Capital Planning Committee
Water and Sewer
Tunnel Projects
Status and Planning

GLWA CIP Committee Meeting

June 18, 2019

GLWA
Great Lakes Water Authority

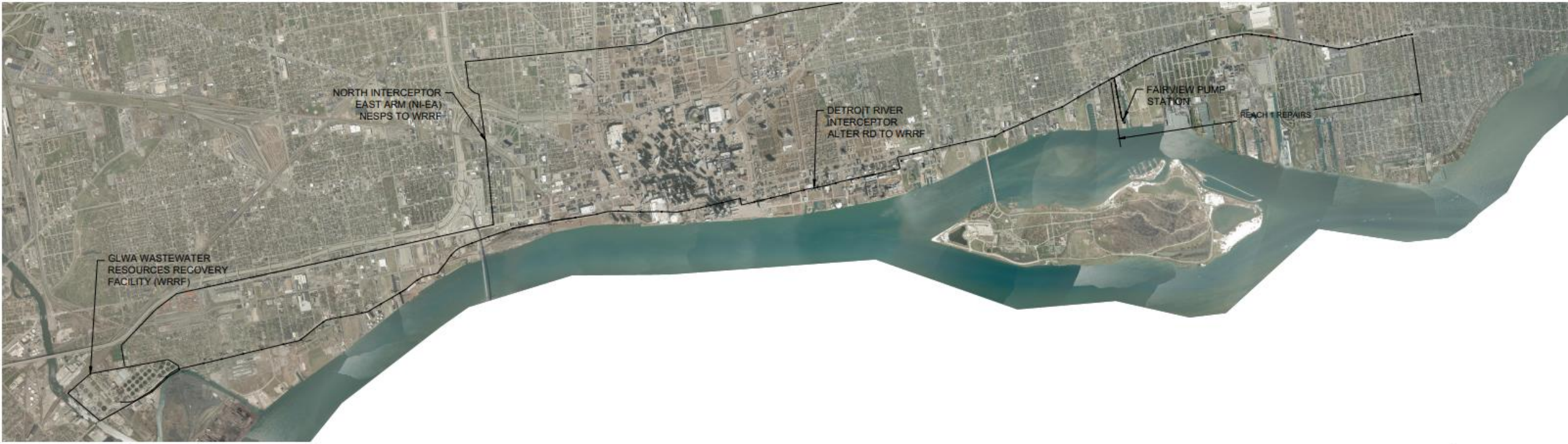
Agenda

- DB-226 Detroit River Interceptor Project
- DB-150 Raw Water Tunnel Project

DB-226 Detroit River Interceptor Project

CIP No: 222002
Start: 5/24/2018
Duration: Five Years
Project Delivery: Design Build
Project Team: Jay Dee – Contractor and Prime; FK Engineers – Designer of Record;
Subconsultants = Applied Sciences, Inc. and Anderson, Eckstein and Westrick, Inc.
GLWA PM: Mini Panicker, P.E.
Scope: Evaluation and repair of the Detroit River Interceptor (DRI) sewer from Alter Road (City of Detroit border) to the WRRF. Approximately 12 miles of sewer with diameters from 8 to 16 feet.
Procurement Method: Quality Based Selection
Original Contract Upper Limit: $19.8 million
Original/Current Budget Estimate: $29 million / $ 50 to 60 million (20% contingency)
Current Estimated Duration: Six to Seven Years

