

## Protecting Our Water Environment

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### Metropolitan Water Reclamation District of Greater Chicago

100 EAST ERIE STREET

CHICAGO, ILLINOIS 60611-3154

312.751.5600

### TARP STATUS REPORT AS OF DECEMBER 31, 2018

This report presents construction progress, cost, and State/Federal grant and revolving loan funding information on the Tunnel and Reservoir Plan (TARP). Figures 1 through 4 are maps showing TARP facilities, and Tables I through III contain data on TARP contracts. Project reference numbers appearing in Table II correspond to the numbers shown on Figures 2, 3, and 4.

#### TARP Phase I

TARP, or "Deep Tunnel," was selected in 1972 as the Chicago area's plan for cost-effectively complying with Federal and State water quality standards with respect to the 375 square mile combined sewer area consisting of Chicago and 51 suburbs. TARP's main goals are to protect Lake Michigan – the region's drinking water supply - from raw sewage pollution; improve the water quality of area rivers and streams; and provide an outlet for floodwaters to reduce street and basement sewage backup flooding. TARP Phase I projects are primarily for pollution control. These projects capture and enable treatment of about 85% of the combined sewer overflow (CSO) pollution from TARP's service area. TARP Phase I includes 109.4 miles of deep, large diameter, rock tunnels. Construction of TARP Phase I was completed in 2006 and the entire system is now in operation. The table below summarizes the tunnel system.

TARP SYSTEM	TUNNEL LENGTH	TUNNEL VOLUME	TUNNEL DIAMETER
Mainstream	40.5 mi.	1,200 MG	8 to 33 ft.
Calumet	36.7 mi.	630 MG	9 to 30 ft.
O'Hare (UDP)	6.6 mi.	70 MG	9 to 20 ft.
Des Plaines	25.6 mi.	405 MG	10 to 33 ft.
TOTALS	109.4 mi.	2,305 MG	8 to 33 ft.

#### TARP Phase II/CUP

TARP Phase II/CUP consists of reservoirs intended primarily for flood control for the Chicagoland combined sewer area, but it will also considerably enhance pollution control benefits being provided under Phase I. The U.S. Army Corps of Engineers' (USACE) Chicagoland Underflow Plan (CUP), Final Phase I General Design Memorandum of 1986 defined the Federal interest in TARP Phase II based on the Federal National Economic Development Plan criteria. The three reservoirs proposed under TARP Phase II/CUP are the Gloria Alitto Majewski Reservoir, the Thornton Reservoir, and the McCook Reservoir.

#### Gloria Alitto Majewski Reservoir

As the local sponsor of TARP Phase II/CUP, the Metropolitan Water Reclamation District of Greater Chicago (District) acquired land rights for the reservoir. The USACE designed and constructed the reservoir, which was completed in 1998. The District has since assumed its operation, and to date the reservoir has yielded over \$461 million in flood damage reduction benefits to the three communities it serves.

### **Thornton Reservoir**

On September 18, 2003 the USACE and District signed a Project Cooperation Agreement (PCA) for construction of the Thornton Composite Reservoir where the Corps would construct the reservoir and the District would take it over for operation. However, due to inadequate funding levels by the USACE and the need to have the Composite Reservoir operational, the District, in June 2004, assumed responsibility for the design and construction of the reservoir, and is pursuing reimbursement of funds through the Water Resources Development Act.

The Thornton Reservoir was constructed in two stages. The first stage, a temporary flood control reservoir called the Thornton Transitional Reservoir, was completed in March 2003 in the West Lobe of the Thornton Quarry. This reservoir provides overbank flood relief for 9 communities, and has captured more than 39 billion gallons of flood water during 59 fill events.

