:

1. FEASIBILITY OF SHEET PILING TO BE CONFIRMED BY A GEOTECHNICAL ENGINEER DURING FINAL DESIGN.
2. SHEET PILING SIZES SHOWN ARE PRELIMINARY. FINAL SIZES TO BE DESIGNED BY A GEOTECHNICAL ENGINEER
3. CONTRACTOR TO BE RESPONSIBLE FOR DEWATERING OF SITE DURING CONSTRUCTION

CDM Smith

EVANSTON TREATED WATER STORAGE ALTERNATIVES ASESSMENT
DECEMBER 2014

FIGURE No. 6
ALTERNATIVE C
EXISTING 1934 CLEARWELL
DEMO PLAN



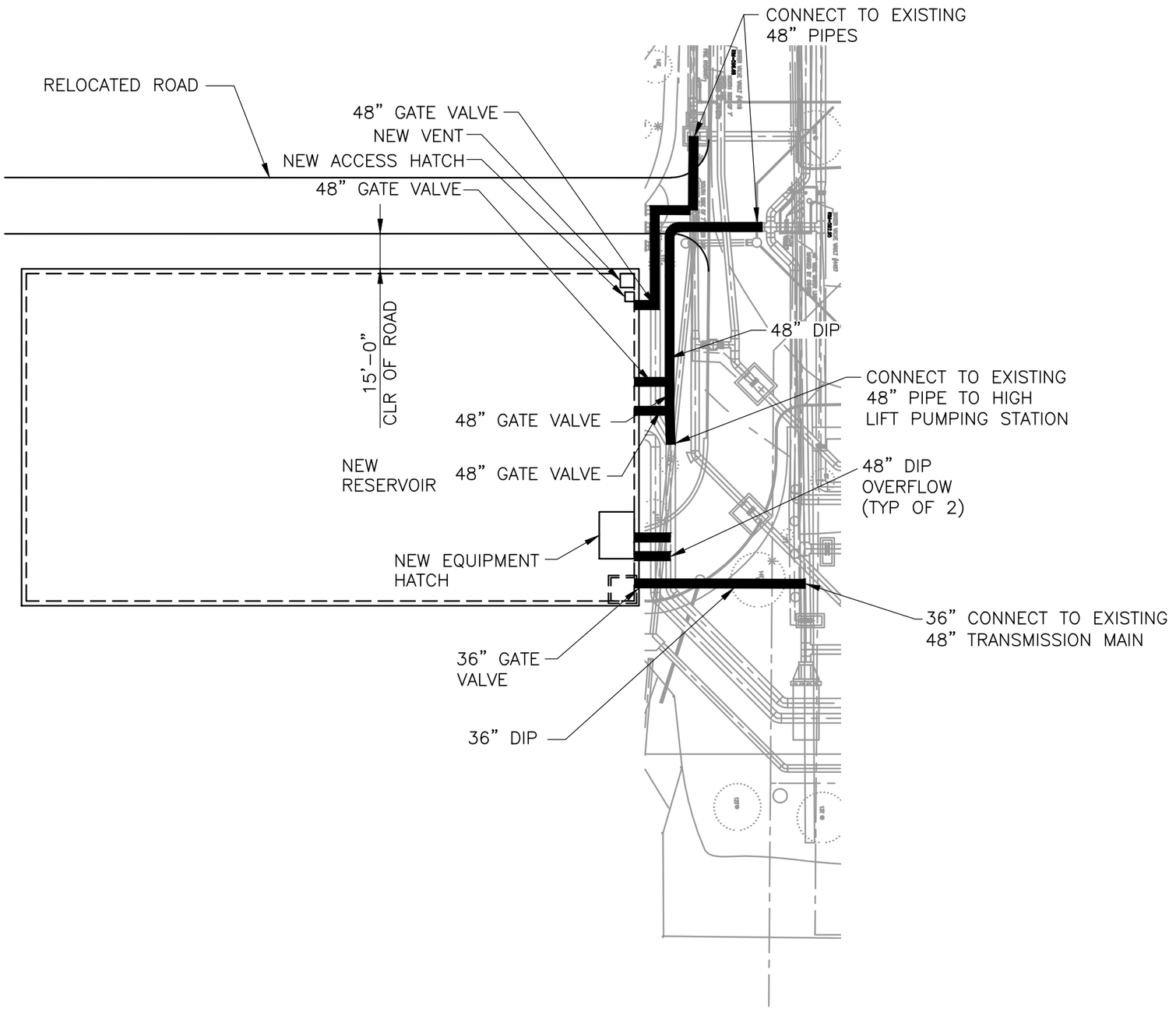

NOTES:

1. FEASIBILITY OF SHEET PILING TO BE CONFIRMED BY A GEOTECHNICAL ENGINEER DURING FINAL DESIGN.
2. SHEET PILING SIZES SHOWN ARE PRELIMINARY. FINAL SIZES TO BE DESIGNED BY A GEOTECHNICAL ENGINEER
3. CONCRETE AND REBAR SIZES SHOWN ARE PRELIMINARY.
4. CONTRACTOR TO BE RESPONSIBLE FOR DEWATERING OF SITE DURING CONSTRUCTION
5. THIS TANK HAS BEEN PRELIMINARILY DESIGNED SUCH THAT THE TANK WILL NOT FLOAT OUT OF THE GROUND WHEN EMPTY IF THE GROUND WATER LEVEL IS AT EL. 585 OR LOWER
6. ▽ INDICATES ASSUMED GROUND WATER LEVEL FOR THIS PRELIMINARY DESIGN.

CDM Smith

EVANSTON TREATED WATER STORAGE ALTERNATIVES ASESSMENT
DECEMBER 2014

FIGURE No. 7
ALTERNATIVE C
REPLACEMENT OF EXISTING 1934 CLEARWELL
PLAN AND SECTION

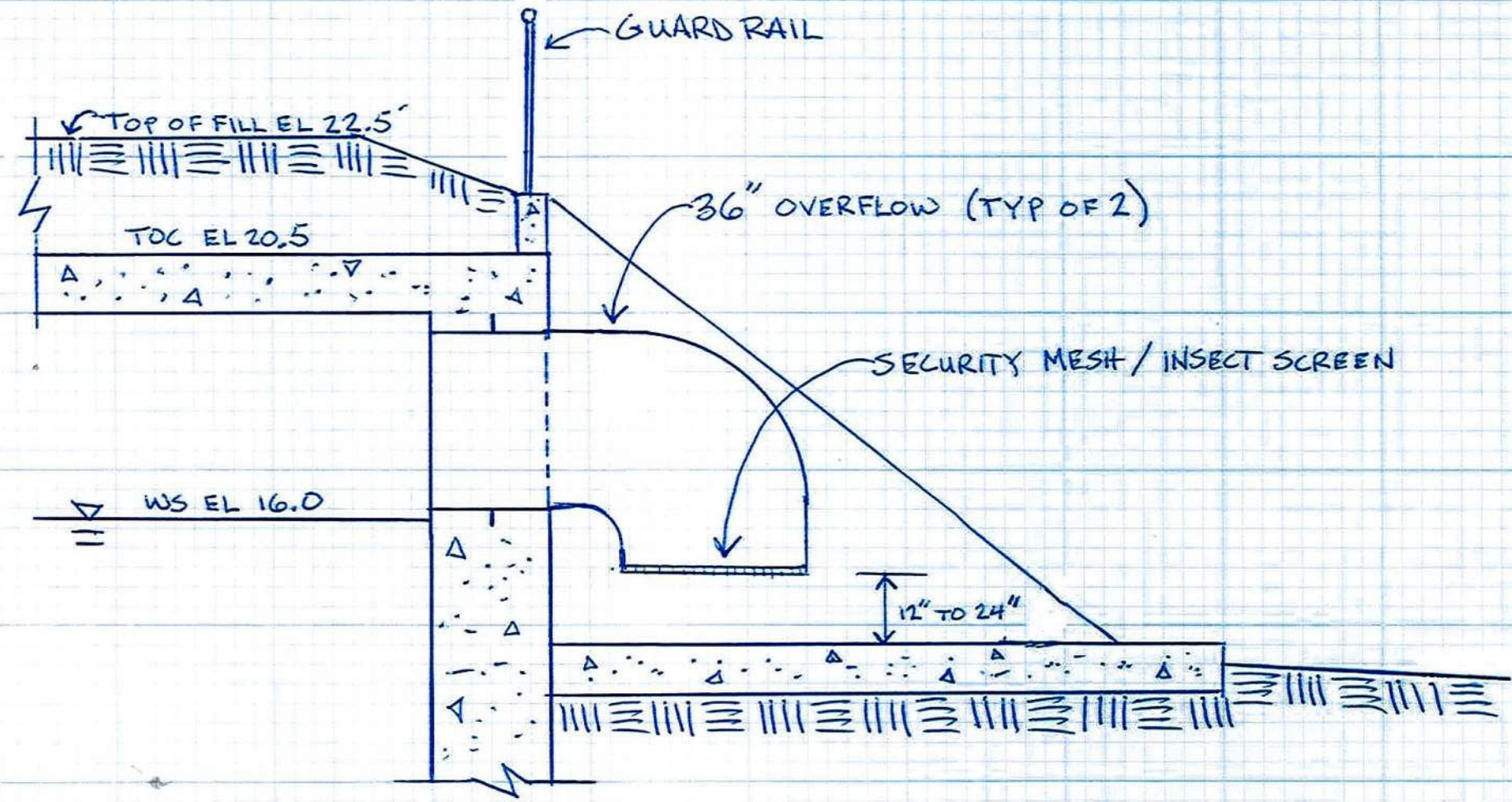



CDM Smith

EVANSTON TREATED WATER STORAGE ALTERNATIVES ASESSMENT
DECEMBER 2014

FIGURE No. 8
ALTERNATIVE C
REPLACEMENT OF
1934 CLEARWELL PROPOSED
PROCESS IMPROVEMENTS

COMPUTED BY
DATE
PAGE NO.
JOB NO.
DATE CHECKED
CHECKED BY
CLIENT
PROJECT
DETAIL




3/8" = 1'-0"

SECTION

REPLACE 1934 CLEARWELL

CDM Smith

# ESTIMATOR'S STATEMENT OF PROBABLE CONSTRUCTION COST

**CDM Smith**

VISTARA construction services

**City of Evanston**
Water Storage Systems
Evanston, IL
**Conceptual Design Estimate - Alternative C**
*Replace 1934 Clearwell near Existing Footprint*
**Revised: 10/22/2014 (Update 12/10/2014)**

| | |
|---|---|
| **Floor Slab (SF)** | **38,016** |
| **Roof Slab (SF)** | **38,836** |

AL = Allowance; CY = Cubic Yard (volume); EA = Each; INST = Instance; LDS = Truck Loads; LF = Linear Foot; LS = Lump Sum; SF = Square Foot Area

| | DESCRIPTION | QTY. | UNIT | UNIT PRICE | BUDGET | SUB-TOTAL |
|---|---|---|---|---|---|---|
| **1000** | **GENERAL REQUIREMENTS** | | | | | **$ 1,966,760.00** |
| | General Conditions | 1 | LS | $ 1,436,600.00 | $ 1,436,600.00 | |
| | Permits | | | | By Owner | |
| | Scaffolding | 38,016 | SF | $ 10.00 | $ 380,160.00 | |
| | Dewatering | 1 | AL | $ 100,000.00 | $ 100,000.00 | |
| | Protect Existing Piping, Adjacent Structures, et. al. | 1 | AL | $ 50,000.00 | $ 50,000.00 | |
| **2000** | **EXISTING CONDITIONS** | | | | | **$ 924,880.00** |
| | Remove Existing Clear well (146' x 266' x 20.5' Deep) | 1 | LS | $ 670,000.00 | $ 670,000.00 | |
| | Demo Ex. Columns & Drop Panels (7'-4" x 7'-4") | 72 | EA | $ 3,540.00 | $ 254,880.00 | |
| **3000** | **CONCRETE** | | | | | **$ 3,783,890.00** |
| | New Reservoir Tank: | | | | | |
| | Perimeter Walls, 144' x 264' at 22'-6" H. & 2' Thick | 1,360 | CY | $ 800.00 | $ 1,088,000.00 | |
| | Columns; 20" Dia.x 22'-6" H. (1.9 CY) | 72 | EA | $ 7,670.00 | $ 552,240.00 | |
| | Column Drop Panels (7'-4"x7'-4"x4.5"), Top & Bottom | 144 | EA | $ 1,870.00 | $ 269,280.00 | |
| | Roof Slab, 12" Thick, Rebar #7 @ 6 EW T&B | 38,016 | SF | $ 18.00 | $ 684,290.00 | |
| | Floor Slab, 24" Thick, Rebar #8 @ 8 EW T&B | 38,836 | SF | $ 30.00 | $ 1,165,080.00 | |
| | 10' x 10' x 7' Deep Sump Pit | 1 | AL | $ 25,000.00 | $ 25,000.00 | |
| **4000** | **MASONRY** | | | | | **$ -** |
| **5000** | **METALS** | | | | | **$ 7,000.00** |
| | Ladders for Access at Roof, Galv. Or St. Stl. | 2 | EA | $ 3,500.00 | $ 7,000.00 | |
| **6000** | **WOOD, PLASTICS & COMPOSITES** | | | | | **$ 131,630.00** |
| | New Fiberglass Panels (Baffles) 18' D. | 5,265 | SF | $ 25.00 | $ 131,630.00 | |
| **7000** | **THERMAL & MOISTURE PROTECTION** | | | | | **$ -** |
| **8000** | **OPENINGS** | | | | | **$ 69,000.00** |
| | New Manway and Equipment Access Hatches | | | | | |
| | Manway Hatches, 3' x 3' | 1 | EA | $ 1,500.00 | $ 1,500.00 | |
| | Equipment Hatch, 15' x 20' | 1 | EA | $ 7,500.00 | $ 7,500.00 | |
| | New Air Vents at roof structure | 6 | EA | $ 10,000.00 | $ 60,000.00 | |

**City of Evanston**
Water Storage Systems
Evanston, IL
**Conceptual Design Estimate - Alternative C**
*Replace 1934 Clearwell near Existing Footprint*
**Revised: 10/22/2014 (Update 12/10/2014)**

| | |
|---|---|
| **Floor Slab (SF)** | **38,016** |
| **Roof Slab (SF)** | **38,836** |

**AL = Allowance; CY = Cubic Yard (volume); EA = Each; INST = Instance; LDS = Truck Loads; LF = Linear Foot; LS = Lump Sum; SF = Square Foot Area**

| | DESCRIPTION | QTY. | UNIT | UNIT PRICE | BUDGET | SUB-TOTAL |
|---|---|---|---|---|---|---|
| **22000** | **PLUMBING** | | | | | **$ 914,370.00** |
| | 48" Gate Valve | 4 | EA | $ 100,000.00 | $ 400,000.00 | |
| | 48" DIP | 220 | LF | $ 400.00 | $ 88,000.00 | |
| | 36" DIP discharge pipe (~15' Deep) | 75 | LF | $ 300.00 | $ 22,500.00 | |
| | 36" Check Valve | 1 | EA | $ 35,000.00 | $ 35,000.00 | |
| | 36" Gate Valves | 2 | EA | $ 45,000.00 | $ 90,000.00 | |
| | Connections/ Tie-ins to Existing Pipe Mains/ Disinfection (x4) | 1 | AL | $ 100,000.00 | $ 100,000.00 | |
| | 48" DIP Overflow | 30 | LF | $ 400.00 | $ 12,000.00 | |
| | Groundwater Sump Pump & Separator | 1 | LS | $ 30,000.00 | $ 30,000.00 | |
| | Submersible 400 HP Pump | 1 | EA | $ 115,450.00 | $ 115,450.00 | |
| | 8" Dia. Perforated Drain Pipe (Groundwater Control) | 857 | LF | $ 25.00 | $ 21,420.00 | |
| **26000** | **ELECTRICAL** | | | | | **$ 394,250.00** |
| | Switch Gear & VFD for Sub. Pump (200 LF wiring) | 1 | LS | $ 376,250.00 | $ 376,250.00 | |
| | Conduit & Wiring | 200 | LF | $ 40.00 | $ 8,000.00 | |
| | Misc. Conduit/ Wire/ Electrical | 1 | AL | $ 10,000.00 | $ 10,000.00 | |
| **31000** | **EARTHWORK** | | | | | **$ 2,637,410.00** |
| | PZC 18 Structural Steel Sheet Pile Wall, 35' High | 29,680 | SF | $ 50.00 | $ 1,484,000.00 | |
| | Secondary Sheet Pile Wall for New Footprint | 11,130 | SF | $ 50.00 | $ 556,500.00 | |
| | Excavation Between Sheet Pile and Existing Perimeter | 4,805 | CY | $ 35.00 | $ 168,190.00 | |
| | Secondary Excavation @ New Footprint | 412 | CY | $ 35.00 | $ 14,430.00 | |
| | Backfill at Perimeter | 5,286 | CY | $ 50.00 | $ 264,290.00 | |
| | Haul/ Dispose (10 mile round trip) | 1 | LS | $ 150,000.00 | $ 150,000.00 | |
| **32000** | **EXTERIOR IMPROVEMENTS** | | | | | **$ 151,810.00** |
| | Campus Drive Road Relocation - By Others | | | | N/A | |
| | Riprap - Erosion Control at Overflow (15' x 10' Area, Class 50) | 1 | AL | $ 18,750.00 | $ 18,750.00 | |
| | New Sod & Berm, 12" Deep / Grass Cover | 38,016 | SF | $ 3.50 | $ 133,060.00 | |
| **40000** | **PROCESS INTERCONNECTIONS** | | | | | **$ 32,880.00** |
| | New level transmitter and level switches | 1 | AL | $ 3,500.00 | $ 3,500.00 | |
| | Mag Meter (12" Dia w/ remote display) and Vault | 1 | AL | $ 29,375.00 | $ 29,380.00 | |
| | **CONSTRUCTION SUB-TOTAL** | | | | | **$ 11,013,900.00** |
| | BOND AND INSURANCE | 2.0% | | | | $ 220,300.00 |
| | CONTRACTOR FEE | 10% | | | | $ 1,123,400.00 |
| | PHASING | 0% | | | | $ - |
| | DESIGN CONTINGENCY | 25% | | | | $ 3,089,400.00 |
| | **CONSTRUCTION TOTAL** | | | | | **$ 15,447,000.00** |
| | CONSTRUCTION CONTINGENCY | 5% | | | | $ 772,400.00 |
| | ENGINEERING | 15% | | | | $ 2,432,900.00 |
| | **PROJECT TOTAL** | | | | | **$ 18,652,300.00** |

**CDM Smith Calculations**
**Client:** **Evanston**
**Project:** **Finished Water Storage Evaluation (#104153)**
**Detail:** **Task 4 Life-Cycle Cost Evaluation**
**Date** **12/12/2014**

| | |
|---|---|
| Inflation Factor | 4.0% |
| Discount Factor | 4.0% |

**Alternative A**

| Item | Construction Cost in 2014 | Midpoint of Construction | Escalated Cost at Midpoint of Construction (from 2014) | Present Worth Cost (2015 dollars) |
|---|---|---|---|---|
| Repair Clearwells 1 thru 4 | $ 470,000 | 2015 | $ 490,000 | $ 490,000 |
| Demolish & replace 1934 Clearwell roof | $ 5,300,000 | 2016 | $ 5,730,000 | $ 5,500,000 |
| Clearwell 5 thru 8 inspection & crack repair | $ 40,000 | 2017 | $ 45,000 | $ 42,000 |
| Clearwell 1 thru 4 inspection & crack repair | $ 40,000 | 2020 | $ 51,000 | $ 42,000 |
| 1934 Clearwell inspection & crack repair | $ 40,000 | 2021 | $ 53,000 | $ 42,000 |
| Clearwell 5 thru 8 inspection & crack repair | $ 40,000 | 2022 | $ 55,000 | $ 42,000 |
| Clearwell 1 thru 4 inspection & crack repair | $ 40,000 | 2025 | $ 62,000 | $ 42,000 |
| 1934 Clearwell inspection & crack repair | $ 40,000 | 2026 | $ 64,000 | $ 42,000 |
| Clearwell 5 thru 8 inspection & crack repair | $ 40,000 | 2027 | $ 67,000 | $ 42,000 |
| Clearwell 1 thru 4 inspection & crack repair | $ 40,000 | 2030 | $ 75,000 | $ 42,000 |
| 1934 Clearwell inspection & crack repair | $ 40,000 | 2031 | $ 78,000 | $ 42,000 |
| Clearwell 5 thru 8 inspection & crack repair | $ 40,000 | 2032 | $ 81,000 | $ 42,000 |
| Clearwell 1 thru 4 inspection & crack repair | $ 40,000 | 2035 | $ 91,000 | $ 42,000 |
| 1934 Clearwell inspection & crack repair | $ 40,000 | 2036 | $ 95,000 | $ 42,000 |
| Clearwell 5 thru 8 inspection & crack repair | $ 40,000 | 2037 | $ 99,000 | $ 42,000 |
| Clearwell 1 thru 4 inspection & crack repair | $ 40,000 | 2040 | $ 111,000 | $ 42,000 |
| 1934 Clearwell inspection & crack repair | $ 40,000 | 2041 | $ 115,000 | $ 41,000 |
| Clearwell 5 thru 8 inspection & crack repair | $ 40,000 | 2037 | $ 99,000 | $ 42,000 |
| Abandon Clearwells 1 thru 4 | | 2045 | $ - | $ - |
| Construct new 3MG clearwell east of Sheridan Road | $ 16,000,000 | 2045 | $ 53,970,000 | $ 16,640,000 |
| Demolish & replace 1934 Clearwell | $ 19,000,000 | 2046 | $ 66,650,000 | $ 19,800,000 |
| Clearwell 5 thru 8 inspection & crack repair | $ 40,000 | 2047 | $ 150,000 | $ 43,000 |
| Clearwell 5 thru 8 inspection & crack repair | $ 40,000 | 2052 | $ 180,000 | $ 42,000 |
| Clearwell 5 thru 8 inspection & crack repair | $ 40,000 | 2057 | $ 220,000 | $ 42,000 |
| | | | **Total Present Worth Cost** | **$ 43,200,000** |