Project Scope – Divided into 3 reaches ~ 13 miles



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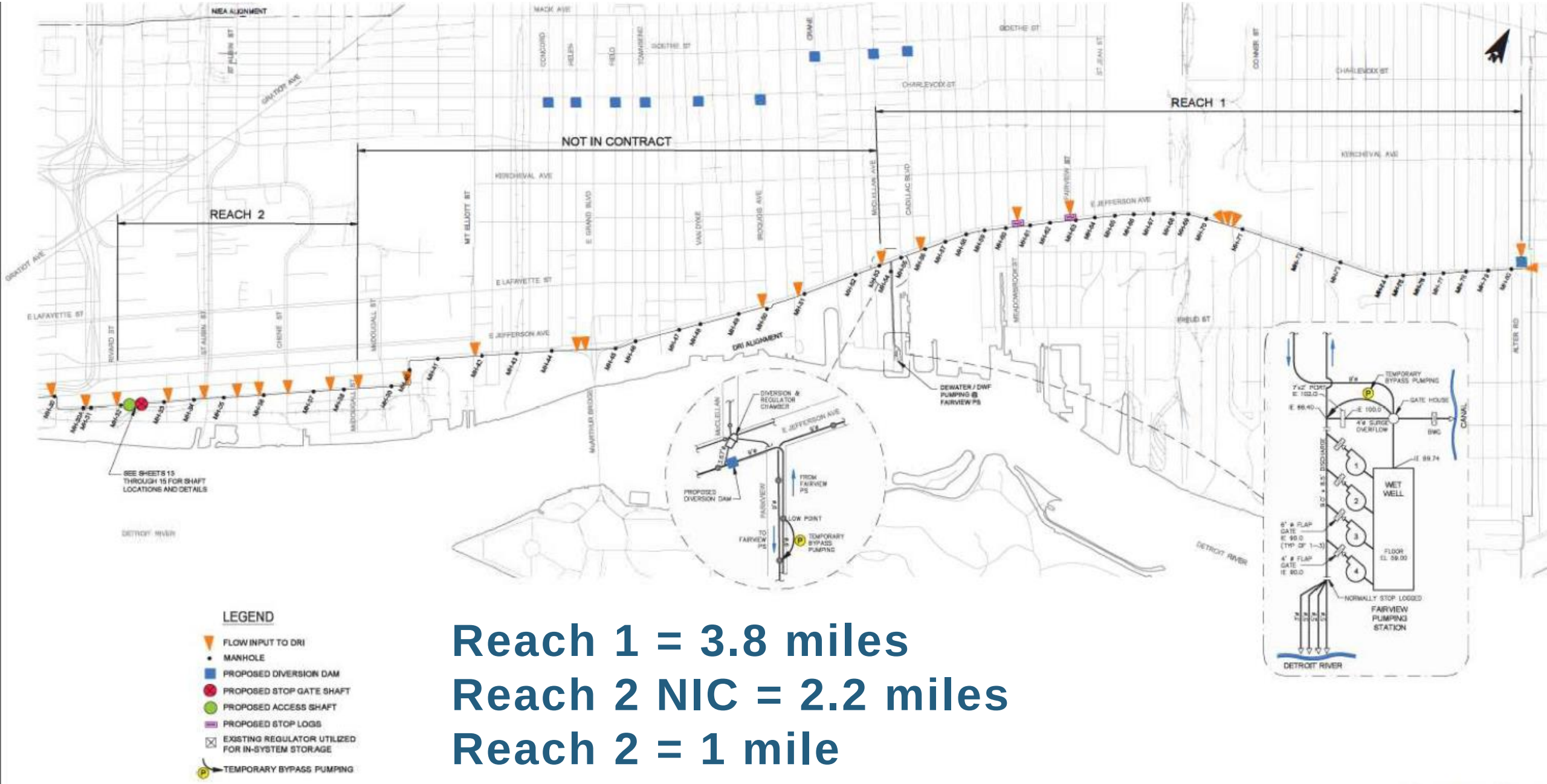


Reach 1 = 3.8 miles

Reach 2 NIC = 2.2 miles

Reach 2 = 1 mile

FIGURE NO. 1

Reach 3 = 6 miles

FIGURE NO. 2

DB-226 Detroit River Interceptor Project (cont.)

Engineering Budget:

$3.4 million as bid

Guaranteed Maximum Price (GMP) Negotiations:

Reach 1: $5.8 million – 9/5/2018
Reach 2: $4.7 million – 1/25/2019
Access Shafts: $6.0 million – 1/25/2019

Added Scope:

Reach 1: Conner Creek Access Shafts + Manhole Improvements: $1.3 million
Reach 1: Increased Repair quantities: $1.5 million
Reach 2: Increased Estimated quantities: $ 2.4 million
Reach 2: Area originally not in contract: $6 million
Reach 3: Enhanced Access Shafts/Gates: $3 million
Reach 3: Additional flows and higher than anticipated PS-1 Wet Level: $12 million
Reach 3: Contingency for additional quantities for Reach 3: $3.9 - $13.9 million