The second stage is a permanent combined reservoir, called the Thornton Composite Reservoir, constructed in the North Lobe of the Thornton Quarry. The Thornton Composite Reservoir provides 7.9 billion gallons of storage. In accordance with an agreement executed in 1998, a local mining company completed the Thornton Composite Reservoir excavation in 2013. Construction continued and the composite reservoir became operational at the end of 2015. The transitional reservoir in the West Lobe will continue to be used to hold Thorn Creek water during storms until the end of 2020, when the West Lobe will be returned to an active quarry. At that time, the Thorn Creek flood water will be diverted to the composite reservoir. The Thornton Composite Reservoir was estimated to provide \$40 million per year in benefits to 556,000 people in 14 communities. Since becoming operational, the Thornton Composite Reservoir has prevented approximately 20.2 billion gallons of combined sewage from entering the waterways.

### **McCook Reservoir**

The District owns the land for the McCook Reservoir, which will be built within the Lawndale Avenue Solids Management Area. A PCA with the USACE was signed on May 10, 1999. The USACE is responsible for designing and constructing the reservoir features, and the District is responsible for providing the massive hole for the reservoir. Several construction contracts awarded by the USACE have been completed, including construction of a groundwater cutoff wall and grout curtain around the reservoir perimeter, a construction shaft for the connecting tunnel, stabilization of rock highwalls, stabilization of soil and construction of retaining walls, distribution tunnels between the reservoir and the pumping station, main tunnels to connect the reservoir to the existing Mainstream Tunnel, the Final Reservoir Prep Contract to complete the distribution tunnel connection to the reservoir and install an aeration system, and addition of pumps and motors at the pumping station.

In October 2003, the District signed an agreement with a local mining company to mine out the limestone to the limits of the McCook Reservoir. The District completed several contracts to connect the quarry to the reservoir site and procure and construct required mining equipment to crush and convey the rock to the quarry for processing. Overburden removal was completed in 2015. Full production mining at the site began in March 2008 and is expected to take approximately 20 years. In order to receive the partial benefits of Stage 1 sooner, the reservoir was planned to be mined and constructed in two stages. Mining of Stage 1 was completed in 2016, and the first stage of the reservoir was made operational at the end of 2017, providing 3.5 billion gallons for storage of combined sewage. In its first year of operation, Stage 1 of the McCook Reservoir has captured approximately 25 billion gallons of combined sewage.

With Stage 1 now operational, Stage 2 construction is expected to continue on and off over the next several years while mining progresses. In 2006, the District decided to expand the federally-authorized 3.5 billion gallon capacity of Stage 2 of the reservoir to 6.5 billion gallons. Stage 2 of the reservoir is currently being mined and is approximately 26% excavated and expected to be operational in 2029. The McCook Reservoir is estimated to provide more than \$143 million per year in benefits to 3.1 million people in 37 communities.



Reservoir storage volumes are presented in the table below.

PHASE II/CUP RESERVOIR	VOLUME (in billion gallons)
Majewski	0.35
Thornton	4.8 *
McCook	10.0
TOTAL STORAGE	15.15

\* Does not include portion designated for non-TARP overbank flood relief.

### TARP/CUP Costs

Current TARP/CUP costs, details of which are provided in Tables I through III, are summarized as follows:

(A) Phase I Tunnels & Appurtenant Facilities (Construction Costs)

(1) Completed	\$2,332,154,822
(2) Remaining	\$ 0
Total Tunnels & Appurtenant Facilities	\$2,332,154,822

(B) Phase II/CUP Reservoirs (Total Project Costs)

(1) <u>Majewski Reservoir:</u>	
Completed	\$ 44,810,552
Remaining	\$ 0
Sub-Total Majewski Reservoir	\$ 44,810,552

(2) <u>Thornton Reservoir:</u>	
Completed/Under Construction	\$ 418,000,000
Remaining	\$ 0
Sub-Total Thornton Reservoir	\$ 418,000,000

(3) <u>McCook Reservoir:</u>	
Completed/Under Construction	\$ 983,000,000
Remaining	\$ 48,000,000
Sub-Total McCook Reservoir	\$1,031,000,000