**CDM Smith Calculations**
**Client:** **Evanston**
**Project:** **Finished Water Storage Evaluation (#104153)**
**Detail:** **Task 4 Life-Cycle Cost Evaluation**
**Date** **12/12/2014**

| | |
|---|---|
| Inflation Factor | 4.0% |
| Discount Factor | 4.0% |

**Alternative B**

| Item | Construction Cost in 2014 | Midpoint of Construction | Escalated Cost at Midpoint of Construction (from 2014) | Present Worth Cost (2015 dollars) |
|---|---|---|---|---|
| Repair Clearwells 1 thru 4 | $ 470,000 | 2015 | $ 490,000 | $ 490,000 |
| Rehabilitate 1934 Clearwell roof in place | $ 4,400,000 | 2016 | $ 4,760,000 | $ 4,580,000 |
| Clearwell 5 thru 8 inspection & crack repair | $ 40,000 | 2017 | $ 45,000 | $ 40,000 |
| Clearwell 1 thru 4 inspection & crack repair | $ 40,000 | 2020 | $ 51,000 | $ 40,000 |
| 1934 Clearwell inspection & crack repair | $ 40,000 | 2021 | $ 53,000 | $ 40,000 |
| Clearwell 5 thru 8 inspection & crack repair | $ 40,000 | 2022 | $ 55,000 | $ 40,000 |
| Clearwell 1 thru 4 inspection & crack repair | $ 40,000 | 2025 | $ 62,000 | $ 40,000 |
| 1934 Clearwell inspection & crack repair | $ 40,000 | 2026 | $ 64,000 | $ 40,000 |
| Clearwell 5 thru 8 inspection & crack repair | $ 40,000 | 2027 | $ 67,000 | $ 40,000 |
| Clearwell 1 thru 4 inspection & crack repair | $ 40,000 | 2030 | $ 75,000 | $ 40,000 |
| 1934 Clearwell inspection & crack repair | $ 40,000 | 2031 | $ 78,000 | $ 40,000 |
| Clearwell 5 thru 8 inspection & crack repair | $ 40,000 | 2032 | $ 81,000 | $ 40,000 |
| Clearwell 1 thru 4 inspection & crack repair | $ 40,000 | 2035 | $ 91,000 | $ 40,000 |
| 1934 Clearwell inspection & crack repair | $ 40,000 | 2036 | $ 95,000 | $ 40,000 |
| Clearwell 5 thru 8 inspection & crack repair | $ 40,000 | 2037 | $ 99,000 | $ 40,000 |
| Clearwell 1 thru 4 inspection & crack repair | $ 40,000 | 2040 | $ 111,000 | $ 40,000 |
| 1934 Clearwell inspection & crack repair | $ 40,000 | 2041 | $ 115,000 | $ 40,000 |
| Clearwell 5 thru 8 inspection & crack repair | $ 40,000 | 2042 | $ 120,000 | $ 40,000 |
| Abandon Clearwells 1 thru 4 | | 2045 | $ - | $ - |
| Construct new 3MG clearwell east of Sheridan Road | $ 16,000,000 | 2045 | $ 53,970,000 | $ 16,640,000 |
| Demolish & replace 1934 Clearwell | $ 19,000,000 | 2046 | $ 66,650,000 | $ 19,760,000 |
| Clearwell 5 thru 8 inspection & crack repair | $ 40,000 | 2047 | $ 150,000 | $ 40,000 |
| Clearwell 5 thru 8 inspection & crack repair | $ 40,000 | 2052 | $ 180,000 | $ 40,000 |
| Clearwell 5 thru 8 inspection & crack repair | $ 40,000 | 2057 | $ 220,000 | $ 40,000 |
| | | | **Total Present Worth Cost** | **$ 42,200,000** |

**CDM Smith Calculations**
**Client:** **Evanston**
**Project:** **Finished Water Storage Evaluation (#104153)**
**Detail:** **Task 4 Life-Cycle Cost Evaluation**
**Date** **12/12/2014**

| | |
|---|---|
| Inflation Factor | 4.0% |
| Discount Factor | 4.0% |

**Alternative C**

| Item | Construction Cost in 2014 | Midpoint of Construction | Escalated Cost at Midpoint of Construction (from 2014) | Present Worth Cost (2015 dollars) |
|---|---|---|---|---|
| Repair Clearwells 1 thru 4 | $ 470,000 | 2015 | $ 490,000 | $ 490,000 |
| Replace 1934 Clearwell near existing footprint | $ 19,000,000 | 2016 | $ 20,550,000 | $ 19,800,000 |
| Clearwell 5 thru 8 inspection & crack repair | $ 40,000 | 2017 | $ 45,000 | $ 42,000 |
| Clearwell 1 thru 4 inspection & crack repair | $ 40,000 | 2020 | $ 51,000 | $ 42,000 |
| Clearwell 5 thru 8 inspection & crack repair | $ 40,000 | 2022 | $ 55,000 | $ 42,000 |
| Clearwell 1 thru 4 inspection & crack repair | $ 40,000 | 2025 | $ 62,000 | $ 42,000 |
| Clearwell 5 thru 8 inspection & crack repair | $ 40,000 | 2027 | $ 67,000 | $ 42,000 |
| Clearwell 1 thru 4 inspection & crack repair | $ 40,000 | 2030 | $ 75,000 | $ 42,000 |
| Clearwell 5 thru 8 inspection & crack repair | $ 40,000 | 2032 | $ 81,000 | $ 42,000 |
| Clearwell 1 thru 4 inspection & crack repair | $ 40,000 | 2035 | $ 91,000 | $ 42,000 |
| Clearwell 5 thru 8 inspection & crack repair | $ 40,000 | 2037 | $ 99,000 | $ 42,000 |
| Clearwell 1 thru 4 inspection & crack repair | $ 40,000 | 2040 | $ 111,000 | $ 42,000 |
| Clearwell 5 thru 8 inspection & crack repair | $ 40,000 | 2042 | $ 120,000 | $ 42,000 |
| Abandon Clearwells 1 thru 4 | | 2045 | $ - | $ - |
| Construct new 3MG clearwell east of Sheridan Road | $ 16,000,000 | 2045 | $ 53,970,000 | $ 16,600,000 |
| Clearwell 5 thru 8 inspection & crack repair | $ 40,000 | 2047 | $ 146,000 | $ 42,000 |
| Clearwell 1 thru 4 inspection & crack repair | $ 40,000 | 2052 | $ 178,000 | $ 42,000 |
| Clearwell 5 thru 8 inspection & crack repair | $ 40,000 | 2057 | $ 216,000 | $ 42,000 |
| | | | **Total Present Worth Cost** | **$ 37,500,000** |

**CDM Smith Calculations**
**Client:** **Evanston**
**Project:** **Finished Water Storage Evaluation (#104153)**
**Detail:** **Task 4 Life-Cycle Cost Evaluation**
**Date** **12/12/2014**

| | |
|---|---|
| Inflation Factor | 4.0% |
| Discount Factor | 4.0% |

**Alternative D**

| Item | Construction Cost in 2014 | Midpoint of Construction | Escalated Cost at Midpoint of Construction (from 2014) | Present Worth Cost (2015 dollars) |
|---|---|---|---|---|
| Repair Clearwells 1 thru 4 | $ 470,000 | 2015 | $ 490,000 | $ 490,000 |
| Construct new clearwell east of Sheridan Road | $ 20,000,000 | 2016 | $ 21,630,000 | $ 20,800,000 |
| Clearwell 5 thru 8 inspection & crack repair | $ 40,000 | 2017 | $ 45,000 | $ 42,000 |
| Clearwell 1 thru 4 inspection & crack repair | $ 40,000 | 2020 | $ 51,000 | $ 42,000 |
| Clearwell 5 thru 8 inspection & crack repair | $ 40,000 | 2022 | $ 55,000 | $ 42,000 |
| Clearwell 1 thru 4 inspection & crack repair | $ 40,000 | 2025 | $ 62,000 | $ 42,000 |
| Clearwell 5 thru 8 inspection & crack repair | $ 40,000 | 2027 | $ 67,000 | $ 42,000 |
| Clearwell 1 thru 4 inspection & crack repair | $ 40,000 | 2030 | $ 75,000 | $ 42,000 |
| Clearwell 5 thru 8 inspection & crack repair | $ 40,000 | 2032 | $ 81,000 | $ 42,000 |
| Clearwell 1 thru 4 inspection & crack repair | $ 40,000 | 2035 | $ 91,000 | $ 42,000 |
| Clearwell 5 thru 8 inspection & crack repair | $ 40,000 | 2037 | $ 99,000 | $ 42,000 |
| Clearwell 1 thru 4 inspection & crack repair | $ 40,000 | 2040 | $ 111,000 | $ 42,000 |
| Clearwell 5 thru 8 inspection & crack repair | $ 40,000 | 2042 | $ 120,000 | $ 42,000 |
| Abandon Clearwells 1 thru 4 | | 2045 | $ - | $ - |
| Construct new 3MG clearwell to replace Clearwells 1 thru 4 | $ 16,000,000 | 2045 | $ 53,970,000 | $ 16,600,000 |
| Clearwell 5 thru 8 inspection & crack repair | $ 40,000 | 2047 | $ 146,000 | $ 42,000 |
| Clearwell 1 thru 4 inspection & crack repair | $ 40,000 | 2052 | $ 178,000 | $ 42,000 |
| Clearwell 5 thru 8 inspection & crack repair | $ 40,000 | 2057 | $ 216,000 | $ 42,000 |
| | | | **Total Present Worth Cost** | **$ 38,500,000** |

**CDM Smith Calculations**
**Client:** **Evanston**
**Project:** **Finished Water Storage Evaluation (#104153)**
**Detail:** **Task 4 Life-Cycle Cost Evaluation**
**Date** **12/12/2014**

| | |
|---|---|
| Inflation Factor | 4.0% |
| Discount Factor | 4.0% |

**Alternative E**

| Item | Construction Cost in 2014 | Midpoint of Construction | Escalated Cost at Midpoint of Construction (from 2014) | Present Worth Cost (2015 dollars) |
|---|---|---|---|---|
| Repair Clearwells 1 thru 4 | $ 470,000 | 2015 | $ 490,000 | $ 490,000 |
| Construct new reservoir in Leahy Park | $ 22,000,000 | 2016 | $ 23,800,000 | $ 22,900,000 |
| Clearwell 5 thru 8 inspection & crack repair | $ 40,000 | 2017 | $ 45,000 | $ 42,000 |
| Clearwell 1 thru 4 inspection & crack repair | $ 40,000 | 2020 | $ 51,000 | $ 42,000 |
| Clearwell 5 thru 8 inspection & crack repair | $ 40,000 | 2022 | $ 55,000 | $ 42,000 |
| Clearwell 1 thru 4 inspection & crack repair | $ 40,000 | 2025 | $ 62,000 | $ 42,000 |
| Clearwell 5 thru 8 inspection & crack repair | $ 40,000 | 2027 | $ 67,000 | $ 42,000 |
| Clearwell 1 thru 4 inspection & crack repair | $ 40,000 | 2030 | $ 75,000 | $ 42,000 |
| Clearwell 5 thru 8 inspection & crack repair | $ 40,000 | 2032 | $ 81,000 | $ 42,000 |
| Clearwell 1 thru 4 inspection & crack repair | $ 40,000 | 2035 | $ 91,000 | $ 42,000 |
| Clearwell 5 thru 8 inspection & crack repair | $ 40,000 | 2037 | $ 99,000 | $ 42,000 |
| Clearwell 1 thru 4 inspection & crack repair | $ 40,000 | 2040 | $ 111,000 | $ 42,000 |
| Clearwell 5 thru 8 inspection & crack repair | $ 40,000 | 2042 | $ 120,000 | $ 42,000 |
| Abandon Clearwells 1 thru 4 | | 2045 | $ - | $ - |
| Construct new 3MG clearwell east of Sheridan Road | $ 16,000,000 | 2045 | $ 53,970,000 | $ 16,600,000 |
| Clearwell 5 thru 8 inspection & crack repair | $ 40,000 | 2047 | $ 146,000 | $ 42,000 |
| Clearwell 1 thru 4 inspection & crack repair | $ 40,000 | 2052 | $ 178,000 | $ 42,000 |
| Clearwell 5 thru 8 inspection & crack repair | $ 40,000 | 2057 | $ 216,000 | $ 42,000 |
| | | | **Total Present Worth Cost** | **$ 40,600,000** |

# TREATED WATER STORAGE IMPROVEMENTS
# L17-5108

# APPENDIX D

## IHPA SIGN-OFF REQUEST

## IDNR CONSULTATION TERMINATION LETTER

## FEMA FLOOD INSURANCE RATE MAP

Utilities Department
555 Lincoln Street
Evanston, Illinois 60201
T 847.448-8198
TTY 847.448.8064
www.cityofevanston.org

March 30, 2015

Ms. Anne E. Haaker
Deputy State Historic Preservation Officer
Illinois Historic Preservation Agency
1 Old State Capitol Plaza
Springfield, IL 62701-1512

RE: City of Evanston
Treated Water Storage Improvements
Sign-off Request

Dear Ms. Haaker:

The City of Evanston is pursuing funding from the IEPA Revolving Loan Program for the subject project. This project includes replacement of a below-grade concrete water storage tank at the Evanston Water Treatment Plant. The project site is the location of an existing water storage tank and parking lot. The replacement tank will be constructed in almost the same footprint as the existing tank (it will be shifted approximately 20 feet to the east).

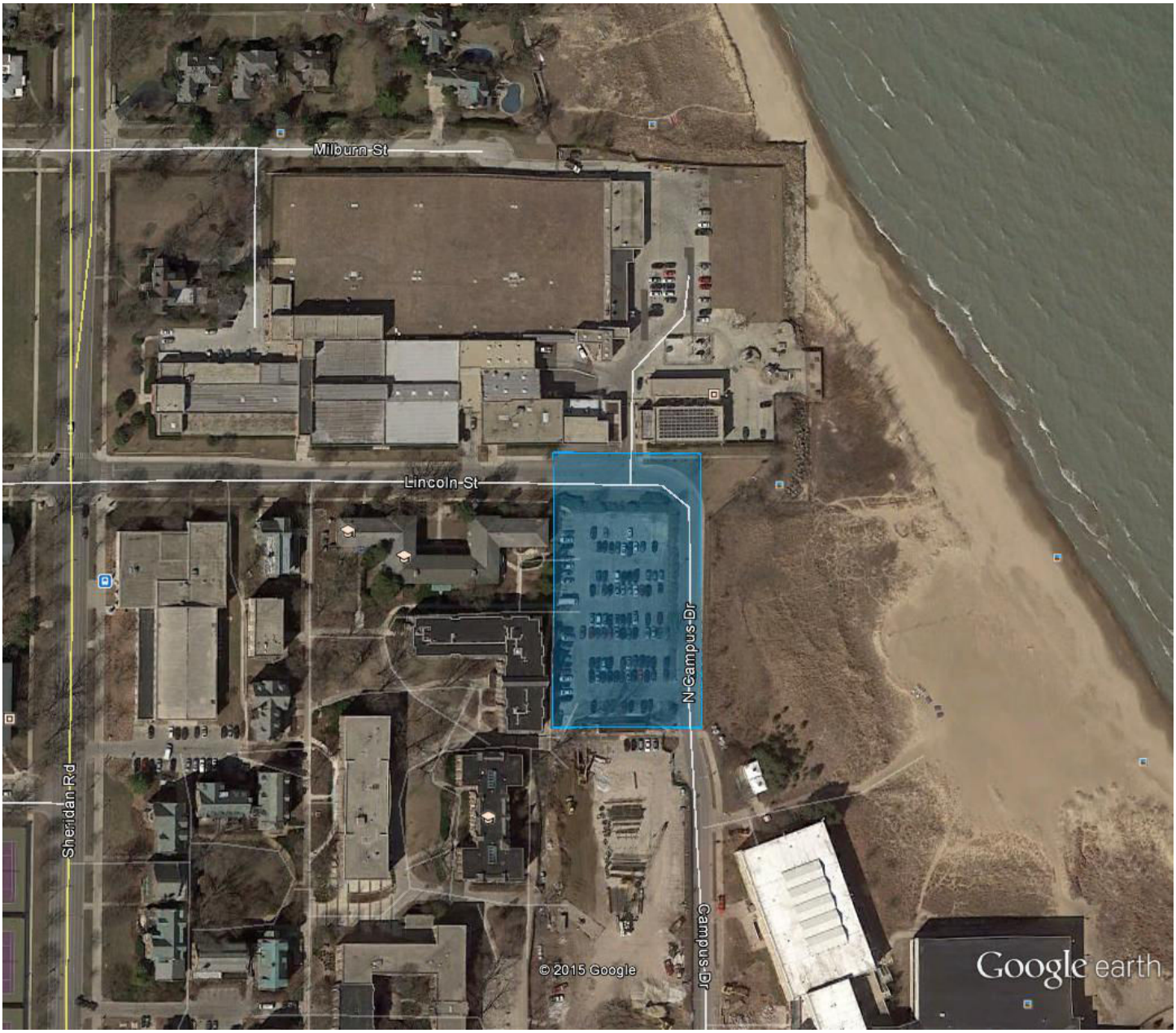
The location of the improvements on the water treatment plant site is shown in blue in the attached map. The project is located at 555 Lincoln Street, Evanston, IL 60201 (Cook County), T41N / R14E / Section 7.

If all is in order, please send me a copy of your sign-off letter. If it is more convenient, you may email it to me at krehg@cityofevanston.org. Thank you.

Sincerely,

_____

Kristin J. Rehg, P.E.
Project Manager
Evanston Utilities Department




Google earth

feet 700
meters 200

Illinois Department of
**Natural Resources**

One Natural Resources Way Springfield, Illinois 62702-1271
http://dnr.state.il.us

Bruce Rauner, Governor
Wayne Rosenthal, Director

March 30, 2015

Kristin Rehg
Kristin Rehg
555 Lincoln Street
Evanston, IL 60201

**RE: Treated Water Storage Improvements**
**Project Number(s): 1510898**
**County: Cook**

Dear Applicant:

This letter is in reference to the project you recently submitted for consultation. The natural resource review provided by EcoCAT identified protected resources that may be in the vicinity of the proposed action. The Department has evaluated this information and concluded that adverse effects are unlikely. Therefore, consultation under 17 Ill. Adm. Code Part 1075 and 1090 is terminated.