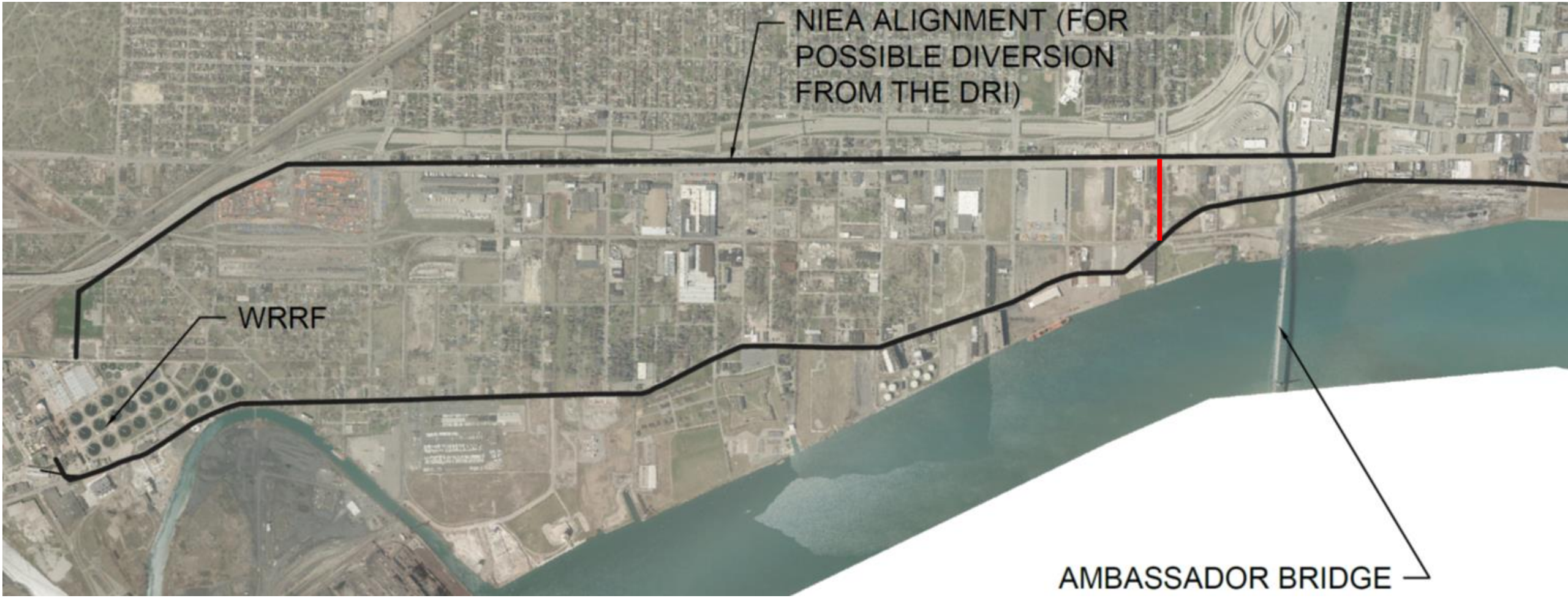
Current Estimated Budget: $50 – 60 million

Significant opportunity for cost savings

DRI to North Interceptor East Arm (NIEA) Crossover

1. Features
    - Conveys dry weather flow from DRI to NIEA
    - 84-inch tunnel to connect DRI and NIEA
    - Tunnel boring machine for 980 lineal feet
    - Connect to five DWSD lateral sewers
2. Benefits
    - Eliminates significant portions of bypass pumping and delays from Fairview project
    - Less disruption to WRRF with reduction in bypass pumping
    - Reduces Reach 3 depths and velocities