Total Reservoirs \$1,494,000,000

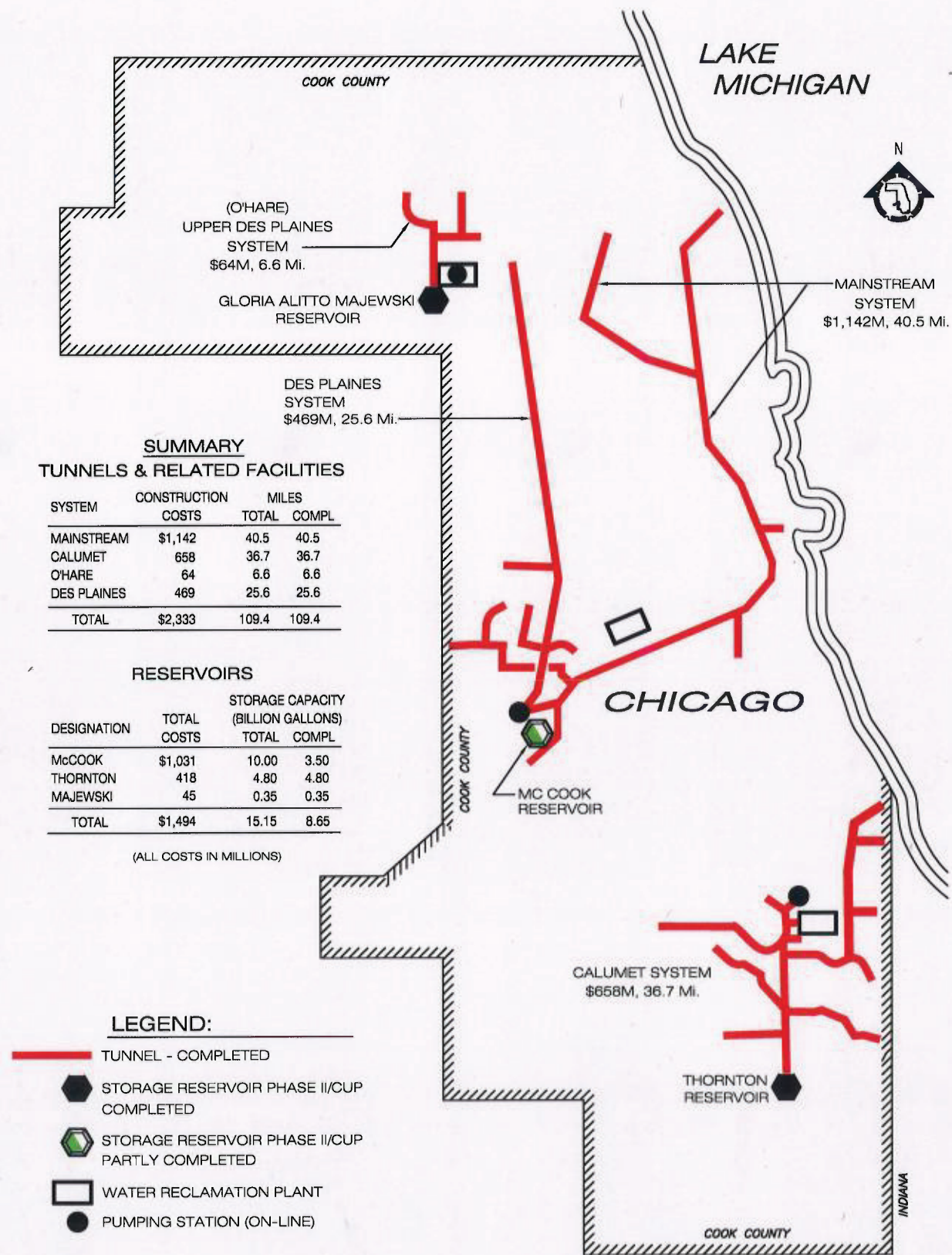
Total Tunnel and Reservoir Plan \$3,826,000,000