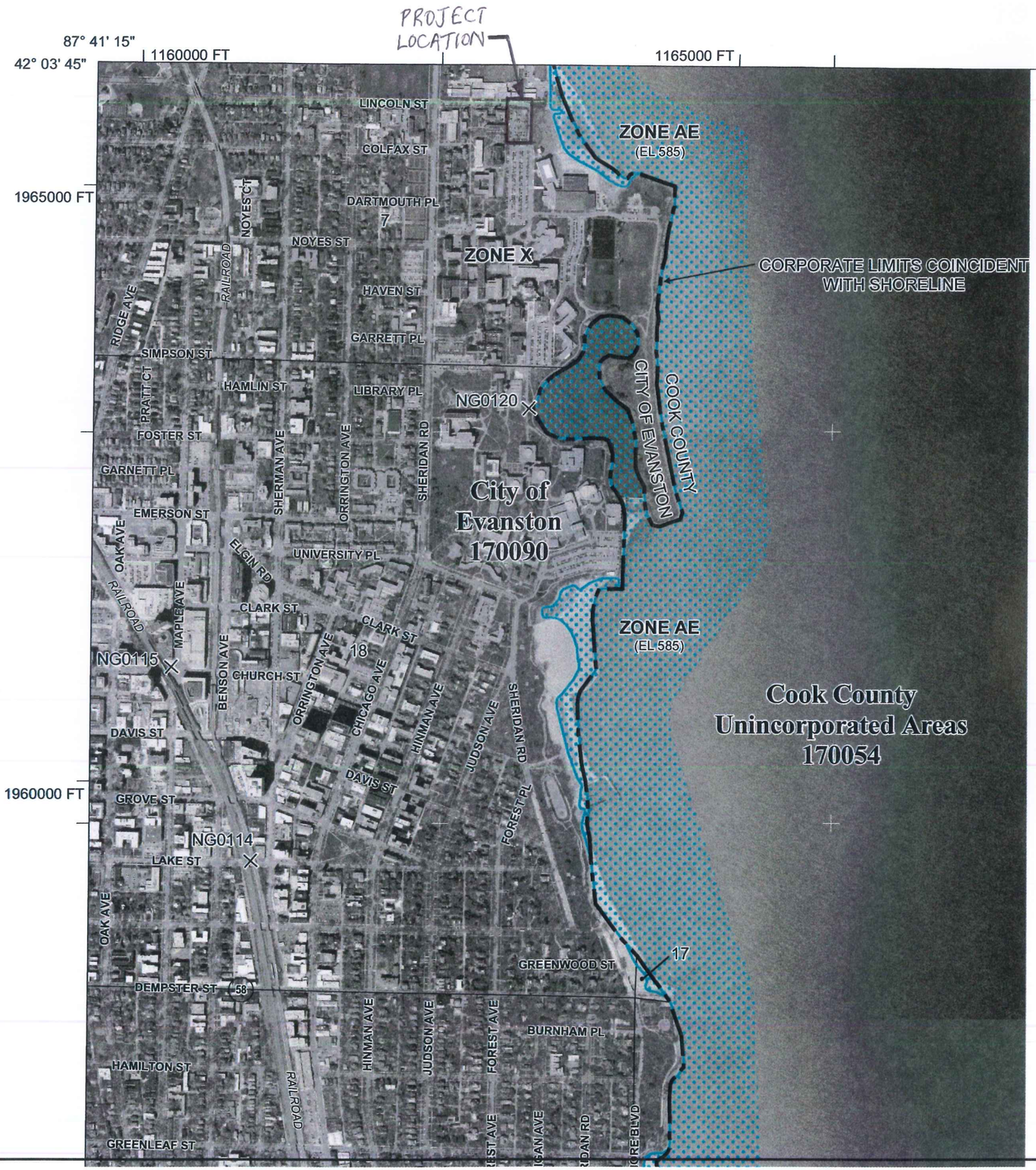
Be aware that state-listed plant species are known to occur on the beach directly east of the project site. Care should be taken to avoid impacts to this area from planned construction activities.

Consultation for Part 1075 is valid for two years unless new information becomes available that was not previously considered; the proposed action is modified; or additional species, essential habitat, or Natural Areas are identified in the vicinity. If the project has not been implemented within two years of the date of this letter, or any of the above listed conditions develop, a new consultation is necessary. Consultation for Part 1090 (Interagency Wetland Policy Act) is valid for three years.

The natural resource review reflects the information existing in the Illinois Natural Heritage Database and the Illinois Wetlands Inventory at the time of the project submittal, and should not be regarded as a final statement on the site being considered, nor should it be a substitute for detailed site surveys or field surveys required for environmental assessments. If additional protected resources are encountered during the project's implementation, you must comply with the applicable statutes and regulations. Also, note that termination does not imply IDNR's authorization or endorsement of the proposed action.

Please contact me if you have questions regarding this review.

Karen Miller
Division of Ecosystems and Environment
217-785-5500




MAP SCALE 1" = 1000'

0 0 1000 2000 FEET

METE

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0270J

# FIRM

## FLOOD INSURANCE RATE MAP

## COOK COUNTY, ILLINOIS

AND INCORPORATED AREAS

**PANEL 270 OF 832**

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

| COMMUNITY | NUMBER | PANEL | SUFFIX |
|---|---|---|---|
| CHICAGO, CITY OF | 170074 | 0270 | J |
| COOK COUNTY | 170054 | 0270 | J |
| EVANSTON, CITY OF | 170090 | 0270 | J |

Notice to User: **The Map Number** shown below should be used when placing map orders; **the Community Number** shown above should be used on insurance applications for the subject community.

**MAP NUMBER**
**17031C0270J**

**MAP REVISED**
**AUGUST 19, 2008**

Federal Emergency Management Agency

Utilities Department
555 Lincoln Street
Evanston, Illinois 60201
T 847.448.8198
TTY 847.448.8064
www.cityofevanston.org/utilities

December 15, 2015

Illinois Environmental Protection Agency
Infrastructure Financial Assistance Section
1021 North Grand Avenue East
P.O. Box 19276
Springfield, IL 62794-9276

Attn: Lanina Clark, Project Manager

RE: City of Evanston PWSLP Project Plan
L17-5108 Treated Water Storage Improvements

Following are responses to the comments and questions resulting from preliminary review of the subject Project Plan. Supplemental documentation is also attached.

**1. Please provide an updated environmental checklist for this project.**

An updated environmental checklist signed by the City's Authorized Representative is attached.

**2. Submit a copy of the IHPA sign-off for this project when received.**

A copy of the IHPA sign-off is attached.

**3. The planning document for the above project mentions that the retail rate payers of Evanston will only be required to repay 20% of the loan repayment and no increase to Evanston retail customer rates are expected to fund this project. How will the other 80% of the loan repayment amount be paid for?**

Further analysis indicates that the Northwest Water Commission (NWC), a wholesale water customer of the City of Evanston, will fund approximately 88% of the loan repayment costs. This is because the NWC's wholesale rate is calculated, in part, based on the value of Evanston Water Utility assets. Based on the formula used to determine the NWC's wholesale rate (per Evanston's water supply agreement with the NWC), Evanston estimates the

following increased revenues from NWC as a result of the subject project. These values are compared to the total annual loan repayment costs.

| Year | IEPA Loan Repayment Cost | NWC Additional Revenue | Evanston Portion of Loan Repayment |
|---|---|---|---|
| 1 | $1,318,200 | $0 | $1,318,200 |
| 2 | $1,318,200 | $1,257,100 | $61,100 |
| 3 | $1,318,200 | $1,250,600 | $67,600 |
| 4 | $1,318,200 | $1,244,500 | $73,700 |
| 5 | $1,318,200 | $1,238,600 | $79,600 |
| 6 | $1,318,200 | $1,233,000 | $85,200 |
| 7 | $1,318,200 | $1,227,700 | $90,500 |
| 8 | $1,318,200 | $1,222,700 | $95,500 |
| 9 | $1,318,200 | $1,218,000 | $100,200 |
| 10 | $1,318,200 | $1,213,600 | $104,600 |
| 11 | $1,318,200 | $1,209,500 | $108,700 |
| 12 | $1,318,200 | $1,205,700 | $112,500 |
| 13 | $1,318,200 | $1,202,300 | $115,900 |
| 14 | $1,318,200 | $1,199,200 | $119,000 |
| 15 | $1,318,200 | $1,196,500 | $121,700 |
| 16 | $1,318,200 | $1,194,100 | $124,100 |
| 17 | $1,318,200 | $1,192,000 | $126,200 |
| 18 | $1,318,200 | $1,190,400 | $127,800 |
| 19 | $1,318,200 | $1,189,100 | $129,100 |
| 20 | $1,318,200 | $1,188,100 | $130,100 |
| **Totals** | **$26,364,000** | **$23,072,700** | **$3,291,300** |
| **% of total repayment cost** | | **88%** | **12%** |

**4. Is there an increase to user rates proposed for wholesale customers to repay the loan amount for this project? If so, are the wholesale customers aware of the increase?**

The increase to NWC's wholesale charges resulting from the additional revenue shown in the table above equates to about $0.16 per 1,000 gallons based on NWC's water demands over the last 12 months. NWC's current wholesale charges equate to about $0.68 per 1,000 gallons, so this would be a rate increase of about 24%. The resulting impact to an average residential customer in one of the NWC's member communities (assume 7,000 gallons per month) would be an additional $1.12 per month.

The City of Evanston has apprised the NWC, in writing, of the anticipated capital cost of the project and that Evanston intends to factor that cost into

NWC's wholesale water rate calculation. The NWC submitted a written response acknowledging Evanston's intent and requesting to be involved in the project to stay informed on the magnitude and timeline of resulting impacts to its wholesale water rate. Copies of both letters are attached.

**5. Please provide a copy of the intergovernmental agreements between Evanston and the Village of Skokie and also Evanston and the Northwest Water Commission if they will be responsible for a portion of the repayment of the loan for this project.**

Evanston's wholesale water supply contract with the Village of Skokie runs through 2/28/2017. The existing contract is different than the contract with NWC, in that it does not allow for the cost of capital improvements to be directly factored in to Skokie's wholesale water rate. Evanston intends to restructure Skokie's next contract, starting 3/1/2017, to more closely align with the rate formula in the NWC contract. However, as contract negotiations have not yet concluded and Evanston cannot guarantee what Skokie's new rate formula will be, we will assume for now that Evanston will pay the remaining share of the loan repayment costs not covered by the NWC.

A copy of Evanston's wholesale water supply agreement with NWC is attached. Pages 10-12 explain how the addition of new assets (capital improvements) affects NWC's wholesale water rate. This agreement runs through 2035, and is automatically renewed in 10-year increments unless either party objects.

**6. If an increase to wholesale rates is proposed to repay the other 80% of the loan repayment amount, how will the rate increase be implemented?**

Wholesale water rates charged to the NWC are updated every year on the following schedule:

- December 31: Evanston's fiscal year ends.
- April – June: Costs for all capital improvements completed by or before the preceding December 31 are incorporated into Evanston's financial audit for the preceding fiscal year.
- July – September: Audited capital costs that are applicable to the NWC (projects related to water supply, treatment, and pumping) are incorporated into the NWC wholesale water rate calculation by an independent third party consultant. Evanston and NWC review the changes to the rate and resolve any discrepancies.
- October 1: New NWC wholesale water rate becomes effective, running through September 30 of the following year.

This project is envisioned to be completed by April 2018. Accordingly, loan payments are assumed to be due in April and October of each year, with the

first payment occurring in October 2018. Based on the above outlined schedule for incorporating the cost of the improvements into NWC's wholesale water rate, Evanston will not begin realizing additional revenue from NWC for this improvement until October 2019.

Therefore, Evanston will be solely responsible for bearing the cost of the first year's loan payments (October 2018 and April 2019), as shown in the table included with the response to comment #3. In recent years, Evanston's water treatment plant capital improvements have averaged about $3 million per year, but we have only $600,000 worth of water plant projects planned for 2018 at this time. Evanston plans to redirect a portion of the unused 2018 capital improvement program allocation to cover the full cost of loan repayment in year 1.

For years 2 – 20 of the loan repayment, additional revenues from the NWC resulting from this project will offset 90-95% of the annual loan repayment cost. Evanston will be responsible for the remainder, which will range from $61,000 to $130,000 per year over the life of the loan (see table included in response to comment #3). At Evanston's current water demands, this equates to $0.02 – $0.04 per 1,000 gallons. It is likely that this cost will be absorbed into the Water Fund budget rather than causing a rate increase, but Evanston will increase rates if needed to cover its portion of the annual loan repayment costs.

**7. Schedule update**

Due to delays in issuing the request for proposals to hire a consulting engineer, the project schedule has been pushed back. The updated schedule is as follows:

| **Table 9.1 Proposed Project Schedule** | |
|---|---|
| Plans and Specifications Finalized* | 8/31/2016 |
| Project Advertised* | 11/3/2016 |
| Bid Opening | 12/20/2016 |
| Notice of Intent to Award | 1/9/2017 |
| Receive IEPA Loan Offer** | 2/23/2017 |
| Notice of Award | 2/27/2017 |
| Notice to Proceed | 2/27/2017 |
| Construction Complete | 4/30/2018 |

* Assumes construction permit issued within 60 days
** Assumes 45-day turn-around.

Please let me know if you require any further information in order to approve this Project Plan.

Sincerely,

Kristin Rehg, P.E.
Project Manager
City of Evanston

X:\Funding\IEPA Loans\Project Plans & Pre-Apps\Treated Water Storage\2015 Project Plan Follow-up\Cover Letter 2015-12-15.docx

Loan Applicant: City of Evanston
L17#: 5108

**IEPA Loan Applicant Environmental Checklist**

**Checklist must be signed by loan applicant's Authorized Representative (not engineering consultant)**

**ALL loan applicants must provide items 1 and 2 below – Items 3-6 are specific to conditions of project.**

---

1) National Historic Preservation Act, Section 106 sign-off:
**Circle one:** (Attached) **OR** **Date requested**_____

---

2) Provide record of consultation with Illinois Department of Natural Resources Office of Realty and Environmental Planning regarding compliance with Illinois Endangered Species Protection Act, Illinois Natural Areas Preservation Act and Illinois Interagency Wetlands Protection Act.
**Circle one:** **EcoCAT printout** (DNR Letter) **Date DNR consultation requested:**_____

**OR** _____ **Project exempt from consultation per Title 17 Ill. Adm. Code Parts 1075 and 1090**

---

3) ____**Yes** X **No** Project involves construction in or near a stream bank (includes stream/river crossing), floodway and/or wetland.
**IF YES: By signing below applicant certifies they will comply with the Rivers, Lakes & Streams Act.**

**IF YES: Comments from the Army Corps of Engineers are:**
**Circle one:** **Attached** **OR** **Date requested**_____

---

4) ____**Yes** X **No** Project involves conversion of prime agricultural land to other uses.
**IF YES** - Description and map of the area to be converted along with a discussion of the necessity of utilizing prime agricultural land for the project must be provided in planning.

---

5) ____**Yes** X **No** Project includes growth resulting in more than a 30% reserve capacity in the present or proposed service.
**IF YES** - Prior to planning approval a detailed discussion in the planning documents must be provided documenting potential secondary impacts of the proposed project.

---

**WASTEWATER PROJECTS ONLY** N/A

**6A)** ____**Yes** ____**No** Project is within jurisdiction of a Designated Water Quality Management Agency such as Chicago Metropolitan Agency for Planning (CMAP), Greater Egypt Regional Planning & Development Commission (GERPDC) or Southwestern Illinois Planning Commission (SIPC).
**IF YES** - Comments from the appropriate agency regarding the project, growth projections and **Facility Planning Area modifications (if applicable)** are:
**Circle one:** **Attached** **OR** **Date requested**_____

**6B)** ____**Yes** ____**No** A change in the Facility Planning Area is proposed
**IF YES** - Comments from Illinois Department of Agriculture regarding the FPA change are required:
**Circle one:** **Attached** **OR** **Date requested**_____

Specific contact information for the various offices and agencies which must be contacted, as well as the sources for further information, is detailed within the instruction guide for this checklist.

Signed: Wally Bobkiewicz Date: 12-10-15
Loan Applicant's Authorized Representative

IHPA
ILLINOIS HISTORIC
Preservation
AGENCY

FAX 217/524-7525

Cook County
Evanston
555 Lincoln Street
Section:7-Township:41N-Range:14E
IEPA LOAN
Underground water storage tank replacement - Evanston Water Treatment Plant

PLEASE REFER TO: IHPA LOG #023040215

April 7, 2015

Kristin J. Rehg
City of Evanston, Dept. of Utilities
555 Lincoln Street
Evanston, IL 60201

Dear Ms. Rehg:

We have reviewed the documentation submitted for the referenced project(s) in accordance with 36 CFR Part 800.4. Based upon the information provided, no historic properties are affected. We, therefore, have no objection to the undertaking proceeding as planned.

Please retain this letter in your files as evidence of compliance with section 106 of the National Historic Preservation Act of 1966, as amended. This clearance remains in effect for two (2) years from date of issuance. It does not pertain to any discovery during construction, nor is it a clearance for purposes of the Illinois Human Skeletal Remains Protection Act (20 ILCS 3440).

If you are an applicant, please submit a copy of this letter to the state or federal agency from which you obtain any permit, license, grant, or other assistance.

Sincerely,

Rachel Leibowitz, Ph.D.
Deputy State Historic
Preservation Officer

1 Old State Capitol Plaza
Springfield IL 62701

ILLINOISHISTORY.GOV

City of
Evanston™

Water & Sewer Division
Utilities Department
555 Lincoln Street
Evanston, Illinois 60201
T 847.448 8198
TTY 847.448.8064
www.cityofevanston.org

February 10, 2015

Mr. John DuRocher
Executive Director
Northwest Water Commission
1525 North Wolf Road
Des Plaines, IL 60016

Re: 1934 Clear Water 5 MG Reservoir at the Evanston Water Works

Dear Mr. DuRocher,

The Evanston City Council accepted staff's recommendation to replace the existing 1934 treated water structure with a new structure. Staff anticipates selecting an engineering consultant to work on the design of the structure replacement by the end of May 2015. It is anticipated that construction of the structure will begin in 2016.

Evanston is notifying the Commission of this work because it will impact the Commission's water rate. The engineer's estimated cost to replace the 1934 treated water storage facility in 2016 is approximately $20,000,000.

The current 1934 structure is a component of the Evanston's water works property related to the treatment facilities necessary to deliver water to the Commission at the point of delivery. This component is listed as asset # 203 in Treatment ('34 clear water resrv 5MG) and is included in the current return on rate base portion of the demand charge to the Commission. The water supply contract allows for additions to the rate base arising out of the retirement and replacement of existing components.

To clarify, the replacement of the 1934 structure will not increase the capacity of the Evanston water works property; is not being replaced due to a Federal or State regulatory requirement, and is not a new reservoir that would be an addition to the treated water storage capacity at the existing Evanston water works plant.

Due to the financial impact this project will have on both Evanston and the Commission, Evanston is requesting written confirmation that the Commission agrees with moving forward with the replacement of the 1934 treated water storage facility and that the Commission agrees that the replacement cost for a new 5 million gallon structure is a component that can be incorporated into the return on rate base portion of the demand charge in accordance with the water supply contract.

Evanston requests that the Commission provide its written confirmation by April 1, 2015 to ensure that any issues are resolved prior to Evanston awarding the engineering work to a consultant.

Thank you for your consideration of this request. We look forward to hearing from you.

Sincerely,

David D. Stoneback,
Utilities Director

NORTHWEST WATER COMMISSION
1525 North Wolf Road
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TEL 847-635-0777
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May 6, 2015

David D. Stoneback
Utility Director
City of Evanston
555 Lincoln St.
Evanston. Il. 60201

Re: 1934 Clear Water 5 MG Reservoir at Evanston Water Works

Dear Mr. Stoneback,

In response to your letter of February 10, 2015 regarding the proposed replacement of the 1934 Clear Water 5MG Reservoir, the Northwest Water Commission acknowledges and supports the recommendation to replace the aged facility with a new structure of the same size. This facility component to the Evanston Water Works is necessary to deliver water to both your customers and the Commission and does not increase the capacity of the Evanston Water Works. The Commission also understands that the cost of replacing the reservoir is only a rough estimate, at this time, which will be subject to addition design and final bidding.

By acknowledging these facts, the Commission understands that the City may seek to increase the return rate base portion of the demand charge to the Commission in accordance with the supply contract. In addition, the Commission reserves the right to evaluate, provide comment and dispute the final calculations of the return rate base portion of the demand charge once the construction costs are finalized. In order to fully understand the City's position we ask to be fully involved in the finalization of the design and discussion of any proposed increase in charges to the Commission.

Thank you for your continued assistance in our mutual efforts to provide reliable high quality water to our customers.

If you have any questions please feel free to let me know.

Sincerely,

William J. Ganek
Interim Executive Director

Northwest water Commission
cc. Northwest Water Commissioners

AMENDED AND RESTATED
WATER SUPPLY CONTRACT
BETWEEN
THE NORTHWEST WATER COMMISSION
AND
THE CITY OF EVANSTON

THIS AGREEMENT, made and entered into between THE NORTHWEST WATER COMMISSION (formerly THE DES PLAINES, MOUNT PROSPECT, ARLINGTON HEIGHTS, AND PALATINE WATER COMMISSION and hereinafter referred to as the "Commission") and THE CITY OF EVANSTON (hereinafter referred to as "Evanston"),

W I T N E S S E T H:

WHEREAS, the Commission is a water commission created under Chapter 24, Article 11, Division 135, Illinois Revised Statutes, 1979; and

WHEREAS, the Commission was created to acquire and operate a common source of supply of water and to develop facilities of sufficient capacity to furnish an adequate supply of filtered water to Commission customers using Lake Michigan as the source of supply; and

WHEREAS, Evanston is the owner of a water works plant that currently takes water from Lake Michigan to furnish water for the use of area inhabitants; and

WHEREAS, the Commission desires to purchase water from Evanston for distribution and sale by the Commission to certain customers; and

WHEREAS, the Commission is authorized under Chapter 24, Article 11, Division 135, Illinois Revised Statutes, 1979, to enter into this contract; and

WHEREAS, Evanston is willing to furnish water to the Commission and will have available water in the quantities hereinafter contracted for to be sold by it to the Commission; and

WHEREAS, the Commission and Evanston, after lengthy negotiations and deliberations, and in order to compromise, settle and resolve certain disputes between them which arose in connection with interpretation and application of the Water Supply Contract dated March 4, 1981, have agreed to amend and restate that original contract between them, as set forth herein:

NOW, THEREFORE, in consideration of the mutual covenants and agreements herein contained, the parties hereto hereby agree as follows:

1. Supply of Water. Subject to the terms and conditions hereinafter set forth, Evanston shall sell and deliver to the Commission, and the Commission shall purchase and receive from Evanston, a maximum of 55 million gallons per day of Lake Michigan water, as required by the Commission to satisfy the Commission's maximum 24-hour demands for Lake Michigan water for resale to the Commission's customers, which 55 million gallons per day shall be delivered at a rate not to exceed 75 million gallons per day. All water that is provided to the Commission shall be from the official Illinois Department of Transportation allocation granted to the Commission or to its customers.