DRI-NIEA Crossover



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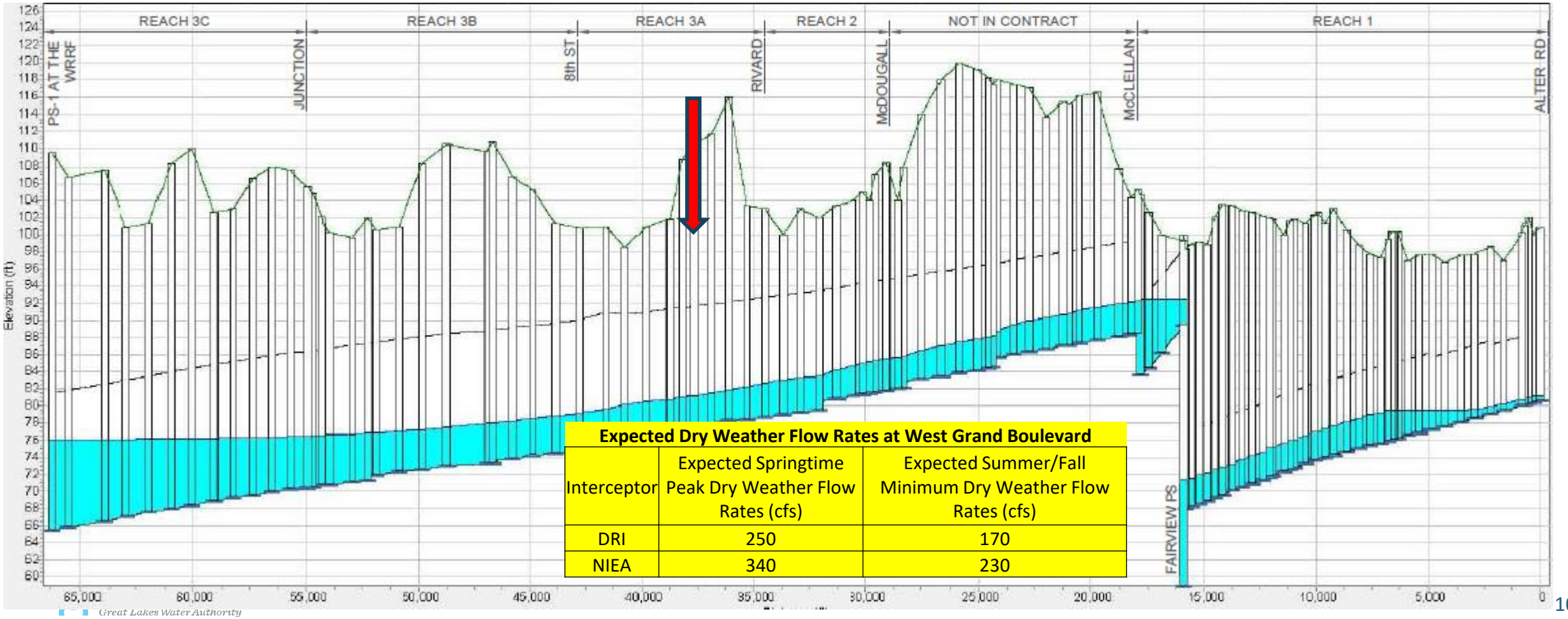
DRI and NIEA Hydraulic Capacities

DRI: 15’-6”Ø at W. Grand Blvd. in Jefferson Ave. and capacity is 952 cfs.

NIEA: 13’-6”Ø at W. Grand Blvd. along Fort St. and capacity is 1,043 cfs.