Very truly yours,

*Catherine A. O'Connor*

Catherine A. O'Connor  
Director of Engineering

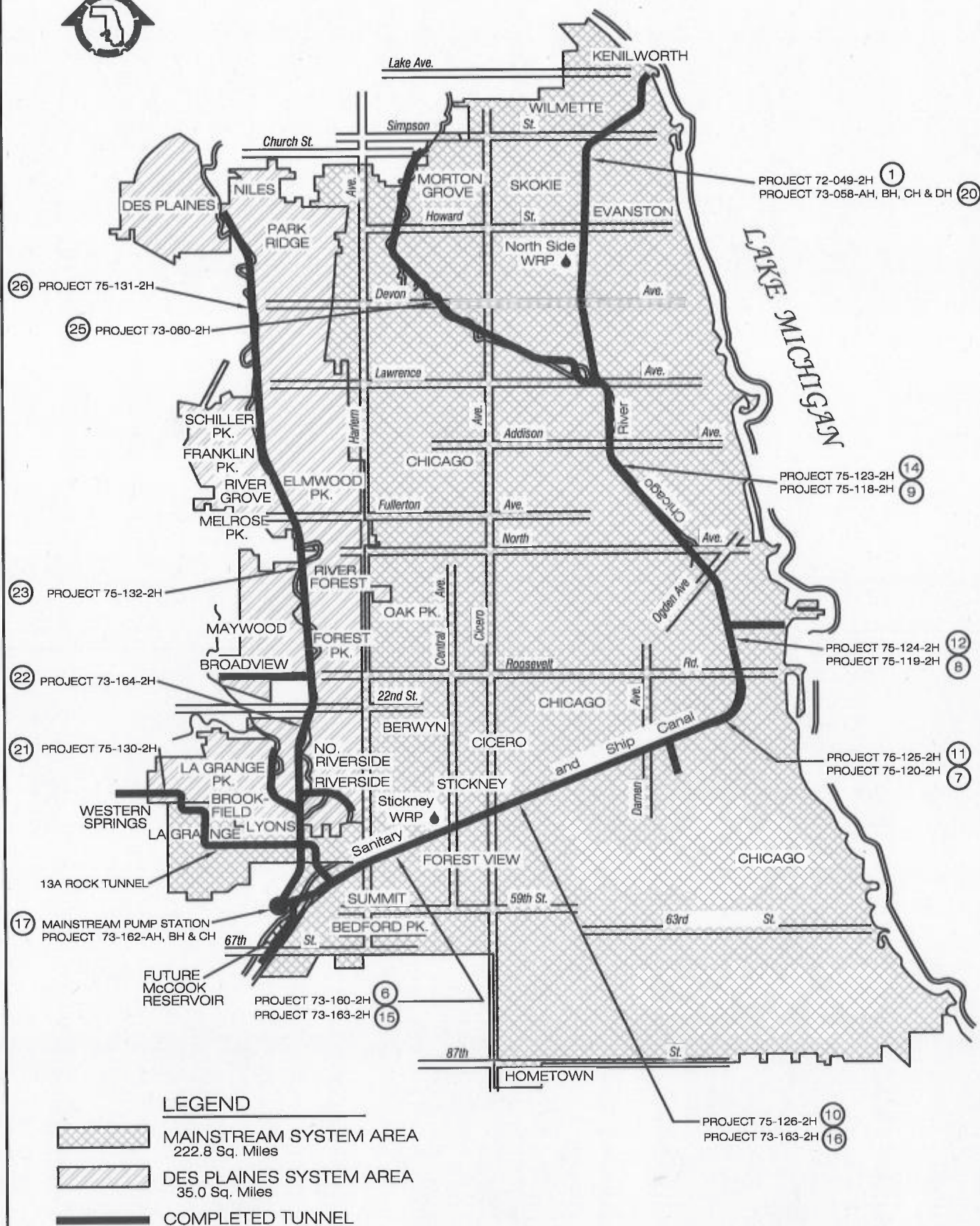
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# TUNNEL and RESERVOIR PLAN PROJECT STATUS