Evanston shall at all times use maximum feasible efforts to avoid interruptions or reductions of the water required to be delivered by it to the Commission. In the event that, by reason of any emergency, system failure or malfunction, Evanston is unable, despite the use of such maximum feasible efforts, to supply the full water needs of itself, its other customers and the Commission, the total amount of water which Evanston is able to supply to such parties, excluding any water available from the New Reservoir described in paragraph 6(k)(vii) of this contract, none of which shall be supplied to the Commission unless and to the extent that the Commission has made a contribution in accordance with paragraph 17(a) of this contract to cover a portion of Evanston's investment in the New Reservoir which has been allocated to the Commission, shall be equitably apportioned among them. The Commission agrees to use its best efforts to maintain storage facilities equal in capacity to its average day demand.

Nothing in this agreement shall be construed to prohibit the Commission from serving any of its customers in whole or in part with water from wells owned by the Commission or any of its customers or from entering into any emergency water service agreement with any other party or from securing an alternate supply of Lake Michigan water to serve any water need it may have in excess of 55 million gallons per day.

2. Quality of Water. The water to be delivered by Evanston and received by the Commission hereunder shall be of such quality as to meet or exceed, at the point of delivery, any water quality

standards heretofore or hereafter enacted or promulgated by the United States Public Health Service, the Department of Public Health of the State of Illinois, the Federal or State of Illinois Environmental Protection Agencies, or such other State or Federal agency or agencies as shall have jurisdiction from time to time to enact or promulgate such standard, except as follows: Evanston shall not be required to comply with 40 C.F.R. Subpart I, "Control of Lead and Copper", §§141.80-141.85, and 35 Illinois Administrative Code Subtitle F, "Public Water Supplies", Part 611, "Primary Drinking Water Standards", Subpart G, "Lead and Copper," or any equivalent requirements for implementing and maintaining optimal corrosion control treatment for control of lead and copper content, including addition or injection of corrosion control inhibitors or implementing other measures, with respect to the water delivered by Evanston and received by the Commission. The Commission shall be required to meet, at its own cost, any such requirements applicable to the water to be delivered to the municipalities served by the Commission. However, Evanston shall implement and maintain optimal corrosion control treatment for control of lead and copper content pursuant to such regulations, including addition or injection of corrosion control inhibitors, or take other measures, for the water to be delivered by Evanston and received by the Commission if Evanston is requested in writing by the Commission to do so and if such treatment or measures can be implemented and maintained at the Evanston water works plant at or before the point of delivery of water to the Commission, in which

case the Commission shall, in addition to any other charges under this Contract, reimburse Evanston on a monthly basis, as billed by Evanston, for Evanston's actual cost to implement and maintain such optimal corrosion control treatment for control of lead and copper content or to take such other measures with respect to the water delivered by Evanston and received by the Commission. At the Commission's request, Evanston shall enter into a separate letter agreement to more particularly describe the service to be provided and the charges to be imposed in connection with implementing and maintaining such optimal corrosion control treatment for control of lead and copper content or taking such other measures.

3. Point of Delivery. Evanston shall deliver to the Commission the water herein required at its water plant at Lincoln Street in Evanston, Illinois, at not less than 50 p.s.i. at the average centerline of the high lift pumps.

4. Meters. Water sold to the Commission shall be measured at the point of delivery, or at such other point as may be approved by the Commission and Evanston, through a meter or meters selected by the parties hereto which shall be furnished and installed by the Commission and maintained by Evanston. Said meter or meters shall be available for inspection and examination by the Commission at all times. All statements for water delivery shall be based upon readings of such meters, except as hereinafter set forth.

Once per month, on a date as near to the end of a calendar month as practicable, Evanston shall calibrate all meters used for measuring the quantity of water delivered from Evanston to the

Commission. Such calibration shall be done in the presence of a representative of the Commission and the parties shall jointly observe any adjustments that are made to the meters in case any adjustments shall be necessary. The cost of meter maintenance shall be charged to the Commission at a rate of $200 per month through and including the month of September 1993; thereafter, there shall be no charge for meter maintenance unless and until such charge is reimposed, beginning October 1, 2006, due to initiation of an arbitration proceeding as provided for in paragraph 16(c) hereof.

The Commission may, at its option and its own expense, install and operate a check meter to check each meter maintained by Evanston, but the measurement of water for the purpose of this contract shall be solely by the meters maintained by Evanston as hereinbefore provided, except in the case hereinafter specifically provided to the contrary. All such check meters shall be of standard make and shall be subject at all reasonable times to inspection and examination by any designated employee or agent of Evanston. The reading, calibration and adjustment of all such check meters shall be performed only by the Commission, but Evanston shall be given notice of any calibration and adjustment of such meters; provided, however, that during any period when a check meter is being used under the provisions hereinafter set forth for measuring the amount of water delivered, the reading, calibration and adjustment thereof shall be performed by Evanston.

If either party at any time observes a variation between a

delivery meter and a check meter or any other evidence of meter malfunction, such party shall promptly notify the other party, and the parties hereto shall then cooperate to procure an immediate calibration test and joint observation of any adjustment, and such meters shall then be adjusted to accuracy.

Each party shall give the other party forty-eight (48) hours' notice of the time of all tests of meters so that the other party may arrange to have a representative present. If said representative is not present at the time set in such notice, the calibration and adjustment may, notwithstanding any other provision of this paragraph, proceed in the absence of said representative. The notice herein required may be waived in writing by either party.

If, upon any inspection or test, any metering equipment is found to be out of service or the percentage inaccuracy of any metering equipment is found to be in excess of two percent (2%), registration thereof as well as charges for water based thereon shall be corrected, by agreement of the parties based on the best data available, for a period extending back to the time when such inaccuracy began, if such time is ascertainable and, if such time is not ascertainable, then for a period extending back one-half (1/2) of the time elapsed since the last date of calibration, but in no event further back than a period of six (6) months. For such purposes, the best data available shall be deemed to be the registration of any check meter or meters if the same have been installed and are accurately registering. Otherwise, the amount of

water delivered during such period may be estimated (1) by correcting the error if the percentage of the error is ascertainable by calibration tests or mathematical calculation; or (2) if the error is not ascertainable by calibration tests or mathematical calculation, by estimating the quantity of delivery by reference to deliveries during the preceding periods under similar conditions when the meter or meters were registering accurately. Any inability to agree upon such correction or estimate shall be referred to arbitration pursuant to paragraph 8 of this contract.

5. Unit of Measurement. The unit of measurement for water delivered hereunder shall be gallons of water, U.S. Standard Liquid Measure, and all measuring devices shall, unless the parties otherwise agree, be so calibrated. In the event that it should become necessary or desirable to use other units of measurement, the basis of conversion shall be that 7.48 gallons is equivalent to one (1) cubic foot.

6. Billing and Rates.

(a) Billing. Commencing as of the end of the first month in which deliveries of water are made by Evanston to the Commission hereunder (when used herein, the term "delivery of water" shall not be deemed to include deliveries for construction, testing and other incidental uses), which the parties agree was March 1985, Evanston shall render bills to the Commission on a monthly basis for all water delivered.

For all months through and including September 30, 1993, and except as provided in subparagraphs (f) , (g) and (i) hereof,

bills shall be based on the rates and components determined in accordance with the provisions hereinbelow set forth in subparagraphs (a) through (d) hereof.

Bills for months through and including September 30, 1993, shall consist of two parts as follows:

Part One - Demand Charge: A fixed monthly payment consisting of (i) one-twelfth of the Annual Return on the Fair Value Rate Base as determined in accordance with subparagraph (b) of this paragraph 6; and (ii) a depreciation charge determined in accordance with subparagraph (c) of this paragraph 6.

Part Two - Quantity Charge: A payment based on the quantity of water delivered through the metering point(s) to the Commission's facilities multiplied by the Quantity Rate determined in accordance with the provisions of subparagraph (d) of this paragraph 6.

For all months commencing October 1, 1993, and thereafter, and except as provided in subparagraphs (i) and (l) hereof, bills shall be based on the rates and components determined in accordance with the provisions hereinbelow set forth in subparagraphs (j) and (k) hereof, which rates and components shall be determined annually to be effective as of October 1 of each year. The twelve month period commencing October 1 shall be called the "Service Year." The "Fiscal Year" shall mean the Fiscal Year of the Evanston Water Department, which, after December 31, 1994, shall be the twelve month period beginning on the first day of March and ending on the

last day of the following February.

For all bills submitted by Evanston pursuant to this contract for months beginning on and after October 1, 1993, meter readings taken at the beginning and end of the monthly billing period in question shall be set forth on the bill. All bills so submitted shall be paid by the Commission within 30 days of the receipt of each bill. Any bill not paid within 15 days of the due date, other than those bills originally submitted by Evanston prior to the effective date of this amended and restated contract for the months from October 1993 through such effective date, shall be deemed delinquent and shall bear interest from the due date until the date of payment at the rate of 10 per cent per annum.

(b) Return on Rate Base. "Rate Base" shall consist of those components of Evanston's water works property relating to lake intake and associated source of supply structures, pumping plant and water treatment facilities necessary to deliver water to the Commission at the point of delivery, such components in service on the date of this contract being more specifically set forth in Appendix A which is attached hereto and hereby incorporated as a part hereof.

"Original Cost Rate Base" shall consist of the components of Rate Base valued at the original cost to Evanston of acquisition, construction and installation as reflected on the books, records and financial statements of Evanston less accrued depreciation as of the end of the Fiscal Year used as a basis for determining charges hereunder.

"Reproduction Cost New Rate Base" shall consist of the components of Rate Base valued initially by a computation as of the end of the last Fiscal Year ended prior to the commencement of delivery of water hereunder. Reproduction Cost New Rate Base shall be recomputed every five years as of the end of each succeeding fifth Fiscal Year reflecting components then properly allocated to Rate Base pursuant to this contract. All computations of Reproduction Cost New Rate Base shall utilize the most current valuation of the Water Works Properties of the City of Evanston, as developed by a reputable qualified consulting engineering firm experienced in water works valuation, adjusted to the applicable year of the rate determination by utilizing the then current Engineering News Record 20 Cities Construction Cost Index. Accrued depreciation as determined by the engineering firm's valuation study plus accrued depreciation which has occurred from the date of the valuation to the applicable year of the rate determination shall be deducted from the reproduction cost new of the plant in service.

"Fair Value Rate Base" shall be computed initially as of the end of the latest Fiscal Year of Evanston ended prior to the commencement of delivery of water hereunder, shall be recomputed every five years thereafter as of the end of each succeeding fifth Fiscal Year, and shall consist of the sum of 75% of the original Cost Rate Base plus 25% of the Reproduction Cost New Rate Base as of the computation date.

The Fair Value Rate Base so computed shall be subject to

adjustment annually as of the end of each Fiscal Year between Fair Value Rate Base recomputations to reflect additions to and retirements of plant contained in the Rate Base during the Fiscal Year. Additions shall be valued at their original cost until recomputation of the Fair Value Rate Base, at which time such additions shall be valued in the same manner as the Fair Value Rate Base. Retirements shall be valued at their fair value as reflected in the last previous Fair Value Rate Base computation.

No additions to Rate Base representing the construction, installation or acquisition of additional intake and associated source of supply structures, buildings, filters, settling basins, or any other supply, pumping or treatment facilities designed to increase the capacity of the Evanston water works property shall be allocated to the Commission without its written consent unless and until the Commission shall desire to exceed the 55 million gallons per day use specified in paragraph 1 hereof, in which event the parties shall negotiate in good faith to determine whether such excess use requires an expansion of the Evanston plant and, if so, the basis for allocating the cost of such expansion among the then current users of the plant. This paragraph shall not, however, prohibit additions to rate base arising out of the retirement and replacement of source of supply, pumping plant or water treatment plant assets in accordance with sound management practices, which retirements and replacements may incidentally upgrade or improve the operation or capacity of Evanston's water plant. Any failure by the parties to agree as to whether an addition to rate base for

any addition or replacement is permitted or prohibited under this paragraph shall be referred to arbitration in accordance with paragraph 8 hereof.

"Annual Return on Rate Base" shall be an amount determined by multiplying the commission's share of Fair Value Rate Base as of the end of the latest Fiscal Year as hereinabove provided by 9.5%. The Commission's share of Fair Value Rate Base shall be determined by allocating to the Commission a portion of such Fair Value Rate Base, as adjusted and recomputed from time to time as provided herein, based upon the ratio of its customers' water allocations as established by order of the Illinois Department of Transportation (IDOT Allocation) during the Fiscal Year to the aggregate IDOT Allocations of Evanston, the Commission's customers and other customers or users of the Evanston water works system; provided, however, that until the end of the first two full Service Years of delivery of water hereunder, the Commission's customers' IDOT Allocation shall be deemed to be the Commission's average daily use or a percentage of the Commission's customers' actual IDOT Allocation, whichever is higher, said percentage being 50% for the period from the first delivery of water hereunder until the end of the first Service Year and 60% in the second Service Year.

(c) Depreciation Charge. Depreciation charges shall be computed as of the end of each month following commencement of the delivery of water to the Commission hereunder and shall consist of one-twelfth of an annual depreciation charge, computed by applying

the depreciation rates utilized by Evanston as of the date hereof, as set forth in Appendix B which is attached hereto and hereby incorporated as a part hereof, to the original cost of the depreciable plant in service contained in the Fair Value Rate Base allocated to the Commission pursuant to subparagraph (b) of this paragraph 6. As of the date when any depreciable plant addition allocable to the Fair Value Rate Base as provided in subparagraph (b) above shall be placed in service or any depreciable plant in the Fair Value Rate Base is retired from service, charges for depreciation to the Commission shall be correspondingly adjusted as of the end of the month in which the addition or retirement took place.

(d) Quantity Rate. The Commission shall pay to Evanston a Quantity Charge based upon a Quantity Rate equal to the Commission's share of the "Operating Costs" per 1,000 gallons of water delivered to the point of delivery. The "Operating Costs" to be included in determining the Quantity Rate shall be the costs assigned to the functions of pumping, filtration, administration and insurance as reflected in the audited financial statements of the Evanston Water Fund and as described in Appendix C which is attached hereto and hereby incorporated as a part hereof. The operating costs applicable to deliveries during the Service Year beginning each October 1 shall be determined based on the results of operation of the Evanston water works, as audited by independent certified public accountants, for the current Fiscal Year, which includes the October 1 Service Year starting date. However, during

the Service Year the operating costs applicable to deliveries during the Service Year shall be determined based on the results of operation as reflected in the financial statements of the Evanston Water Fund, as audited by independent certified public accountants, for the Fiscal Year immediately preceding the commencement of the Service Year. The total Quantity Charge shall be adjusted at the end of each Service Year to reflect the actual, total Quantity Charge owed to Evanston based on current Fiscal Year operating costs as finally determined by the current annual audit performed by independent certified public accountants. Accordingly, at the end of each Service Year there shall be a final Quantity Charge or Credit issued by Evanston to the Commission to adjust the total Quantity Rate computed by utilizing the current Fiscal Year audited operating costs. This final charge or credit must be settled within thirty days of the issuance of the invoice or credit memo. In determining the Quantity Rate, Operating Costs shall be allocated to the Commission based upon the ratio of its Average Day Water Use of the Evanston water works system to the aggregate Average Day Water Use of Evanston, the Commission and other customers or users of said system during the Fiscal Year.

The Quantity Rate shall not include any portion of any cost included in computing the Fair Value Rate Base, Annual Return on Rate Base or Depreciation Charge.

(e) Advance Computations. For Service Years beginning on or before October 1, 1992, and for Service Years beginning on and after October 1, 2006, should the methods and principles for

determining billings and rates under subparagraphs (a) through (d) of paragraph 6 hereof become applicable to such Service Years as a result of arbitration pursuant to paragraph 16(c) of this contract, Evanston shall deliver to the Commission not less than 30 days prior to the start of a new Service Year a computation of the Original Cost Rate Base, Reproduction Cost New Rate Base, Fair Value Rate Base, Annual Return on Rate Base, Depreciation Charge and Quantity Rate to be utilized in billing the Commission during the coming Service Year with supporting explanations, data and work papers including an identification of any adjustments to the actual results of operations during the Fiscal Year as reported in the audited financial statements of the Evanston Water Fund made for purposes of determining new charges. The Commission may, at its option and its own expense, examine the books and records of the Evanston Water Fund upon giving no less than 10 days' written notice of its intention to do so. Any such examination shall take place at the Evanston Civic Center during regular business hours.

For Service Years beginning on and after October 1, 1993, and continuing so long as the methods and principles for determining billings and rates set forth in subparagraphs (j) and (k) hereof remain in effect, Evanston shall deliver to the Commission not less than 60 days prior to the start of a new Service Year a computation of the rate per 1000 gallons to be utilized in billing the Commission during the coming Service Year with supporting explanations, data and work papers, provided, that this requirement of advance delivery of the rate computation shall not apply to the

Service Years commencing October 1, 1993 and October 1, 1994. For each Evanston Fiscal Year beginning on or after January 1, 1993, Evanston shall provide to the Commission the following data:

(i) Evanston's audited financial statement. (It is assumed that said statement will set forth individually the Water Fund operating expenses for the following accounts: Administration (1900 Group), Pumping (1905 Group), and Filtration (1910 Group). If said expenses are not set forth in the statement, they shall be separately provided.)

(ii) The amount of pension expense included in the operating expense accounts for Administration (1900 Group), Pumping (1905 Group) and Filtration (1910 Group).

(iii) The amount of insurance expense contained in insurance expense accounts 1935.401, 1935.420, 1935.421 and 1935.423.

(iv) A list of plant additions and retirements within Source of Supply (WF 171), Pumping Plant (WF 172) and Water Treatment Plant (WF 173), with the cost of each such addition and retirement.

(v) Evanston's annual report of its 5-year capital improvements program.

Evanston shall provide the following data to the Commission periodically or as available:

(i) Updates every fifth year of Reproduction Cost New Less Depreciation for Source of Supply, Pumping Plant and Water Treatment Plant components of the water plant. For purposes of this item, Evanston shall not be required to have a valuation performed by a consulting engineering firm.

(ii) Any appraisal of the water plant that Evanston, in its sole discretion, may choose to have performed.

(iii) Any capital improvements study of the water plant that Evanston, in its sole discretion, may choose to have performed.

In the event that a dispute arises concerning any of the computations provided for in this subparagraph (e), and the parties

are unable to reach an agreement on any of said computations, such computations shall become subject to arbitration in accordance with paragraph 8 hereof.

(f) Initial Rates. Until such time as data from the first full Fiscal Year following commencement of water deliveries to the Commission hereunder are available for purposes of establishing rates as herein provided, the Commission shall pay such estimated rates as may be agreed upon by the parties based upon the formulas hereinabove set forth and the best available estimates of projected water uses and costs. At the end of such period there shall be an accounting and adjustment between the parties based upon actual experience during said period. Any surplus paid by the Commission or deficit owing from the Commission shall be recouped or paid in twelve equal monthly installments by appropriate adjustments to the bills rendered to the Commission pursuant to subparagraph (a) of this paragraph 6.

(g) Charges for Construction Water. Water taken from the Evanston system by the Commission for construction, testing and other incidental uses prior to the first delivery of water hereunder, shall be metered and shall be billed to and paid for by the Commission on a monthly basis at the rate of 18 cents per thousand gallons.

(h) Illustrative Calculation. For the purposes of illustrating the parties' intent and understanding concerning the method of computing the water rate to be charged to the Commission for Service Years (i) through and including September 30, 1993, and

(ii) beginning October 1, 2006, and thereafter should the methods and principles for determining billings and rates under subparagraphs (a) through (d) of this paragraph 6 become applicable to such Service Years as a result of arbitration pursuant to subparagraph 16(c) of this contract, Appendixes D and E attached hereto are hereby incorporated as illustrative examples of the computations necessary to calculate such rate, except, however, that, with respect to the method of computing the water rate during the period and under the conditions specified in (ii), if any inconsistencies exist between subparagraphs (a) through (d) of this paragraph 6 and Appendix D, on the one hand, and Appendix E, on the other hand, Appendix E shall control.