METROPOLITAN WATER RECLAMATION  
DISTRICT OF GREATER CHICAGO  
ENGINEERING DEPARTMENT  
TARP & PROJECT SUPPORT KMF:JJK  
**Figure 1**



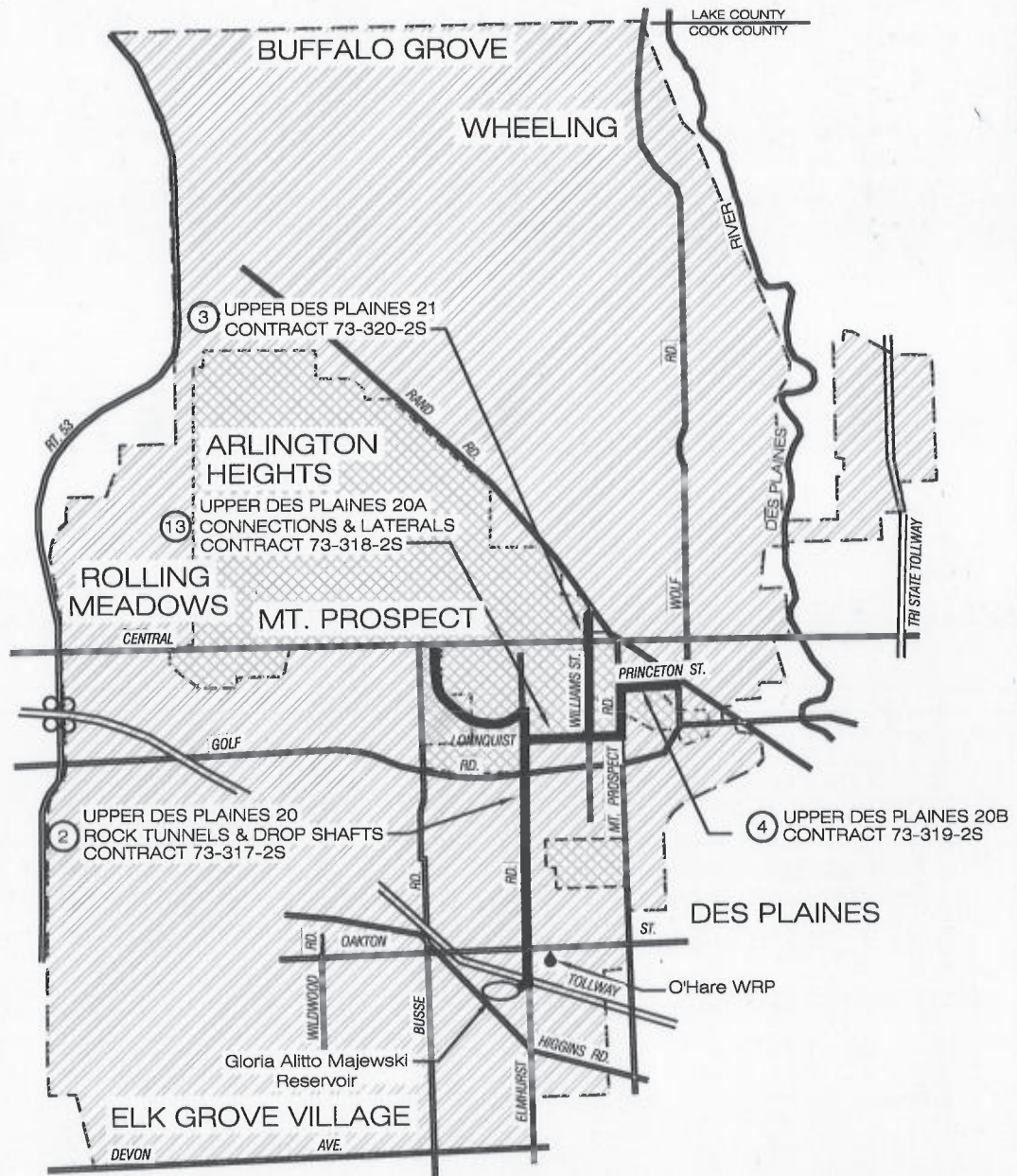


# TARP - MAINSTREAM and DES PLAINES SYSTEMS

METROPOLITAN WATER RECLAMATION  