(i) Billing Credit for Service Years Through September 30, 1993: Notwithstanding the provisions of subparagraphs (a) through (d) of this paragraph 6, the Commission and Evanston agree that in full compromise, settlement and resolution of all bills for water delivered by Evanston and received by the Commission for periods through and including September 30, 1993, and of all claims and disputes relating to such bills, Evanston (i) shall retain all amounts actually paid by the Commission in respect of such bills, which shall constitute full and complete payment of such bills, and (ii) shall give the Commission credits in the total amount of $850,000 against bills for water delivered by Evanston and received by the Commission for periods commencing on and after October 1, 1993. The total credit of $850,000 shall be utilized as follows: (A) $717,431 shall be applied against amounts owed by the

Commission to Evanston for water delivered by Evanston and received by the Commission during the period October 1, 1993, through December 31, 1994; and (B) the balance of the total credit shall be applied at the rate of $2,946 per month against amounts billed for water delivered by Evanston and received by the Commission during the period from January 1, 1995, through September 30, 1998. For the period of October 1, 1993, through December 31, 1994, Evanston shall submit a statement to the Commission showing the amount billed for that period in accordance with subparagraph (j) of this paragraph 6, any amounts already paid by the Commission for that period, and the amount of the credit being applied to that period. Evanston shall show on its bill rendered to the Commission for each month in the period January 1, 1995, through the month in which the remaining credit is exhausted, the total amount billed, any amount previously paid by the Commission in respect of service for that month, the amount of credit applicable to that month pursuant to this subparagraph (i), and the net amount, if any, due from the Commission to Evanston or from Evanston to the Commission.

(j) Rates for Service Years Beginning on and After October 1, 1993. Subject to the provision of subparagraph (i) of this paragraph 6 and paragraph 16(c) of this contract, for Service Years beginning October 1, 1993, and thereafter, Evanston shall bill the Commission and the Commission shall pay Evanston for water delivered by Evanston and received by the Commission at a rate consisting of a Base Rate, calculated as set forth in this subparagraph (j), plus, for Service Years beginning on and after

October 1, 2006, a Regulatory Adjustment Charge, if any, in accordance with, and calculated as set forth in, subparagraph (k) hereof. The Base Rate shall be as follows:

(i) For the Service Year beginning October 1, 1993, 30.8 cents per 1000 gallons.

(ii) For each Service Year beginning October 1, 1994 and thereafter, the rate per 1000 gallons applicable in the immediately preceding Service Year multiplied by 1.WXYZ, where ".WXYZ" shall be calculated as described in the following subparagraphs (A) and (B):

(A) Calculate "Annual Inflation" equal to

a. the percentage change, expressed as a decimal, in the Consumer Price Index -- All Urban Consumers -- Chicago, IL/Northwest IN, as published by the U.S. Department of Labor, Bureau of Labor Statistics, 1982-1984=100, or any successor index (hereinafter referred to a the "CPI"), from the value of the CPI at the second December preceding the Service Year to the value of the CPI at December preceding the Service Year, plus

b. the percentage change, expressed as a decimal, in the national Producer Price Index -- Total Durable Goods, as published by the U.S. Department of Labor, Bureau of Labor Statistics, 1982=100, or any successor index (hereinafter referred to as the "PPI"), from the value of the PPI at the second December preceding the Service Year to the value of the PPI at December preceding the Service Year,

c. said sum (a+b) then divided by two to produce the average of the percentage change of the CPI and the PPI and

d. subject to the limitations that (1) if the resulting dividend ((a+b)/2) is

greater than the ceiling of 0.090, Annual Inflation shall be deemed to be 0.0900, and (2) if the resulting dividend is less than the floor of 0.0375, then Annual Inflation shall be deemed to be 0.0375.

(B) Subtract 0.0175 from Annual Inflation as calculated pursuant to the preceding subparagraph 6(j)(ii)(A).

(k) Regulatory Adjustment Charge for Certain Costs Due to Changes in Federal or State Regulatory Requirements.

(i) Calculation of Regulatory Adjustment Charge. Unless the methods and principles for determining billing rates under subparagraphs (a) through (d) of paragraph 6 hereof become applicable to Service Years beginning on and after October 1, 2006, as a result of arbitration pursuant to subparagraph 16(c) of this contract, for Service Years beginning on and after October 1, 2006, in addition to the Base Rate, Evanston shall bill and the Commission shall pay, where the conditions set forth in this subparagraph (k) are satisfied, a Regulatory Adjustment Charge, calculated as set forth in this subparagraph (k). The Regulatory Adjustment Charge, if any, for the Service Year shall be equal to the product of (A) the Commission's share (based on the ratio of its 55 million gallon per day reservation to the rated maximum daily capacity of the Evanston water works plant during such Service Year (for purposes of this provision, the parties agree that the rated maximum daily capacity of the Evanston water works plant at November 30, 1994, is 108 million gallons per day)) multiplied by (B) the sum of the total annual Principal and Interest Charges plus Net Operating Cost for such Service Year,

attributable to the Qualified Capital Equipment and Facilities. The Regulatory Adjustment Charge, if any, for any Service Year shall be billed by Evanston and paid by the Commission in twelve equal installments as a separately identified item or items on the monthly bills rendered by Evanston.

(ii) Qualified Capital Equipment and Facilities. "Qualified Capital Equipment and Facilities" means capital equipment and facilities

(A) required in serving the Commission,

(B) properly classified in one of the three accounts originally used in computing the Commission's Rate Base, that is, Source of Supply, WF171.00, Pumping Plant, WF 172.000, or Water Treatment Plant, WF173.000,

(C) having an initial acquisition cost calculated in the Service Year in which installation of such equipment or facility is commenced, equal to or greater than the Threshold Value, which Threshold Value shall be $1 million in the Service Year beginning October 1, 1993, and for each Service Year beginning October 1, 1994 and thereafter shall be the Threshold Value in the immediately preceding Service Year multiplied by 1.ABCD, where ".ABCD" is the Annual Inflation as defined in subparagraph 6(j)(ii)(A) above,

(D) but only when the need for such equipment or facilities is certified by an independent engineering firm to be entirely and directly due to a specific, identifiable addition or additions to, or change or changes in, Federal or State statutes or

regulations applicable to operation of the Evanston water works plant and/or the delivery of water to the Commission therefrom, including without limiting the foregoing, additions to or changes in the regulations of the United States Public Health Service, the United States Environmental Protection Agency, the Department of Public Health of the State of Illinois, the Illinois Pollution Control Board, or the Illinois Environmental Protection Agency, or any successor departments or agencies, which addition(s) or change(s) become effective on or after October 1, 2006 (hereinafter referred to as a "New Regulation"). Such certification shall be conclusive and binding on the parties.

Any such equipment or facility which is entirely and directly due to a New Regulation shall be deemed Qualified Capital Equipment and Facilities notwithstanding the fact that the equipment or facility also produces other benefits to Evanston such as reducing operating expenses, increasing operating efficiencies, or permitting the retirement of other water works properties. Notwithstanding the foregoing, however, the New Reservoir defined in subparagraph (vii) below shall not be Qualified Capital Equipment and Facilities.

In determining whether to certify equipment or facilities, or what portion of the cost of equipment and facilities to certify, as Qualified Capital Equipment and Facilities, the independent engineering firm shall include only the minimum cost of equipment and facilities necessary to comply with the New Regulation, and shall not include any costs for the equipment or

facilities incurred by Evanston for purposes other than compliance with the New Regulation, such as costs to improve or upgrade the operation, or to expand the capacity, of the Evanston water works plant, that are not entirely and directly due to the New Regulation. Evanston may, in its discretion, incur costs in connection with the acquisition and installation of Qualified Capital Equipment and Facilities for equipment, facilities or purposes not required for compliance with a New Regulation, but none of such additional costs shall be included in the calculation of the Regulatory Adjustment Charge.

(iii) Principal and Interest Charges. "Principal and Interest Charges" means (A) the actual principal and interest payments due during the Service Year in question attributable to the bonds (or that portion of bonds) issued to finance the acquisition and installation of Qualified Capital Equipment and Facilities less the annual depreciation charge which would have been recorded for any assets required in serving the Commission which are retired in connection therewith, computed on a straight-line basis of depreciation using the depreciation rates shown in Appendix B, or (B) if no bonds are issued, the amount of Imputed Payments for such Qualified Capital Equipment and Facilities less the amount of the annual depreciation charge which would have been recorded for any assets required in serving the Commission which are retired in connection therewith, computed on a straight-line basis of depreciation using the depreciation rates shown in Appendix B, where "Imputed Payments" means the principal and

interest charges that would be incurred in the Service Year in question if the Qualified Capital Equipment and Facilities had been financed by an issue of 20-year bonds to be retired by 40 equal, semi-annual payments at an annual interest rate equal to the average interest rate, in the month in which the principal contract for the Qualified Capital Equipment and Facilities is signed by Evanston, for newly-issued municipal bonds carrying the same rating as Evanston's bonds as reported in the Municipal Bond Buyer or similar publication. Principal and Interest Charges shall not be less than zero.

(iv) Net Operating Cost. The "Net Operating Cost" shall be (A) the increase in annual operating expense properly recorded by Evanston in the Water Fund expense accounts for Administration (1900 Group), Pumping (1905 Group), and Filtration (1910 Group), and the portion of the increase in annual operating expense properly recorded by Evanston in the applicable expense accounts for Insurance (1935.401, 1935.423, 1935.420 and 1935.41) that is allocated to the Water Fund, entirely and directly attributable to the operation and maintenance of the Qualified Capital Equipment and Facilities, less (B) any reduction in the operating expense categories specified in subpart (A) entirely and directly attributable (1) to the operation and maintenance of the Qualified Capital Equipment and Facilities or (2) to the retirement due to the installation of the Qualified Capital Equipment and Facilities of any assets at the Evanston water works plant in the Source of Supply, Pumping Plant and/or Water Treatment Plant

categories which had been required in serving the Commission, which annualized Net Operating Costs for the first Service Year incurred shall be so certified by the independent engineering firm identified in subparagraph (k)(ii)(D) above.

(v) Procedure for Certification of Qualified Capital Equipment and Facilities. The independent engineering firm identified in subparagraph (k)(ii)(D) above shall not have been previously employed by either party for at least 4 years prior to the date of its appointment pursuant to said subparagraph, and shall not be utilized by Evanston in connection with designing or installing the Qualified Capital Equipment and Facilities in question. Its contract shall be executed jointly, and its fees shall be shared equally, by Evanston and the Commission. The independent engineering firm shall be informed that its determination of what expenditure is "entirely and directly" due to the New Regulation is to be based on the minimum cost of acquiring and installing, or operating and maintaining, as the case may be, capital equipment and facilities strictly necessary to comply with the New Regulation, and shall not include any expenditures that serve to improve or upgrade operation of, or expand the capacity of, the Evanston water works plant but that are not entirely and directly required by the New Regulation.

(vi) Termination of Regulatory Adjustment Charge. At such time as Evanston ceases to incur any Principal and Interest Charges that are incorporated in the Regulatory Adjustment Charge, either by retirement of bonds actually issued or by reaching the

end of the 20-year amortization period for Imputed Payments specified in subparagraph (k)(iii) above, the Regulatory Adjustment Charge shall be reduced by that amount. The Commission shall continue to pay the balance, if any, of the Regulatory Adjustment Charge.

(vii) New Reservoir. The "New Reservoir" shall mean any addition installed after November 30, 1994 to the treated water storage capacity existing at the Evanston water works plant.

(l) Rates for Service Years Beginning on and After October 1, 2006, in the Event of Exercise of the Right to Reopen. In the event that either the Commission or Evanston exercises the right to reopen determination of the rates to be billed by Evanston and paid by the Commission for water delivered by Evanston and received by the Commission as provided for in paragraph 16 hereof, Evanston shall continue to bill and the Commission shall continue to pay for water received from October 1, 2006, until the completion of the negotiations and/or arbitration proceedings provided for in paragraph 16 at the rates determined in accordance with subparagraphs (j) and (k) of this paragraph 6. Within 30 days following completion of such negotiations or such arbitration proceedings, Evanston shall calculate the amount due from the Commission for water received on and after October 1, 2006, at the rates agreed to or established in, or calculated pursuant to the methods and principles agreed to or established in, such negotiations or such arbitration proceedings, less the amount theretofore actually paid by the Commission for water received on

and after October 1, 2006, and shall render to the Commission a bill or credit for the net amount due from or to the Commission, as the case may be. Thereafter, Evanston shall bill, and the Commission shall pay, for water delivered by Evanston and received by the Commission at the rates agreed to or established in, or calculated pursuant to the methods and principles agreed to or established in, such negotiations or such arbitration proceedings; provided, that this provision shall not eliminate the right of either party to refer any new issues or disputes arising thereafter to arbitration in accordance with paragraph 8 hereof.

7. Service to Others. Except for municipalities and other customers being served by Evanston on the date of this agreement, Evanston agrees not to supply water to any municipality or other customer unless it can do so without impairing the Commission's right to service in accordance with the terms of this contract and, in particular but without limitation, its right to receive 55 million gallons of water per day from Evanston's existing water plant without any increase in the rate base allocable to the Commission under this contract.

8. Arbitration. It is hereby expressly understood and agreed that, if any point in this contract is unclear or ambiguous, or in case of any dispute arising between the parties hereunder, said point or dispute shall, at the written request of either party, be referred to arbitration for determination or settlement under the Uniform Arbitration Act (Ill. Rev. Stat., ch. 10, § 101-123 (1979)), including amendments that may hereafter be made

thereto which at any particular time are in force and effect. The arbitration board shall consist of three (3) experienced specialists in the matter to be arbitrated. One member of the arbitration board is to be chosen by Evanston, one is to be chosen by the Commission, and the two thus named shall appoint a third member, who shall serve as chairman. If the two thus named cannot agree upon a third within ten (10) days, they shall be dismissed, and two other persons shall be appointed as outlined above, this procedure to continue until the full board results; provided, however, that nothing in this section shall act to halt any negotiations, or to relieve Evanston or the Commission of the responsibility for seeking an equitable settlement.

Arbitration hearings shall take place at the Evanston Civic Center unless the parties shall agree to some other place.

It shall be the responsibility of the arbitration board to demand a clear and concise definition of the matter or matters at issue, and to decide and demand whatever information, testimony, or other aid is necessary to its deliberations. It shall be the responsibility of Evanston and the Commission to meet such demands promptly and without reservation.

Any award pursuant to arbitration as herein provided for shall be accompanied by a written opinion of the arbitrators giving reasons for the award. In case of a determination as to a point that has not been covered or adequately covered herein, or that is unclear or ambiguous, the arbitrators in making their determination shall include a consideration of the general objectives sought to

be obtained under this contract and what would appear to be reasonable under the circumstances.

The arbitrators shall be entitled to reasonable compensation and to incur reasonable expenses, and such compensation and all other expenses of the arbitration board shall be shared equally by Evanston and the Commission unless the arbitrators shall specify some other allocation based on the equities of the situation. References in this contract to specific matters to be referred to arbitration in accordance with this paragraph shall not be construed to preclude the referral of any other matter.

9. Regulatory Bodies. This contract shall be subject to all valid rules, regulations, and laws applicable hereto passed or promulgated by the United States of America, the State of Illinois, or any governmental body or agency having lawful jurisdiction, or any authorized representative or agency of any of them; provided, however, that this clause shall not be construed as waiving the right of either party to challenge the validity of any such rule, regulation, or law on any basis, including impairment of this contract.

10. Modification. Any other provision of this contract to the contrary notwithstanding, this contract may be changed or modified only with the consent of the governing bodies of both the Commission and Evanston. Such modification may be requested by either party, in which event, unless the parties shall agree to some other procedure or time, a joint meeting of such governing bodies shall be held not more than thirty (30) days after the

giving of such notice, at which joint meeting the requested changes or modifications shall be discussed and considered.

11. Notices. All notices or communications provided for herein shall be in writing and delivered either in person or by United States Mail, via certified or registered mail, return receipt requested, and with the proper postage prepaid, addressed to the party for whom such notice or communication is intended at the address shown below or at such other address as specified by notice given in accordance herewith:

If for the Commission:

Executive Director
Northwest Water Commission
1525 North Wolf Road
Des Plaines, Illinois 60016

If for Evanston:

City Manager
Evanston Civic Center
2100 Ridge Avenue
Evanston, Illinois 60201

12. Severability. Should any part, term, or provision of this contract be determined by a court of competent jurisdiction to be illegal or in conflict with any law, the validity of the remaining portion or provisions shall not be affected thereby.

13. Term of Contract. Subject to the provisions of paragraph 16 hereof, this contract shall continue in force and effect for a period of forty-five (45) years from the date of first delivery of water to the Commission hereunder (which is not more than 40 years from the effective date of this amended and restated contract), which date of first delivery Evanston and the Commission agree was

March 1, 1985, and shall be renewed automatically at ten (10) year intervals thereafter unless either party hereto conveys notice of its intention to terminate this contract, in writing, not less than five (5) years prior to the end of the initial period hereof or any such ten-year period thereafter. However, both parties hereby agree to negotiate in good faith with reference to the continuation, extension, or renewal of this contract in the event that one party conveys notice of its intention to terminate the contract and the other party hereto requests that said party negotiate for the continuation, extension or renewal of this contract.

14. Effective Date. This amended and restated contract shall become effective on the first day of the next month commencing immediately after its execution by the parties.

15. Termination Contingency. Either party shall have the right to terminate this contract by written notice to the other, delivered not later than June 1, 1981, in the event that the Commission has not, on or before April 1, 1981, entered into binding agreements to sell at least a 1984 annual average of 16.8 mgd of Lake Michigan water to its member municipalities or other customers beginning not later than January 1, 1984. Upon such notice being given as herein provided, this contract shall be of no further force or effect, and neither party shall thereafter have any obligation to the other by reason of this contract. If no such notice is given on or before June 1, 1981, this paragraph shall be of no further force or effect and this contract shall not

thereafter be terminated except in accordance with the provisions of paragraph 13 above or by mutual consent of the parties pursuant to paragraph 10 above.

16. Right to Reopen Determination of Billings and Rates for Service.

(a) Exercise of Right to Reopen. Either party hereto may cause negotiations for the purpose of determining the rates to be billed by Evanston and paid by the Commission for water delivered by Evanston and received by the Commission hereunder on and after October 1, 2006, to be reopened (hereinafter referred to as "Reopening") by giving written notice to the other party, on or before April 1, 2006, but in no event before October 1, 2005, that it is initiating Reopening. Such written notice shall be given by placing it with the United States Postal Service for delivery by registered mail, return receipt requested, postmarked not later than April 1, 2006. Such written notice shall include proposed amendment or amendments to the provisions of this contract relating to the determination of billings and rates for water provided by Evanston to the Commission.

(b) Negotiation. Should either party request Reopening in accordance with subparagraph (a) of this paragraph 16, the Commission and Evanston shall promptly commence negotiations towards determination of a revised method or methods for determining the billings and rates for water provided by Evanston to the Commission on and after October 1, 2006. Such negotiations need not be limited to consideration of the amendment or amendments

to the contract proposed in the written notice submitted by the party initiating Reopening, and may result in an agreement that no change should be made in the provisions of the contract relating to determination of billings and rates for water provided by Evanston to the Commission. Nothing in this Paragraph 16 shall be construed to impose on either the Commission or Evanston any obligation, responsibility or duty whatever to agree to any change in the provisions of this amended and restated contract, each party reserving to itself absolute discretion to decline any proposal advanced pursuant to this Paragraph 16.

(c) Arbitration. Should the parties fail to reach agreement as to the method for determining billings and rates for water provided by Evanston to the Commission under the contract within six months after the date of the notice initiating Reopening, or such later date as Evanston and the Commission may in writing agree, the rates to be billed by Evanston and paid by the Commission for water delivered by Evanston and received by the Commission on and after October 1, 2006, shall thereafter be determined in accordance with the principles and methods set forth in subparagraphs (a), (b), (c) and (d) of paragraph 6 hereof, i.e., the methods and principles applicable under this contract prior to October 1, 1993, as modified by Appendix E hereto, and the determination of the rates for the Service Year beginning on October 1, 2006, shall be referred to arbitration in accordance with paragraph 8 hereof, unless Evanston and the Commission have agreed on such rates. In such arbitration, the arbitrators shall

be limited to determining the rate to be applicable for the Service Year beginning October 1, 2006. The methods and principles to be applied by the arbitrators in determining the rates to be applicable for such Service Year, and to be applied in determining the rates in subsequent Service Years, shall be the methods and principles set forth in the aforesaid subparagraphs (a), (b), (c) and (d) of paragraph 6 hereof as modified by Appendix E hereto, provided, that the parties shall stipulate to and shall not contest, and the arbitration board shall accept as agreed, the components of Annual Return on Rate Base, Original Cost Rate Base, Reproduction Cost New Rate Base, Fair Value Rate Base, Depreciation Charge, and Operating Costs set forth in Appendix E hereto and the methods and procedures reflected therein for calculating said figures. The pendency of arbitration proceedings pursuant to this subparagraph (c) shall not prohibit the parties from continuing negotiations pursuant to subparagraph (b), but neither party shall have any obligation to continue such negotiations.

(d) Rights and Obligations Relating to Delivery and Receipt of Water Unaffected. The initiation of Reopening pursuant to this paragraph 16, and the pendency of any negotiations or arbitration proceedings hereunder, shall not affect the rights and obligations of Evanston and the Commission under this contract relating to the delivery and receipt of water.

(e) Right to Extend or Shorten Term of Contract. Following the conclusion of any negotiations pursuant to subparagraph (b) hereof or of any arbitration proceedings pursuant

to subparagraph (c) hereof, the party which did not initiate Reopening may in its sole discretion elect either to extend or to shorten the term of the contract by five (5) years. Such election shall be made by giving written notice thereof to the other party within 180 days following the effective date of any amendment to the contract agreed to through negotiations pursuant to subparagraph (b) hereof or the date of the arbitration award pursuant to subparagraph (c) hereof.

17. Provisions Relating to Potential Requirement for New Reservoir.

(a) Adequacy of Present Treated Water Storage Capacity. The Commission and Evanston agree that it is not necessary for Evanston to construct a New Reservoir, and that should Evanston construct additional treated water storage capacity after November 30, 1994, the Commission shall not, under any circumstances, be entitled to, or make any demand for, any allocation of water from such additional treated water storage capacity pursuant to paragraph 1 hereof in the event of emergency, system malfunction or failure, unless and to the extent that the Commission has made a contribution, in an amount agreed to by both parties, and in addition to the rates for water service provided for in this contract, to cover a portion of Evanston's investment in such additional treated water storage capacity which shall have been allocated to the Commission, but nothing in this contract shall require the Commission to make any such contribution.

(b) Cooperation Concerning Potential Requirement for New

Reservoir. In consideration for the exclusion of the costs of a New Reservoir from the calculation of the Regulatory Adjustment Charge pursuant to subparagraph (k) of paragraph 6, the Commission agrees to cooperate with and assist Evanston, in both informal activities and formal proceedings, in demonstrating to the Illinois Environmental Protection Agency and the Illinois Pollution Control Board that Evanston should not be required to construct any additional treated water storage capacity. In carrying out this obligation, the Commission agrees to, among other things, advocate to the Illinois Environmental Protection Agency and the Illinois Pollution Control Board that, insofar as the demands of the Commission's customers are taken into account in determining the need for additional treated water storage capacity, the capacity of the Commission's reservoir in Des Plaines, Illinois should be included as part of the treated water storage capacity at the Evanston water works plant in determining whether the treated water storage capacity at the Evanston water works plant is sufficient in relation to the demands of the customers served by the plant.

18. Booster Station Operation. The Commission's Morton Grove Booster Pump Station (the "Booster Station") shall be operated in accordance with the following procedures:

(a) The Booster Station shall be operated only when pumpage rates from the Evanston Water Treatment Plant to the Commission reservoir are equal to, or greater than, 2.083 million gallons per hour. It is understood and agreed that these hourly pumpage rates will generally not be necessary unless (1) the total

daily (24 hour) water demand of the Commission is at least 40 mgd; or (2) there is a declared emergency situation at the Evanston plant.

(b) All precautions shall be taken to prevent the short cycling use of the Booster Station. In general, Evanston shall attempt to use the Booster Station a minimum of six hours per occurrence of operation.

(c) The objective in operating the Booster Station shall be to provide the Commission with an adequate supply of water which will satisfy the Commission's maximum 24-hour water demand of 55 million gallons.

(d) The Evanston operator shall notify the Commission's operator a minimum of six hours in advance of when the Booster Station will be used, unless shorter notice is necessary due to emergency conditions. However, all efforts shall be made, whenever possible, to notify the Commission's operator during normal working hours prior to the startup of the Booster Station.

(e) The Booster Station shall be operated in accordance with the technical procedures set forth in Appendix F, which is attached hereto and hereby incorporated.

(f) Evanston shall pay all electricity costs associated with the operation of the pumps at the Booster Station, but only for electricity actually used to operate the pumps.

IN WITNESS WHEREOF, the parties hereto, acting under authority of their respective governing bodies, have caused this amended and restated contract to be executed in several counterparts, each of

which shall constitute an original, all as of this 27 day of April, 1995.

THE NORTHWEST WATER COMMISSION

By: William R. Ballen
Chairman

Attest:
P Stephen Stengell
Clerk

THE CITY OF EVANSTON

By:
City Manager

Attest:
Kristen L. Davis
Clerk

APPENDIX A

ALLOCATION OF RATE BASE
AND OPERATING EXPENSES

I. Rate Base.

Rate Base shall consist of those components of Evanston's water works property relating to lake intake and associated source of supply structures, pumping plant, and water treatment facilities necessary to deliver water to the Commission reflected in the following accounts in the books and records of the Evanston Water Fund, which books and records are maintained and will continue to be maintained during the term of this Agreement in accordance with the system of accounts promulgated by the Municipal Finance Officers' Association of the United States and Canada, as described in the manual entitled Governmental Accounting, Auditing, and Financial Reporting, published 1968.

| Account No. | Description | Balance at January 1, 1980 |
|---|---|---|
| WF 171.000 | Source of Supply | $ 3,654,469 (1) |
| WF 172.000 | Pumping Plant | 1,952,884 (1) |
| WF 173.000 | Water Treatment Plant | 5,579,962 (1) |
| | | |
| | | |
| | | |
| WF 171-009 | Accumulated Depreciation Source of Supply | ( 441,933) (1) |
| WF 172.099 | Accumulated Depreciation Pumping Plant | ( 860,180) (1) |
| WF 173.099 | Accumulated Depreciation Water Treatment Plant | (1,970,940) (1) |
| | | |
| | | |
| | | |
| | | |
| | | |

(1) Cost Basis

APPENDIX B

## DEPRECIATION RATES

The Depreciation Charge pursuant to this Agreement shall be based on the depreciation rates for the various classes of plant set forth below:

| Class of Plant | Annual Rate of Depreciation |
|---|---|
| Source of Supply | 1.11% |
| Pumping Plant | 1.81% |
| Water Treatment Plant | 1.71% |

APPENDIX C

Quantity Rate

Operating Costs to be included in determining the Quantity Rate shall be the costs assigned to the functions of pumping, filtration and administration reflected in the following accounts in the books and records of the Evanston Water Fund. For insurance costs, the portion to be allocated and the basis for such allocation are as set forth below:

| Account No. | Description | Actual Costs Year Ended 12/31/79 | Basis of of Allocation |
|---|---|---|---|
| 1900 Group | Administration | $146,328.64 | SEE BELOW |
| 1905 Group | Pumping | $417,380.09 | " |
| 1910 Group | Filtration | $347,624.92 | " |
| 1935.401 | Insurance | $ 22,499.00 | " |
| 1935.423 | Insurance | $ 19,897.00 | " |
| 1935.420 | Insurance | $ 6,235.00 | " |
| 1935.421 | Insurance | $ 245.87 | " |

Explanation of basis of allocation

Entire amount allocated to Commission based upon the ratio of its average day water use of the Evanston Water Works System to the aggregate average day water use of Evanston, the Commission and other customers or users of said system during the fiscal year.

APPENDIX D

## ILLUSTRATIVE COMPUTATION OF CONTRACT RATES

The following computations illustrate the charges which would be payable by the Northwest Water Commission to the City of Evanston for the Service Year October 1, 1980 to September 30, 1981 if Evanston were to deliver water to the Commission, Skokie and its own customers in aggregate quantities equal to the IDOT Lake Michigan Allocations for the year 1981 and if Evanston incurred the total costs reflected in its budget for the fiscal year ended February 28, 1981 and had the same level of plant in service as at December 31, 1979. These computations are intended only as examples to illustrate how rates are computed.

Return on Rate Base (Paragraph 6(b))

The annual Return on Rate Base is 9.5% of that portion of the Fair Value Rate Base allocated to the Commission. The portion of rate base allocable to the Commission is the ratio of the Commission's IDOT water allocations to the aggregate allocations of Evanston and all other users of the Evanston water system.

| 1980 Allocations | MGD | % of Total |
|---|---|---|
| Evanston | 11.982 | |
| Skokie | 14.228 | |
| Commission | 17.209 | 39.63% |
| Total | 43.419 | |

The Fair Value Rate Base is determined by adding 75% of the net original cost of water plant used to provide service to 25% of the net reproduction cost new of water plant in service.

| Original Cost Rate Base (at 12/31/79) | Cost | Depreciation | Net Book Cost |
|---|---|---|---|
| Source of Supply | $3,654,469 | ($ 441,933) | $3,212,536 |
| Pumping Plant | 1,952,884 | ( 860,180) | 1,092,704 |
| Water Treatment Plant | 5,679,962 | ( 1,970,940) | 3,709,022 |
| | | | $8,014,262 |
| Total Original Cost Rate Base | | | $6,010,697 |
| 75% of Original Cost Rate Base | | | |

| Reproduction Cost New Rate Base * | Reproduction Cost | Depreciation | Net |
|---|---|---|---|
| Source of Supply | $12,751,983 | ($2,320,778) | $10,431,20! |
| Pumping Plant | 8,516,647 | ( 2,887,692) | 5,628,95. |
| Water Treatment Plant | 22,849,096 | (. 7,006,268) | 15,842,82 |
| | | | $31,902,98 |
| Total Reproduction Cost Rate Base | | | $ 7,975,74 |
| 25% of Reproduction Cost Rate Base | | | |

*Figures are from Reproduction Cost Study prepared by Evanston. The Study begins with a 1966 appraisal of the Evanston Water System. Engineering News Record 20 Cities Construction Cost Indices are applied to all plant using the 1966 appraisal as the base with appropriate indices being used for plant added to the system after the 1966 appraisal and with adjustments to reflect plant included in the 1966 appraisal but subsequently retired.

| Fair Value Rate Base | |
|---|---|
| 75% of Original Cost | $ 6,010,697 |
| 25% of Reproduction Cost | 7,975,747 |
| Total Fair Value Rate Base | $ 13,986,444 |
| Percent Allocable to Commission | 39.63% |
| Commission Rate Base | $ 5,542,828 |
| Rate of Return | 9.5% |
| Return on Rate Base | $ 526,569 |

Depreciation Charge (Paragraph 6(c))

The Depreciation Charge is determined each month by taking 1/12 of the annual depreciation rate times the original cost of depreciable plant in service contained in the fair value rate base allocated to the Commission.

1/12 X Deprec. Rate X Orig. Cost of Plant allocable to Commission = Monthly Charge

| | | |
|---|---|---|
| 1. | Source of Supply | |
| | 1/12 X 1.11% X 3,654,469 X 39.63% | $ 1,340 |
| 2. | Pumping Plant | |
| | 1/12 X 1.81% X 1,952,883 X 39.63% | 1,167 |
| 3. | Water Treatment Plant | |
| | 1/12 X 1.71% X 5,679,962 X 39.63% | 3,208 |
| | Total Monthly Charge | $ 5,715 |
| | X 12 | X12 |
| | Annual Charge | $ 68,580 |

Quantity Rate (Paragraph 6(d).)

The total Quantity Charge is determined at the end of each Service Year to reflect the actual costs to Evanston of the functions of pumping, filtration, administration and insurance. $200 per month for meter maintenance is allocated directly to the Commission. Those total costs budgeted by Evanston for the fiscal year ended February 28, 1981 were as follows:

| | | |
|---|---|---|
| a. | Pumping | $ 492,762 |
| b. | Filtration | 385,554 |
| c. | Administration | 154,322 |
| d. | Insurance | 42,499 |
| | Total Costs | $ 1,075,137 |

The Total Costs are divided by the gallons of water delivered to determine the Quantity Rate per 1,000 gallons of water delivered to the point of delivery. Total gallons assumed for the Service Year ended September 30, 1981 (based on 1981 IDOT allocations) were as follows:

| | | Quantity (000 gals.) |
|---|---|---|
| a. | Evanston | 4,373,430 |
| b. | Skokie | 5,193,220 |
| c. | Commission | 6,281,285 |
| | Total Water | 15,847,935 |
| | Cost per 1,000 gallons | 6.78¢ |

The Quantity Rate per 1,000 gallons is multiplied by the quantity delivered to the Commission to determine the total quantity charge.

| Quantity Rate | X | Quantity (1,000 gal.) | = | Total Charge |
|---|---|---|---|---|
| 6.78¢ | X | 6,218,285 | = | $421,600 |

Total Contract Charges:

| | |
|---|---|
| Return on Rate Base | $ 526,569 |
| Depreciation on Charges | 68,580 |
| Quantity Charges | 421,600 |
| Meter Maintenance | 2,400 |
| Total | $1,019,149 |

# APPENDIX E

## RESOLUTION OF PREVIOUSLY DISPUTED ITEMS FOR PURPOSES OF ARBITRATION PURSUANT TO PARAGRAPH 16(c) OF AMENDED AND RESTATED WATER SUPPLY CONTRACT AND SUBSEQUENT WATER RATE CALCULATION

For purposes of any arbitration conducted pursuant to paragraph 16(c) of the amended and restated contract, and thereafter for purposes of determining billings and rates for water delivered by Evanston and received by the Commission pursuant to subparagraph 6(1) and subparagraphs 6(a) through 6(d) of the amended and restated contract, the matters set forth in this Appendix E are stipulated and agreed to by the Commission and Evanston and shall be accepted as agreed by any arbitration board acting pursuant to this contract. In case of any conflict between this Appendix E and the original contract executed on March 4, 1981, or any prior interpretation of it, this Appendix E shall control.

### I. Quantity Charge

#### A. General

The calculation of the Quantity Rate and Quantity Charge shall be in accordance with subparagraph 6(d) and Appendix C of the contract and this Appendix E.

The attached Schedule A, which is by this reference incorporated herein, sets forth an illustrative calculation of the Quantity Rate and Quantity Charge. The figures contained in Schedule A are entirely fictitious and are intended solely to illustrate the method of calculation pursuant to subparagraph 6(d) and Appendix C of the contract and this Appendix E.

B. Sludge Removal Costs and Pension Costs

Notwithstanding anything set forth in subparagraph 6(d) and Appendix C of the contract, costs included in calculating the Commission's Quantity Rate and Quantity Charge for the Service Years beginning October 1, 2006, and thereafter, shall include fees for sludge removal as billed to Evanston by the Metropolitan Water Reclamation District or its successor agency, or costs incurred by Evanston for such removal if said agency ceases to carry out such removal, but shall not include any expense incurred by Evanston for pension costs, including any contributions to the Illinois Municipal Retirement Fund or any successor entity.

C. Calculation and Recalculation

During each Service Year, the Commission shall be billed a monthly Quantity Charge equal to the number of gallons used by the Commission during the month divided by 1,000 and multiplied by the Quantity Rate per 1,000 gallons. The Quantity Rate per 1000 gallons shall be determined by dividing the total applicable costs, as described in subparagraph 6(d) and Appendix C of the contract and Paragraph I.B above, incurred during the last Fiscal Year[1] ending before the beginning of such Service Year, by the total gallons of water used by all users of the Evanston water plant during the same Fiscal Year and dividing the resulting figure by 1,000.

After the September 30 conclusion of each Service Year, the Quantity Rate for that Service Year shall be recalculated and adjusted

[1]Through December 31, 1994 the Fiscal Year of the Evanston Water Department, for purposes of this contract, was from January 1 through December 31. After December 31, 1994 the Fiscal Year is from March 1 through February 28.

based on cost data updated by one Fiscal Year. Thus, after the September 30 conclusion of each Service Year, the Commission's Quantity Charge for such Service Year shall be recalculated by dividing the Commission's total water usage for that Service Year by 1,000 and multiplying that figure by the Quantity Rate per 1,000 gallons as determined for the Fiscal Year ending during such Service Year. The difference between the recalculated Quantity Charge for the Service Year and the sum of the monthly Quantity Charges previously billed during such Service Year, whether a charge or credit to the Commission, shall be billed and settled within 60 days after the conclusion of such Service Year.

D. Calculation In 2006.

Subject to the provisions of the first sentence of subparagraph 6(1) of the amended and restated contract, the Quantity Charge for the Service Year beginning October 1, 2006, shall be based, initially, on the Quantity Rate per 1,000 gallons, determined as described above, for the last Fiscal Year ending prior to the beginning of the October 1, 2006 Service Year (i.e., ending February 28, 2006). At the end of that Service Year, September 30, 2007, the Quantity Charge shall be recalculated based on the Quantity Rate per 1,000 gallons during the Fiscal Year ending during that Service Year (i.e., ending February 28, 2007), and the appropriate additional charge or credit resulting from the recalculation shall be billed or credited to the Commission.

II. Return On Rate Base Charge

A. General

The calculation of the Return on Rate Base Charge shall be in accordance with subparagraph 6(b) of the contract and this Appendix E.

The attached Schedules B, B-1 and B-2, which are by this reference incorporated herein, set forth illustrative calculations of the Return on Rate Base Charge, and its components, the Fair Value Rate Base, the Original Cost Rate Base ("OCLD rate base"), and the Reproduction Cost New Rate Base ("RCNLD rate base"). The figures contained in said Schedules are fictitious and are intended solely to illustrate the method of calculation pursuant to subparagraph 6(b) of the contract and this Appendix E.

No plant additions installed after December 31, 1992, other than the Zebra Mussel Equipment described in II.C.2 below, shall be included in any component of the rate base to the extent that the addition increases the capacity of the water plant or any component thereof beyond its existing capacity as of December 31, 1992. If Evanston, in its sole discretion, chooses to install a plant addition that in part replaces the capacity of any existing plant component, equipment or facility and in part increases the capacity of such component, equipment or facility beyond that which previously existed, the rate base shall be adjusted to incorporate a pro rata portion of the cost of the plant addition based on the ratio of the previously existing capacity to the new capacity.

No New Reservoir, as defined in subparagraph 6(k)(viii) of the contract, shall be included in any component of the rate base.

B. No Recalculation

The annual Return On Rate Base Charge shall be determined for each Service Year based on the Fair Value Rate Base as of the end of the last Fiscal Year ended prior to such Service Year. Unlike the Quantity Charge, the Return On Rate Base Charge shall be final as billed during the Service Year and shall not be recalculated and adjusted at the end of the Service year.

Pursuant to subparagraph 6(b) of the contract, the Commission's share of the Fair Value Rate Base during a Service Year is a percentage calculated by taking the ratio of the Commission's customers' IDOT allocations commencing during the Fiscal Year to the aggregate IDOT allocations of Evanston, the Commission's customers and other customers or users of the Evanston water system.[2]

C. Calculation in 2006

The Return on Rate Base Charge for the Service Year beginning October 1, 2006, shall be 9.5% of the Commission's share of the Fair Value Rate Base as of the end of the last Fiscal Year ending prior to October 1, 2006 (i.e., as of February 28, 2006).

1. Fair Value Rate Base

The Fair Value Rate Base, which consists of 75% of the OCLD rate base and 25% of the RCNLD rate base, shall be subject to recomputation as of the end of each fifth Fiscal Year ending on or after December 31, 2004 (the initial recomputation is thus to be as of

[2]For example, for the Service Year from October 1, 2006 to September 30, 2007, the Fair Value Rate Base would be determined as of the end of the last preceding Fiscal Year, ending February 28, 2006, and the Commission's share would be based on the IDOT allocations established during that last preceding Fiscal Year, which would be the 2006 allocations effective from October 1, 2005 to September 30, 2006.

the Fiscal Year ending February 28, 2005). In the years intervening between the five-year recomputations, the Fair Value Rate Base shall be adjusted as of the end of each Fiscal Year to reflect additions (at original cost), retirements (at their Fair Value as reflected in the last previous Fair Value Rate Base computation), and depreciation during such Fiscal Year, as illustrated in the attached Schedules B, B-1 and B-2.

Accordingly, for the Service Year beginning October 1, 2006, the Fair Value Rate Base shall be 75% of the OCLD rate base plus 25% of the RCNLD rate base, each as of the end of the Fiscal Year ending on or immediately after December 31, 2004 (i.e., the Fiscal year ending February 28, 2005) and adjusted to the end of the last Fiscal Year ending prior to October 1, 2006 (i.e., the Fiscal Year ending February 28, 2006), to incorporate plant additions, retirements and depreciation during such Fiscal Year, as illustrated in the attached Schedules B, B-1 and B-2.

The Fair Value Rate Base at the end of the 1992 Fiscal Year (December 31, 1992), before allocation to the Commission, is $22,807,076, consisting of the following component values[3]:

| | |
|---|---|
| Original Cost: | $19,761,048 |
| Less Accumulated Depreciation: | $ 5,911,431 |
| Equals Original Cost Rate Base: | $13,849,617 x 0.75 = $10,387,213 |
| Reproduction Cost New: | $60,369,971 |

[3]These figures are broken down into Source of Supply, Pumping Plant and Treatment Plant in the attached Schedule D, which is by this reference incorporated herein.

| | | |
|---|---|---|
| Less Depreciation: | $10,690,523 | |
| Equals Reproduction Cost New Rate Base: | $49,679,448 x 0.25 = | $12,419,862 |
| FAIR VALUE RATE BASE: | | $22,807,075 |

2. OCLD Rate Base

The figure for OCLD rate base at December 31, 1992, as set forth in subparagraph 1 above and Schedule D, consists of the water works plant assets shown in the Source of Supply, Pumping Plant and Water Treatment Plant categories on Evanston's books[4] at the end of the 1992 Fiscal Year (December 31, 1992), with the following adjustments:

(a) Exclude two 30 million gallon per day capacity ("MGD") low lift pumps installed in 1983. (Original Cost of $572,613).[5]

(b) Exclude one 22 MGD high lift pump installed in 1986. (Original Cost of $1,104,659).[5]

(c) Include the Zebra Mussel Control System equipment installed in 1993 ("Zebra Mussel Equipment"). (Original Cost of $461,790).