DISTRICT OF GREATER CHICAGO  
ENGINEERING DEPARTMENT  
TARP & PROJECT SUPPORT KMF:JJK

Figure 2





#### LEGEND

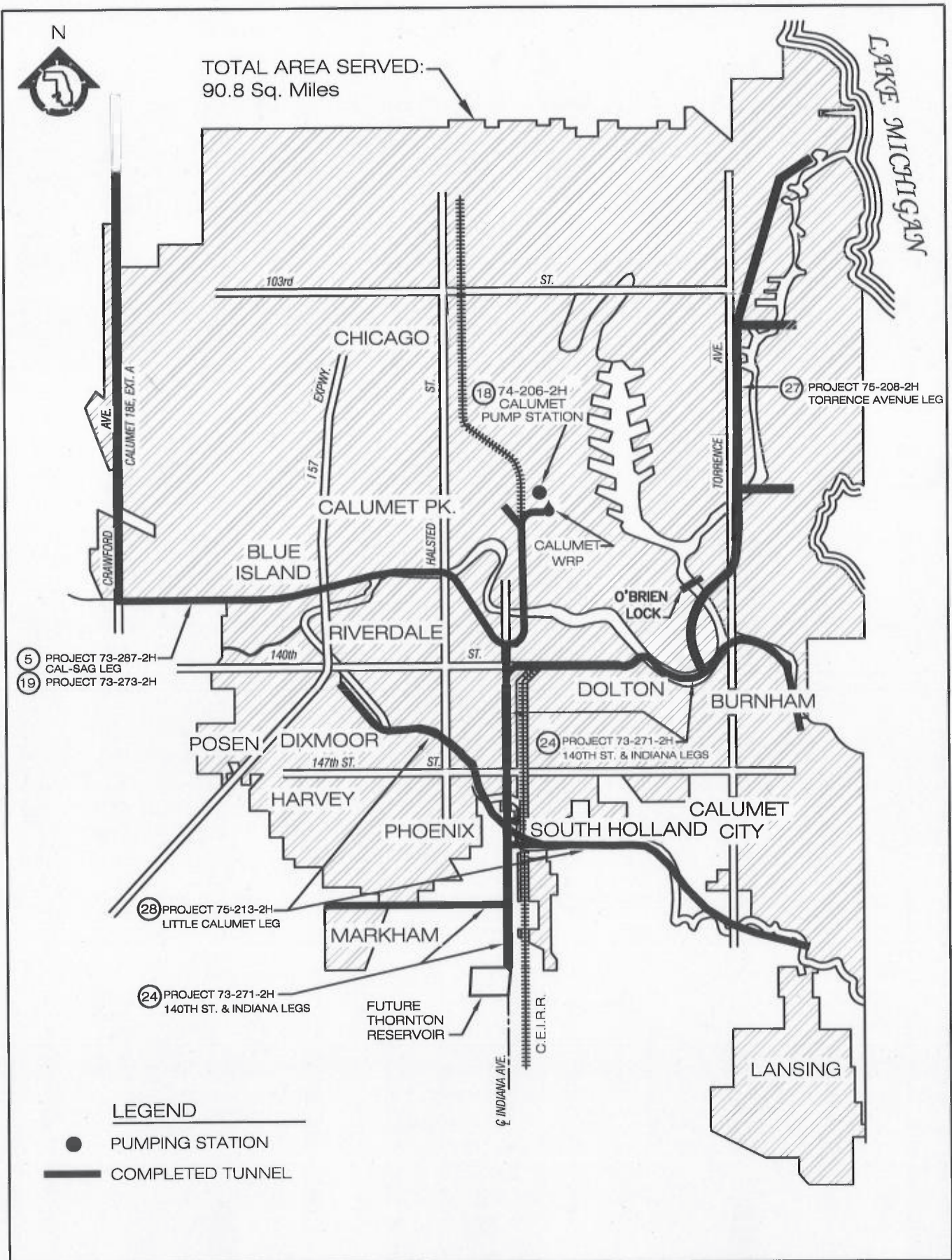
- COMPLETED TUNNEL
- Kirie WRP Service Area
- Upper Des Plaines TARP Service Area