For purposes of calculating the OCLD rate base for the Service Year beginning October 1, 2006, the aforesaid figure for OCLD rate base (as of December 31, 1992) shall be brought forward to the end of the Fiscal Year ending on or immediately after December 31, 2004 (i.e., the Fiscal Year ending February 28, 2005) by incorporating annual adjustments for plant additions properly allocable to the

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[4]Assets shall be those shown on the Evanston books, at cost, but depreciation shall be calculated at the rates set forth in footnote 6, notwithstanding that depreciation shown on the Evanston books may be calculated based on different rates.

[5]These items shall not be deemed "assets required in serving the Commission" for purposes of paragraph 6(k)(iii) and (iv) of the amended and restated contract.

Commission (at original cost), retirements (at original cost less depreciation) and depreciation[6] for the Fiscal Years beginning January 1, 1993, and ending on or after December 31, 2004 (i.e., ending on February 28, 2005). The OCLD rate base thus determined as of February 28, 2005 shall be incorporated in the recomputation of Fair Value Rate Base as of February 28, 2005.

3. RCNLD Rate Base

The RCNLD rate base was initially established as of December 31, 1984 (based on a 1981 valuation of the reproduction cost new, less depreciation, of the Source of Supply, Pumping Plant and Water Treatment Plant components of the water plant) and is subject to recomputation every five years thereafter. It would, therefore, be subject to recomputation, as of the Fiscal Year ending on or immediately after December 31, 2004 (i.e., the Fiscal Year ending February 28, 2005).

The recomputation of RCNLD rate base for the Fiscal Year ending February 28, 2005 (and all subsequent five year recomputations) shall be based on either (1) a trending forward to the end of the relevant Fiscal Year (i.e., to February 28, 2005 for the first recomputation) by Evanston's staff of the last "current valuation of the Water Works Properties of the City of Evanston, as developed by a reputable qualified consulting engineering firm experienced in water works valuation" using as a trending index the Engineering News Record

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[6]Depreciation shall be calculated at the rate per year of 1.11% for Source of Supply, 1.81% for Pumping Plant, and 1.71% for Water Treatment Plant. As an accounting convention, all additions and retirements during the Fiscal Year shall be deemed to have been made at the mid-point of such Fiscal Year, resulting in the inclusion of six months depreciation on such additions and retirements.

20 Cities Construction Cost Index and no other index; or (2) a new valuation, as of the end of the relevant Fiscal Year (i.e. as of February 28, 2005 for the first recomputation), of the Water Works Properties by such a "qualified consulting engineering firm," which may be based on a physical appraisal or on a trending of a prior valuation which may utilize any trending indices and any methods for determining accrued depreciation that are generally accepted as reasonable, appropriate and applicable by professional engineers experienced in the appraisal and valuation of utility plants and assets.

The RCNLD rate base thus determined as of February 28, 2005 shall be incorporated in the recomputation of Fair Value Rate Base as of February 28, 2005.

The Commission and Evanston acknowledge the following with respect to the computation and recomputation of RCNLD:

(1) The assets included in any recomputation of RCNLD shall be limited to the specific equipment and facilities attributable to the Commission's rate base (including plant additions and retirements as described above in connection with OCLD) existing at the effective date of the valuation.

(2) No adjustment shall be included in calculating RCNLD for overheads in the nature of or comparable to the general overheads described at page 3 of the report entitled "Valuation of the Property of the Evanston Water Works as of December 31, 1989" ("1989 Valuation Study") prepared by Alvord, Burdick & Howson ("AB&H").

(3) The RCNLD rate base at the end of the 1992 Fiscal Year (December 31, 1992) is based on the 1989 Valuation Study, excluding

two 30 MGD low lift pumps installed in 1983 and the one 22 MGD high lift pump installed in 1986 and the adjustment for general overheads described at page 3 of the 1989 Valuation Study, less retirements (at Fair Value) from, and plus additions (at original cost) (including the Zebra Mussel Equipment, which was installed in 1993) to, plant in service from December 31, 1989 to December 31, 1992.

(4) The RCNLD rate base at December 31, 1989, reported in the 1989 Valuation Study, with the adjustments stated in item (3) immediately preceding, is, as of the date hereof, "the most current valuation of the Water Works Properties of the City of Evanston, as developed by a reputable qualified consulting engineering firm experienced in water works valuation," including appropriate deduction of "accrued depreciation as determined by the engineering firm's valuation study," and results in a RCNLD rate base conforming to the requirements of paragraph 6(b) of the contract. The trending indices and depreciation methods used in the 1989 Valuation Study satisfy the requirement of being generally accepted as reasonable, appropriate and applicable by professional engineers experienced in the appraisal and valuation of utility plants and assets.

(5) The in-service dates for the water works plant assets used in the 1989 Valuation Study as the starting points for determining accrued depreciation are correct and should, in the future, be used for all purposes.

III. Depreciation Charge

The calculation of the annual Depreciation Charge for each Service year shall be in accordance with subparagraph 6(c) and Appendix B of the contract as modified by item (2) in this paragraph

and this Appendix E. For each Service Year, such charge shall be the Commission's share of the total annual depreciation during the Fiscal Year based on (1) application of the annual depreciation rates of 1.11% for Source of Supply, 1.81% for Pumping Plant and 1.71% for Water Treatment Plant to the assets incorporated in the OCLD rate base as of the end of the last Fiscal Year ended prior to such Service Year; (2) adjusted for depreciation for all plant additions or retirements made at any time during such Fiscal Year based on the assumption that such additions and retirements were all made at the midpoint of such Fiscal Year, resulting in the inclusion of six months depreciation of such additions and retirements (i.e., minus one-half year depreciation on additions during the Fiscal Year and plus one-half year depreciation on retirements during the Fiscal Year).

The attached Schedule C, which is by this reference incorporated herein, is an illustrative calculation of the Depreciation Charge. The figures contained therein are fictitious and intended solely to illustrate the method of calculation pursuant to subparagraph 6(c), Appendix B and this Appendix E.

The Commission's share of the annual Depreciation Charge shall be based on the ratio of IDOT allocations described in subparagraph II.B above.

The figures shown on this schedule are entirely fictitious and are intended solely to illustrate the method of calculation pursuant to subparagraph 6(d), Appendix C and Appendix E of the contract.

## ILLUSTRATIVE CALCULATION OF QUANTITY RATE AND QUANTITY CHARGE

| | | Service Yr. 10/1/06 To 9/30/07 | Service Yr. 10/1/07 to 9/30/08 |
|---|---|---|---|
| **A. Fiscal Year Operating Expenses (1)** | 3/1/05 to 2/28/06 | 3/1/06 to 2/28/07 | 3/1/07 to 2/28/08 |
| Pumping (3) | $2,000,000 | $2,100,000 | $2,200,000 |
| Filtration (3)(4) | 1,000,000 | 1,050,000 | 1,100,000 |
| Administration (3) | 500,000 | 525,000 | 550,000 |
| Insurance | 200,000 | 210,000 | 220,000 |
| TOTAL | $3,700,000 | $3,885,000 | $4,070,000 |
| **B. Fiscal Year Usage (Gallons)(1)** | | | |
| Evanston | 4,000,000,000 | 3,800,000,000 | 3,900,000,000 |
| Skokie | 4,500,000,000 | 4,700,000,000 | 4,800,000,000 |
| NWC | 11,000,000,000 | 10,900,000,000 | 11,300,000,000 |
| TOTAL | 19,500,000,000 | 19,400,000,000 | 20,000,000,000 |
| **C. Quality Rate/1000 Gal. (A/(B/1000))** | $0.189744 (5) | $0.200258 (6) | $0.203500 (7) |
| **D. NWC Usage During Service Year (2) (Gallons)** | | 11,150,000,000 | 11,400,000,000 |
| **E. Final Charge To NWC at end of Service Yr. (2)** | | $2,232,877 | $2,319,900 |

(1) Figures are for Fiscal Year (March through February).
(2) Figures are for Service Year (October through September).
(3) Excludes pension costs.
(4) Includes sludge removal fees.
(5) Quantity Rate used for initial monthly billing during Service Year 10/1/06 to 9/30/07
(6) Quantity Rate used for final year-end adjustment for Service Year 10/1/06 to 9/30/07, and for initial monthly billing during Service Year 10/1/07 to 9/30/08
(7) Quantity Rate used for final year-end adjustment for Service Year 10/1/07 to 9/30/08.

The figures shown on this schedule are fictitious and are intended solely to illustrate the method of calculation pursuant to subparagraph 6(b) and Appendix E of the contract.

## ILLUSTRATIVE CALCULATION OF RETURN ON RATE BASE CHARGE

| | Service Yr. 10/1/06 To 9/30/07 | Service Yr. 10/1/07 to 9/30/08 |
|---|---|---|
| | 2/28/06 Rate Base | 2/28/07 Rate Base |
| **A. OCLD** (See Schedule B-1) | $19,998,580 | $20,013,070 |
| **B. RCNLD** (See Schedule B-2) | 66,020,000 | 66,159,800 |
| **C. Fair Value Rate Base** (75%*A + 25%*B) | 31,503,935 | 31,549,752 |
| **D. % Allocation to NWC** | 54.60% | 55.10% |
| **E. FVRB Allocation to NWC** (C*D) | 17,201,148 | 17,383,913 |
| **F. Annual Return at 9.5%** (9.5% * E) | 1,634,109 | 1,651,472 |
| **G. Monthly Charge to NWC** (F/12) | $136,176 | $137,623 |

The figures shown on this schedule are fictitious and are intended solely to illustrate the method of calculation pursuant to subparagraph 6(b) and Appendix E of the contract.

## ILLUSTRATIVE CALCULATION OF ORIGINAL COST LESS DEPRECIATION (OCLD)

Schedule B-1

| | Fixed Assets | | | | | Accumulated Depreciation (1) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | OCLD at 2/28/05 | OC Balance at 2/28/05 | Additions at cost 3/1/05 to 2/28/06 | Retirements at cost 3/1/05 to 2/28/06 | OC Balance at 2/28/06 | Depr. Balance at 2/28/05 | Depreciation 3/1/05 to 2/28/06 (2) | Retirements at acc. depr. 3/1/05 to 2/28/06 (3) | Depr. Balance at 2/28/06 | OCLD at 2/28/06 |
| Source of Supply | 3,500,000 | 5,000,000 | 0 | 0 | 5,000,000 | (1,500,000) | (55,500) | 0 | (1,555,500) | 3,444,500 |
| Pumping Plant | 6,500,000 | 9,000,000 | 500,000 | (100,000) | 9,400,000 | (2,500,000) | (166,520) | 60,000 | (2,606,520) | 6,793,480 |
| Treatment Plant | 10,000,000 | 14,000,000 | 0 | 0 | 14,000,000 | (4,000,000) | (239,400) | 0 | (4,239,400) | 9,760,600 |
| TOTAL | 20,000,000 | 28,000,000 | 500,000 | (100,000) | 28,400,000 | (8,000,000) | (461,420) | 60,000 | (8,401,420) | 19,998,580 |
| | OCLD at 2/28/06 | OC Balance at 2/28/06 | Additions at cost 3/1/06 to 2/28/07 | Retirements at cost 3/1/06 to 2/28/07 | OC Balance at 2/28/07 | Depr. Balance at 2/28/06 | Depreciation 3/1/06 to 2/28/07 (2) | Retirements at acc. depr. 3/1/06 to 2/28/07 (3) | Depr. Balance at 2/28/07 | OCLD at 2/28/07 |
| Source of Supply | 3,444,500 | 5,000,000 | 0 | 0 | 5,000,000 | (1,555,500) | (55,500) | 0 | (1,611,000) | 3,389,000 |
| Pumpage Plant | 6,793,480 | 9,400,000 | 120,000 | (20,000) | 9,500,000 | (2,606,520) | (171,045) | 50,000 | (2,727,565) | 6,772,435 |
| Treatment Plant | 9,760,600 | 14,000,000 | 400,000 | (100,000) | 14,300,000 | (4,239,400) | (241,965) | 150,000 | (4,331,365) | 9,968,635 |
| TOTAL | 19,998,580 | 28,400,000 | 520,000 | (120,000) | 28,800,000 | (8,401,420) | (468,510) | 200,000 | (8,669,930) | 20,013,070 |

(1) Reflects depreciation at annual rates of 1.11% on Source of Supply, 1.81% on Pumping Plant, and 1.71% on Treatment Plant.

(2) Includes depreciation at 1.11% on Source of Supply, 1.81% on Pumping Plant and 1.71% on Treatment Plant, for original cost balances at end of Fiscal Year, minus one-half year depreciation on additions during Fiscal Year and plus one-half year depreciation on retirements during Fiscal Year.

(3) Includes one-half year depreciation on retirements during Fiscal Year.

The figures shown on this schedule are fictitious and are intended solely to illustrate the method of calculation pursuant to subparagraph 6(b) and Appendix E of the contract.

## ILLUSTRATIVE CALCULATION OF REPRODUCTION COST NEW LESS DEPRECIATION (RCNLD)

Schedule B-2

| | | Fixed Assets | | | | Accumulated Depreciation (3) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | RCNLD at 2/28/05 (1) | RCN Balance at 2/28/05 | Additions at cost 3/1/05 to 2/28/06 | Retirements at RCN 3/1/05 to 2/28/06 | RCN Balance at 2/28/06 | Depr. Balance at 2/28/05 | Depreciation 3/1/05 to 2/28/06 | Retirements at RC depr. 3/1/05 to 2/28/06 | Depr. Balance at 2/28/06 | RCNLD at 2/28/06 (2) |
| Source of Supply | 13,400,000 | 16,000,000 | 0 | 0 | 16,000,000 | (2,600,000) | (20,000) | 0 | (2,620,000) | 13,380,000 |
| Pumping Plant | 14,200,000 | 18,000,000 | 500,000 | (300,000) | 18,200,000 | (3,800,000) | (75,000) | 80,000 | (3,875,000) | 14,325,000 |
| Treatment Plant | 38,400,000 | 46,000,000 | 0 | 0 | 46,000,000 | (7,600,000) | (85,000) | 0 | (7,685,000) | 38,315,000 |
| TOTAL | 66,000,000 | 80,000,000 | 500,000 | (300,000) | 80,200,000 | (14,000,000) | (180,000) | 80,000 | (14,180,000) | 66,020,000 |

| | RCNLD at 2/28/06 (2) | RCN Balance at 2/28/06 | Additions at cost 3/1/06 to 2/28/07 | Retirements at RCN 3/1/06 to 2/28/07 | RCN Balance at 2/28/07 | Depr. Balance at 2/28/06 | Depreciation 3/1/06 to 2/28/07 | Retirements at RC depr. 3/1/06 to 2/28/07 | Depr. Balance at 2/28/07 | RCNLD at 2/28/07 (2) |
|---|---|---|---|---|---|---|---|---|---|---|
| Source of Supply | 13,380,000 | 16,000,000 | 0 | 0 | 16,000,000 | (2,620,000) | (20,000) | 0 | (2,640,000) | 13,360,000 |
| Pumpage Plant | 14,325,000 | 18,200,000 | 120,000 | (70,000) | 18,250,000 | (3,875,000) | (75,100) | 10,000 | (3,940,000) | 14,309,900 |
| Treatment Plant | 38,315,000 | 46,000,000 | 400,000 | (200,000) | 46,200,000 | (7,685,000) | (85,100) | 60,000 | (7,710,100) | 38,489,900 |
| TOTAL | 66,020,000 | 80,200,000 | 520,000 | (270,000) | 80,450,000 | (14,180,000) | (180,200) | 70,000 | (14,290,200) | 66,159,800 |

(1) RCNLD at 2/28/05 shall be based on "recomputation" of RCNLD by either (a) a new valuation of RCNLD as of 2/28/05 performed by an independent engineering firm, or (b) a trending forward to 2/28/05 by Evanston's staff of the last such valuation by an independent engineering firm.

(2) RCNLD at 2/28/06 and at 2/28/07 is not a "recomputation" of RCNLD, but merely reflects adjustments for additions, retirements and depreciation during the respective Fiscal Years then ending.

(3) Reflects depreciation based on inclining balance method, or such other method, as used by independent engineering firm in preparing valuation of RCNLD.

The figures shown on this schedule are fictitious and are intended solely to illustrate the method of calculation pursuant to subparagraph 6(c), Appendix B and Appendix E of the contract.

## ILLUSTRATIVE CALCULATION OF DEPRECIATION CHARGE

Schedule C

| | | Assets | | | Depreciation (1) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | OC Balance FY End at 2/28/06 | Additions 3/1/05 to 2/28/06 | Retirements 3/1/05 to 2/28/06 | Depr. on OC Balance at 2/28/06 | Minus ½ Yr. Depr. on Additions | Plus ½ Yr. Depr. on Rtmts | Total Depreciation FY 3/1/05 to 2/28/06 | NWC Allocation | DEPRECIATION CHARGE | |
| SERVICE YEAR 10/1/06 to 9/30/07 | Source of Supply | 5,000,000 | 0 | 0 | 55,500 | 0 | 0 | 55,500 | | Annual | Monthly (4) |
| | Pumping Plant | 9,400,000 | 500,000 | 100,000 | 170,140 | (4,525) | 905 | 166,520 | | | |
| | Treatment Plant | 14,000,000 | 0 | 0 | 239,400 | 0 | 0 | 239,400 | | | |
| | TOTAL | 28,400,000 | 500,000 | 100,000 | 465,040 | (4,525) | 905 | 461,420 | 54.60% (2) | $251,935 | $20,995 |
| | | OC Balance FY End at 2/28/07 | Additions 3/1/06 to 2/28/07 | Retirements 3/1/06 to 2/28/07 | Depr. on OC Balance at 2/28/07 | Minus ½ Yr. Depr. on Additions | Plus ½ Yr. Depr. on Rtmts | Total Depreciation Fy 3/1/06 to 2/28/07 | | | |
| SERVICE YEAR 10/1/07 to 9/30/08 | Source of Supply | 5,000,000 | 0 | 0 | 55,500 | 0 | 0 | 55,500 | | | |
| | Pumping Plant | 9,500,000 | 120,000 | 20,000 | 171,950 | (1,086) | 181 | 171,045 | | | |
| | Treatment Plant | 14,300,000 | 400,000 | 100,000 | 244,530 | (3,420) | 855 | 241,965 | | | |
| | TOTAL | 28,800,000 | 520,000 | 120,000 | 471,980 | (4,506) | 1,036 | 468,510 | 55.10% (3) | $258,149 | $21,512 |

(1) Includes depreciation at 1.11% on Source of Supply, 1.81% on Pumping Plant, and 1.71% on Treatment Plant, for original cost balances at end of Fiscal Year, minus one-half year depreciation on additions during Fiscal Year and plus one-half year depreciation on retirement during Fiscal year (thus including one-half year depreciation on all additions and retirements during Fiscal Year).

(2) Ratio of sum of IDOT allocations for NWC members to IDOT allocations of all users of Evanston water plant, for year 2006 (i.e., IDOT allocations taking effect during the Fiscal Year 3/1/05 to 2/28/06 and in effect from 10/1/05 to 9/30/06).

(3) Ratio of IDOT allocations for year 2007 (i.e., IDOT allocations taking effect during the Fiscal Year 3/1/06 to 2/28/07 and in effect from 10/1/06 to 9/30/07).

(4) Monthly Depreciation Charge is annual Depreciation Charge divided by 12.

# OCLD, RCNLD AND FAIR VALUE RATE BASES AT DECEMBER 31, 1992

## OCLD Rate Base at December 31, 1992

| | OC at 12/31/92 | Accum. Depr. at 12/31/92 | OCLD at 12/31/92 |
|---|---|---|---|
| Source of Supply | 3,715,519 | (962,798) | 2,752,721 |
| Pumping Plant | 4,806,577 | (1,495,923) | 3,310,654 |
| Treatment Plant | 11,238,952 | (3,452,710) | 7,786,242 |
| TOTAL | 19,761,048 | (5,911,431) | 13,849,617 |

## RCNLD Rate Base at December 31, 1992

| | RCN at 12/31/92 | Accum. Depr. at 12/31/92 | RCNLD at 12/31/92 |
|---|---|---|---|
| Source of Supply | 11,719,405 | (2,023,594) | 9,695,811 |
| Pumping Plant | 13,414,559 | (2,943,275) | 10,471,284 |
| Treatment Plant | 35,236,007 | (5,723,654) | 29,512,353 |
| TOTAL | 60,369,971 | (10,690,523) | 49,679,448 |

## Fair Value Rate Base at December 31, 1992

| | |
|---|---|
| OCLD Rate Base | $13,849,617 x 75% = $10,387,213 |
| RCNLD Rate Base | 49,679,448 x 25% = 12,419,862 |
| Fair Value Rate Base | $22,807,075 |

APPENDIX F



# OPERATING PROCEDURES FOR THE NORTHWEST WATER COMMISSION MORTON GROVE BOOSTER PUMPING STATION

## START-UP PROCEDURE

1. When it is determined that it will be necessary to operate the booster pumps, the NWC will be notified in advance of the start-up procedure by at least six (6) hours whenever possible.

2. Call and advise the NWC operator that you are beginning the start-up procedure for the booster station.

3. Push test all control and alarm indicator lights related to the booster pumps, booster pump discharge valves, control valves and annunciator panel. If any indicator lights are not working they shall be replaced prior to start-up of the system.