## TARP - UPPER DES PLAINES (O'HARE) SYSTEM

METROPOLITAN WATER RECLAMATION  
DISTRICT OF GREATER CHICAGO  
ENGINEERING DEPARTMENT  
TARP & PROJECT SUPPORT KMF:JJK

**Figure 3**





## TARP - CALUMET SYSTEM

METROPOLITAN WATER RECLAMATION  
DISTRICT OF GREATER CHICAGO  
ENGINEERING DEPARTMENT  
TARP & PROJECT SUPPORT KMF:JJK

**Figure 4**

**TABLE I**  
**TARP Phase I Funding**

<i>TARP System</i>	<i>Total Construction Cost (1)</i>
Mainstream	\$1,142
Calumet	\$658
O'Hare	\$64
Des Plaines	\$469
Total	\$2,332

(1) Costs are in millions and represent contract award costs and are not in today's dollars.

*Additional TARP Phase 1 related contracts excluded from above for various reasons:*

1. Mainstream System Bulkhead Removal Contract (82-178-2H)	\$2,937,462
2. Mainstream System Groundwater Monitoring Wells-Contract (73-162-DH)	\$674,600
3. Calumet System Bulkhead Removal Contract (82-243-2H)	\$335,728
4. Calumet System Groundwater Monitoring Wells (Contract 74-206-BH)	\$128,900
5. Mainstream Pitney Ct. Sewer (Contract 75-120-KH)	\$278,856
6. Mainstream Drop Shafts-Installation of Louvers (Contract 85-122-2H)	\$496,600
7. Mainstream Slide Gate Installation (Contract 86-131-2H)	\$673,000
8. S.W. 13-A Groundwater Monitoring Wells (Contract 73-172-2H)	\$27,750
9. Mainstream Oxygen Injection System (Contract 85-113-AM)	\$247,700
<i>Total</i>	<u>\$5,800,596</u>



TABLE II

## TARP Phase I Contracts Completed

Ref. No. (1)	Project Name	Project Number	Contractor	Project Cost (2)
1	<u>Mainstream System</u> Addison-Wilmette Tunnel	72-049-2H	Kenny-Paschen, S & M J.V.	\$63,140,480
6	59th to Central Tunnel	73-160-2H	Morrison-Knudsen, S & M, Paschen J.V.	\$86,493,975
7	Damen to Roosevelt Connecting Structures	75-120-2H	Awarded to Various Contractors	\$19,877,570
8	Roosevelt to Ogden Connecting Structures	75-119-2H	Awarded to Various Contractors	\$16,901,774
9	Ogden to Addison Connecting Structures	75-118-2H	Awarded to Various Contractors	\$11,162,159
10	Central to Damen Tunnel	75-126-2H	Healy, Ball, Horn J.V.	\$98,985,250
11	Damen to Roosevelt Tunnel	75-125-2H	Paschen, Morrison-Knudsen, Kenny J.V.	\$107,837,300
12	Roosevelt to Ogden Tunnel	75-124-2H	Shea Inc, P. Kiewit & Sons	\$101,970,680
14	Ogden to Addison Tunnel	75-123-2H	Ball, Healy, Horn J.V.	\$85,205,910
15,16	59th to Damen Connecting Structures	73-163-2H	Awarded to Various Contractors	\$26,440,052
17	Mainstream Pumping Station Part I	73-162-AH	P.Kiewit & Sons, J F Shea, Kenny Cnstr J.V.	\$168,811,300
17	Mainstream Pumping Station Part II	73-162-BH	Healy, Ball, Grow Tunneling Corp J.V.	\$64,755,000
17	Mainstream Pumping Station Part III	73-162-CH	Morrison-Knudsen, Paschen Contractors J.V.	\$28,012,400
20	Addison-Wilmette Connecting Structures	73-058-AH	Granite Construction Co.	\$34,966,450
20	Addison-Wilmette Connecting Structures	73-058-BH	Granite Construction Co.	\$27,613,300
20	Addison-Wilmette Connecting Structures	73-058-CH	Kenny, Paschen J.V.	\$19,571,740
20	Addison-Wilmette Connecting Structures	73-058-DH	G H Ball Co, Dew & Sons J.V.	\$12,220,875

(1) Chronological order of awards

(2) Bid price

TABLE II (cont.)

## TARP Phase I Contracts Completed

Ref. No. (1)	Project Name	Project Number	Contractor	Project Cost (2)
	<u>Mainstream System (cont.)</u>			
25	North Branch Chicago River, Tnl & Conn Str.	73-060-2H	Perini, ICA, O&G J.V.	\$167,907,130
2	<u>Upper Des Plaines (O'Hare System)</u>			
	Upper Des Plaines #20 Tunnel	73-317-2S	Healy, Ball, Greenfield J.V.	\$35,749,664
3	Upper Des Plaines #21 Tunnel	73-320-2S	McHugh Construction Co.	\$21,371,607
4	Upper Des Plaines #20B Tunnel	73-319-2S	Jay-Dee, Kenny J.V.	\$2,683,943
13	Upper Des Plaines #20A Connecting Structures	73-318-2S	Jay-Dee, Jay-Dee of Illinois	\$4,598,650
	<u>Calumet System</u>			
5	Crawford to Calumet Plant Tunnel	73-287-2H	Traylor Bros, Ferrera & Resco, Inc J.V.	\$79,256,370
18	Calumet Tunnel And Pump Station	74-206-2H	Healy, Atlas-Gest International Inc J.V.	\$54,841,825
19	Crawford Ave to Calumet Plant Connecting Str.	73-273-2H	S. A. Healy Co	\$19,173,509
24	Calumet Tnl Sys, Tnl, Sfts, Con Str, 140th St & Ind	73-271-2H	Kenny, P Kiewit, Shea J.V.	\$194,530,500
27	Torrence Ave. Leg, Tunnels, Shfts & Conn Str.	75-208-2H	Kenny, P Kiewit, Shea J.V.	\$140,666,650
28	Little Calumet Leg, Tunnels, Shfts & Conn Str.	75-213-2H	Jay-Dee, Affholder J.V.	\$168,700,000
	<u>Des Plaines System</u>			
21	13A Ext. Tunnel, Shafts & Connecting Structures	75-130-2H	Kenny Construction Co.	\$23,292,759
22	59th to Cermak, Tunnel, Shafts, & Connecting Str.	73-164-2H	Morrison-Knudsen, Paschen Contractors J.V.	\$156,631,000
23	Cermak to Fullerton, Tnl, Sfts & Conn Struct.	75-132-2H	Impregilo, Ebasco, Losinger J.V	\$147,665,000
26	Fullerton to Prairie, Tnl, Sfts & Conn Struct.	75-131-2H	Kenny, P Kiewit, Shea J.V.	\$141,120,000
<b>Total Phase I Contracts Completed:</b>				<b>\$2,332,154,822</b>

(1) Chronological order of awards

(2) Bid price