4. Adjust the 30" cone valve, in the manual position, to a setting of approximately 45% open. This will provide an approximate flow rate to the NWC of 30 MGD.

5. Start a booster pump with the thumbwheel speed controller set at 00%, the minimum speed setting.

6. When the "green" booster pump run light comes on; adjust the pump's thumbwheel speed controller to 50%.

7. After the system stabilizes' adjust the pump's thumbwheel speed controller to 90%.

8. The second booster pump should be started when the flow rate to the NWC is approximately 40 MGD.

9. Start the second booster pump with the thumbwheel speed controller set at 00%.

10. When the "green" booster pump run light comes on; adjust the pump's thumbwheel speed controller to 50%.

11. After the system stabilizes; adjust the NWC 30" cone valve position and the second pump's thumbwheel speed controller to obtain the desired flow rate.

12. Call and advise the NWC operator that you have completed the booster station start-up procedure.

13. Continuously monitor the Morton Grove booster station suction pressure to assure that the pressure remains above 20 PSI. This shall be controlled by adjusting the NWC 30" cone valve position.

# OPERATING PROCEDURES FOR THE NORTHWEST WATER COMMISSION MORTON GROVE BOOSTER PUMPING STATION

## SHUT-DOWN PROCEDURE

1. Call and advise the NWC operator that you are beginning the shut-down procedure for the booster pump station.

2. Adjust the thumbwheel speed controller for the first pump by decreasing it's setting to 10% increments to a setting of 70%.

3. Throttle the NWC 30" cone valve to approximately 48% open.

4. Adjust the thumbwheel speed controller for the first pump decreasing it' setting to offset any booster pump discharge pressure increases. Continue t adjust the thumbwheel speed controller to decrease the setting to 30%.

5. After the system stabilizes; shut off the first booster pump.

6. Adjust the thumbwheel speed controller for the second pump by decreasing it's setting in 10% increments to 50%.

7. After the system stabilizes; shut off the second booster pump.

8. Adjust the thumbwheel speed controller for the second pump to a setting of 00% when the second pump's valve open AND valve closed lights are it.

# OPERATING PROCEDURES FOR THE NORTHWEST WATER COMMISSION MORTON GROVE BOOSTER PUMPING STATION

## MORTON GROVE BOOSTER PUMP FAILURE

If one booster pump fails while two pumps are in use, the discharge valve on the pump that failed will close in 8 seconds. The other pump will continue to run providing an approximate 40 MGD flow rate to the NWC reservoir. If this occurs, the following steps should be followed.

1. Adjust the position of the NWC 30" cone valve for single pump flow.
2. After the system has stabilized; start the stand-by booster pump with the thumbwheel speed controller set at 00%.
3. When the "green" booster pump run light comes on; adjust the pump;s thumbwheel speed controller to 50%.
4. After the system stabilizes' adjust the NWC 30" cone valve position and the stand-by pump's thumbwheel speed controller to obtain the desired flow rate.
5. Call and advise the NWC operator that you have completed the switch-over to the stand-by booster pump.

## MORTON GROVE BOOSTER PUMP STATION POWER FAILURE

A power failure at the Morton Grove Booster Pump Station will cause both booster pumps to drop off line. The pump discharge valves will close in 8 seconds and the 60" booster station by-pass valve will open in 480 seconds. If this occurs, the following steps should be followed.

1. Decrease high lift pumpage as necessary to maintain appropriate pressures in the Evanston & Skokie distribution systems.
2. Throttle the NWC 30' cone valve to provide a flow rate of approximately 50 MGD.
3. After the required pump changes and valve positioning changes have been completed, call the NWC operator and advise of your current or proposed pumpage rate to the NWC reservoir.

# OPERATING PROCEDURES FOR THE NORTHWEST WATER COMMISSION MORTON GROVE BOOSTER PUMPING STATION

## EVANSTON PUMPING STATION POWER FAILURE

An electrical power failure at the Evanston pumping station will cause the following sequence to happen automatically. The Morton Grove booster pumps will shut down, the 42" cone valve will close in 90 seconds, and the 60" booster station by-pass valve will open in 480 seconds. If this occurs; the following steps should be followed.

1. Turn the 42" cone valve selector switch to the closed position to ensure that the cone valve will close.

2. Leave the NWC 30" cone valve in the same position that it was in prior to the power failure.

3. Start emergency engines necessary to maintain proper pressures in the Evanston & Skokie distribution systems.

4. Call the NWC operator and inform them of the situation.

5. After approximately 30 minutes, when the pressure transients have subsided, call the NWC operator and inform them that we are beginning to restart the system.

6. Close the 30" cone valve. Check that the NWC 24" butterfly valve is also closed.

7. Open the 42" cone valve and throttle it as necessary to keep the flow below a 10 MGD rate while refilling the transmission line and purging any air in it.

8. Fully open the 42" cone valve after the transmission main is refilled and purged of air.

9. Open the NWC 24" butterfly valve slowly to obtain a 10 MGD rate to the NWC reservoir. Maintain this flow rate a minimum of 30 minutes to ensure that all the air is expelled from the transmission main.

10. Call the NWC operator and advise of the flow rate that you will be supplying to the NWC.

Public Works Agency
555 Lincoln Street
Evanston, Illinois 60201
T 847.448.8198
TTY 847.448.8064
www.cityofevanston.org

September 6, 2017

Illinois Environmental Protection Agency
Infrastructure Financial Assistance Section
1021 North Grand Avenue East
Springfield, IL 62794-9276

RE: City of Evanston
L17-5108 Treated Water Storage Improvements
Project Plan Update Memo

Dear Ms. Clark:

The City of Evanston is pursuing PWSLP funding for the subject project. The City of Evanston submitted a project plan for the Treated Water Storage Improvements Project in 2013. In 2015, Amendment No. 1 was submitted to update project details. The attached memo describes additional updates since 2015 including:

- Projected Water Demand
- Selected Alternative and Basis of Design
- Cost Estimate
- Implementation Plan
- Rate Structure

Please feel free to contact me at pmoyano@cityofevanston.org or 847-448-8217 with any questions.

Sincerely,

Paul Moyano, P.E.
City of Evanston
Public Works Agency

**Illinois Environmental Protection Agency**
**Public Water Supply Loan Program**

# Project Plan Update Memo

## Treated Water Storage Improvements

## L17-5108

City of Evanston, Illinois

*September 2017*

## 1.0 Background

The City of Evanston submitted a project plan for the Treated Water Storage Improvements Project (L17-5108) in 2013. In 2015, Amendment No. 1 was submitted to update project details. This memo describes additional updates since 2015 including:

- Projected Water Demand
- Selected Alternative and Basis of Design
- Cost Estimate
- Implementation Plan
- Rate Structure

Because the location of the project has not changed as part of this amendment, original reviews of environmental and historic impact are assumed to remain valid.

## 2.0 Projected Water Demand

Projected water demands have been updated to include new wholesale customers. In 2016, the average day demand (ADD) was approximately 39.8 mgd, maximum day demand (MDD) was 55.1 mgd, and the peak hour demand (PHD) was 57.3 mgd. Utilizing water demand projections for the year 2030 from the IDNR's 2012 Illinois Lake Michigan Water Allocations, ultimate water demands are projected as shown in Table 2.1. A peaking factor of 1.5 is used to project ultimate MDD for each customer based on the average of the previous five year demands. At this time, a formalized agreement has been signed to begin providing water to Morton Grove and Niles beginning at the end of 2018.

**Table 2.1 Projected Growth in Customer Demands**

| Customer | 2016 ADD | 2030 ADD | 2030 MDD |
|---|---|---|---|
| City of Evanston | 8.38 mgd | 9.68 mgd | 14.52 mgd |
| Village of Skokie | 7.66 mgd | 10.84 mgd | 16.26 mgd |
| Northwest Water Commission | 23.74 mgd | 30.14 mgd | 45.21 mgd |
| Morton Grove and Niles | -- | 9.03 mgd | 13.55 mgd |
| **Total Demand** | **39.78 mgd** | **59.73 mgd** | **89.54 mgd** |

## 3.0 Existing Facilities

No changes made to this section in this memo update.

## 4.0 Project Need

No changes made to this section in this memo update.

## 5.0 Regulatory Compliance

No changes made to this section in this memo update.

## 6.0 Selected Alternative and Basis of Design

Alternative C, demolishing and replacing the 1934 clearwell near the existing location, remains the selected alternative, but has been updated. In our previous submittal, the proposed clearwell ~~design selected was located in approximately the same~~ location was~~as the 1934 clearwell, but~~ shifted east approximately 50 feet of the existing location with North Campus Drive rerouted to the west side of the clearwell. To accommodate constraints by Northwestern University and avoid rerouting North Campus Drive, the proposed clearwell will now remain ~~The design has been altered to be located~~ in the same location as the 1934 clearwell~~. to avoid rerouting North Campus Drive. These site constraints were imposed by Northwestern University.~~ Because of the proximity of the proposed clearwell to existing University structures, the University ~~Because Northwestern University constructed a new dormitory just west of the clearwell location, they~~ agreed to install~~pay for~~ a ~~the planned~~ sheetpile wall along~~to~~ the west side of the clearwell to protect their structures and infrastructure from ~~decrease the amount of~~ settlement ~~the new dormitory will experience~~ during construction. ~~The sheetpile will also serve as a groundwater cutoff to limit the amount impacting the clearwell. The sheetpile will provide earth retention during excavation of the clearwell.~~ Construction of the sheetpile wall was completed by Northwestern in August 2017.

## 7.0 Cost Estimate

The total capital cost estimate at the time of bidding has been updated in this memo to reflect a 2018 bid. The estimated costs for design and construction of proposed improvements are outlined in Table 7.1. This cost estimate was prepared in 2014. To estimate costs at the time of bidding (2018), the total capital cost estimate ~~is~~ was inflated by 4 percent per year. This inflation rate is based on the average annual change in the ENR Construction Cost Index for the Chicago area over the last 30 years. ~~While Northwestern University is coveringd the costs for the planned sheetpile construction, additional costs from site constraints and project construction approach have offset these cost savings.~~

**Table 7.1 Capital Cost Estimate**

| Description | Estimated Cost |
|---|---|
| General Conditions | $ 1,966,760 |
| Demolition | $ 924,880 |
| Concrete for new Clearwell | $ 3,783,890 |
| Ladders, Baffles, and Hatches | $ 207,630 |
| Piping, Valves, and Pumping Systems | $ 914,370 |
| Electrical | $ 394,250 |
| Earthwork | $ 2,637,410 |

| | |
|---|---|
| Site Work | $ 184,690 |
| Construction Sub-Total (rounded) | $11,014,000 |
| Bond and Insurance (2%) | $ 220,000 |
| Contractor's Overhead and Profit (10%) | $ 1,123,000 |
| Undeveloped Design Details | $ 2,600,000 |
| Construction Total | $14,957,000 |
| Contingency (10%) | $ 1,500,000 |
| Engineering (15%) | $ 2,470,000 |
| **Total Capital Cost Estimate (rounded)** | **$19,000,000** |
| **Total Capital Cost Estimate at Time of Bidding (2018)** | **$22,230,000** |

## 8.0 Environmental Impacts

No changes made to this section in this memo update.

## 9.0 Implementation Plan

The proposed start date has been delayed from the original project plan. The updated anticipated construction schedule is outlined in Table 9.1.

**Table 9.1 Proposed Project Schedule**

| | |
|---|---|
| Plans and Specifications Finalized* | 12/15/2017 |
| Project Advertised* | 1/15/2018 |
| Bid Opening | 3/1/2018 |
| Notice of Intent to Award | 3/8/2018 |
| Receive IEPA Loan Offer** | 4/22/2018 |
| Notice of Award | 5/10/2018 |
| Notice to Proceed | 6/14/2018 |
| Construction Complete | 6/13/2020 |

* Assumes construction permit issued within 60 days
** Assumes 45-day turn-around

Table 9.2 below has been altered to reflect the current loan interest rate and updated project costs. The total project cost is estimated at $22,230,000. A projected debt repayment schedule based on Public Water Supply Loan Program (PWSLP) funding is shown in Table 9.2. The State Revolving Fund interest rate for July 1, 2017 through June 30, 2018 is 1.76%.

| Table 9.2 Debt Repayment Calculation | |
|---|---|
| Percent Funded | 100% |
| Dollars Funded | $22,230,000 |
| Loan Interest Rate | 1.76% |
| Loan Duration | 20 years |
| **Annual Loan Payment** | **$1,426,000** |

Revenues for debt repayment will be generated through wholesale and retail water user charges. Evanston retail customers comprise only 20 percent of water produced at the Evanston Water Treatment Plant; the remainder is pumped to the Village of Skokie and the Northwest Water Commission. When Morton Grove and Niles comes online, the percentage of water produced for City of Evanston will drop ~~more~~further. Therefore, Evanston retail customers would be responsible for no more than 20 percent of loan repayment costs over the next 20 years, or approximately $285,200 per year.

Table 9.3 below has been updated to reflect the most recent budgetary numbers available. Revenues from retail and wholesale water sales are deposited in the Water Fund, an enterprise fund. A summary of the Water Fund budget for FY 2017, beginning January 1, 2017, is shown in Table 9.3. The City intends to draw down excess reserves to fund capital projects in FY 2018, and anticipates maintaining the Water Fund OM&R Reserve at or near the $3,500,000 target level in future years.

| Table 9.3 Water Fund – FY 2017 Budget Summary | | |
|---|---|---|
| | **FY 2016 Year-End Estimate** | **FY 2017 Adopted Budget** |
| **Operating Revenues** | | |
| Other Revenue | $6,090,000 | $6,828,400 |
| Licenses, Permits and Fees | $70,000 | $70,000 |
| Charges for Services | $14,963,000 | $17,495,000 |
| Interfund Transfers | - | - |
| Interest Income | $10,000 | $1,600 |
| **Total Revenue** | **$21,133,000** | **$24,395,000** |
| **Operating Expenses** | | |
| Salary and Benefits | $4,458,980 | $4,589,411 |
| Services and Supplies | $3,622,880 | $3,611,150 |
| Miscellaneous | $35,000 | $62,980 |
| Insurance and Other Chargebacks | $1,126,392 | $1,174,064 |
| Capital Outlay | $6,239,800 | $14,982,119 |
| Contingencies | $1,000 | $1,000 |
| Debt Service | $1,214,201 | $1,438,470 |
| Depreciation Expense | - | - |
| Interfund Transfers | $3,502,313 | $3,502,315 |
| **Total Expenses** | **$20,200,566** | **$29,361,509** |
| **Net Surplus (Deficit)** | **$932,434** | **($4,966,509)** |
| **Beginning Water Fund OM&R Reserve** | $9,223,203 | $10,155,637 |
| **Ending Water Fund OM&R Reserve** | $10,155,637 | $5,189,128 |
| **Target Water Fund OM&R Reserve** | $3,500,000 | $3,500,000 |

## 10.0 Rate Structure

The rate structure provided in the original project plan has been updated to include the latest 2017 quantity charges and 2016 water usage values.

Evanston's retail water rates include a minimum charge for the first 5 units based on water meter size, and a quantity charge for every unit in excess of the first 5 units in the bi-monthly billing period (1 unit = 100 cubic feet or 748 gallons of water).

Current retail water rates took effect January 1, 2017. For the 5/8-inch and 3/4-inch meter sizes (the sizes most commonly used in single-family homes) the minimum charge for the first 5 units consumed in the bi-monthly billing period is $8.25. The quantity charge for usage in excess of 5 units is $2.31 per unit. Calculation of the average bi-monthly water bill (and equivalent monthly cost) for single-family residential customers under current rates is shown in Table 10.1.

| Table 10.1 Current Average Single-Family Residential Water Bill | |
|---|---|
| Bi-Monthly Minimum Charge | $8.25 |
| Average Water Use per Bi-Monthly Billing Period (in ~~2014~~2016) | 20 CCF |
| Water Use Included in Minimum Charge | – 5 CCF |
| Water Use Billed to Quantity Charge | 15 CCF |
| Water Quantity Rate | x $2.31/CCF |
| Water Quantity Charge | $34.65 |
| **Average Bi-Monthly Residential Water Bill** | **$42.90** |
| **Equivalent Monthly Water Cost** | **$21.45** |

Revenue from wholesale water customers will offset the revenue needed from Evanston retail rate payers to repay the loan. A calculation is provided in Table 10.2 assuming the Evanston retail rate payers must cover 20 percent of the loan repayment.

Total annual water usage billed in Evanston was ~~4,089,767~~3,186,566 CCF in 2016. Table 10.2 outlines the estimate of the annual debt service cost per CCF for this project and the maximum impact on an average single-family residential customer's bi-monthly water bill (and equivalent monthly water cost). In reality, it is anticipated that Evanston's portion of the annual debt service will be absorbed into existing retail water rates and no retail water rate increase will be necessary to repay the loan.

| Table 10.2 Average Single-Family Residential Water Bill Increase | |
|---|---|
| Annual Loan Payment (Evanston portion) | $285,200 |
| Annual Water Consumption in CCF (Evanston retail customers) | ~~4,089,767~~3,186,566 |
| Debt Service Cost per CCF | $0.0~~7~~90 |
| Bi-Monthly Water Usage Billed at Quantity Rate (CCF) | ~~20~~15 |
| **Increase to Bi-Monthly Water Bill** | **$1.~~39~~34** |
| **Equivalent Monthly Water Cost Increase** | **$0.~~70~~67** |

Signoffs from the following agencies to complete the update to the Project Plan for L17-5108 Treated Water storage Improvements emailed on December 20, 2017.

- IDNR 11-25-17 for EcoCAT
- IHPS from IDNR 10-23-17 for National Historic Preservation Act

Illinois Department of
**Natural Resources**

One Natural Resources Way Springfield, Illinois 62702-1271
http://dnr.state.il.us

Bruce Rauner, Governor
Wayne Rosenthal, Director

September 25, 2017

Paul Moyano
City of Evanston
555 Lincoln Street
Evanston, IL 60201

**RE: Treated Water Storage Improvements**
**Project Number(s): 1802509 [1510898]**
**County: Cook**

Dear Applicant:

This letter is in reference to the project you recently submitted for consultation. The natural resource review provided by EcoCAT identified protected resources that may be in the vicinity of the proposed action. The Department has evaluated this information and concluded that adverse effects are unlikely. Therefore, consultation under 17 Ill. Adm. Code Part 1075 and 1090 is terminated.

However, appropriate erosion and sediment control best management practices (BMPs)are recommended and should be inspected and maintained until final site stabilization is achieved. Properly installed and maintained erosion control BMPs will help ensure impacts to state-listed plants located on the Lake Michigan beach immediately to the east are unlikely.

Consultation for Part 1075 is valid for two years unless new information becomes available that was not previously considered; the proposed action is modified; or additional species, essential habitat, or Natural Areas are identified in the vicinity. If the project has not been implemented within two years of the date of this letter, or any of the above listed conditions develop, a new consultation is necessary. Consultation for Part 1090 (Interagency Wetland Policy Act) is valid for three years.

The natural resource review reflects the information existing in the Illinois Natural Heritage Database and the Illinois Wetlands Inventory at the time of the project submittal, and should not be regarded as a final statement on the site being considered, nor should it be a substitute for detailed site surveys or field surveys required for environmental assessments. If additional protected resources are encountered during the project's implementation, you must comply with the applicable statutes and regulations. Also, note that termination does not imply IDNR's authorization or endorsement of the proposed action.

Please contact me if you have questions regarding this review.

Illinois Department of
**Natural Resources**

One Natural Resources Way Springfield, Illinois 62702-1271
http://dnr.state.il.us

Bruce Rauner, Governor
Wayne Rosenthal, Director

Adam Rawe
Division of Ecosystems and Environment
217-785-5500

Illinois Department of
**Natural Resources**

One Natural Resources Way Springfield, Illinois 62702-1271
www.dnr.illinois.gov

Bruce Rauner, Governor
Wayne A. Rosenthal, Director

Cook County PLEASE REFER TO: SHPO LOG #023040215
Evanston
555 Lincoln Street
Section:7-Township:41N-Range:14E
IEPA LOAN
Underground water storage tank replacement - Evanston Water Treatment Plant

October 23, 2017

Paul Moyano
City of Evanston - Public Works Agency
555 Lincoln Street
Evanston, IL 60201

Dear Mr. Moyano:

We have reviewed the documentation submitted for the referenced project(s) in accordance with 36 CFR Part 800.4. Based upon the information provided, no historic properties are affected. We, therefore, have no objection to the undertaking proceeding as planned.

Please retain this letter in your files as evidence of compliance with section 106 of the National Historic Preservation Act of 1966, as amended. This clearance remains in effect for two (2) years from date of issuance. It does not pertain to any discovery during construction, nor is it a clearance for purposes of the Illinois Human Skeletal Remains Protection Act (20 ILCS 3440).

If you are an applicant, please submit a copy of this letter to the state or federal agency from which you obtain any permit, license, grant, or other assistance. If further assistance is needed contact Joe Phillippe of my office at 217/785-1279 or joe.phillippe@illinois.gov.

Sincerely,

Rachel Leibowitz, Ph.D.
Deputy State Historic
Preservation Officer