Expected Dry Weather Flow Rates at West Grand Boulevard

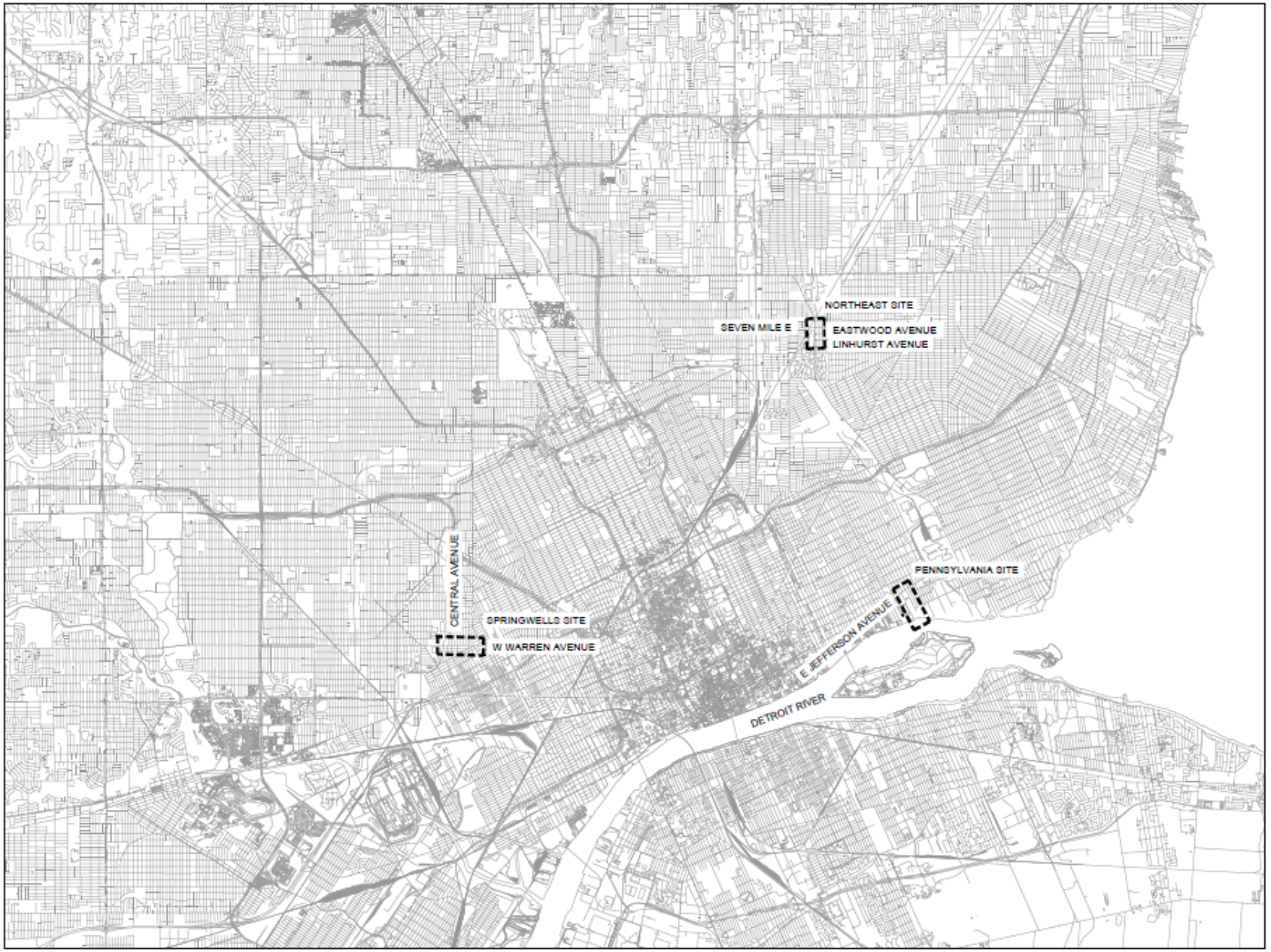
Interceptor	Expected Springtime Peak Dry Weather Flow Rates (cfs)	Expected Summer/Fall Minimum Dry Weather Flow Rates (cfs)
DRI	250	170
NIEA	340	230

DB-226 Next Steps

1) EGLE and City of Detroit have approved DRI-NIEA Crossover in Principle
2) Need to negotiate a change order and GMP for the first phase of Reach 3 work to include the DRI-NIEA Crossover
3) Will present to Board as Change Order No. 1 for DB-226 by late summer

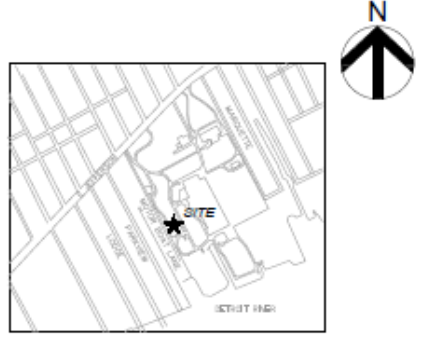
DB-150 Raw Water Tunnel Project

CIP No: 116002
Start: 1/29/2018
Duration: One Year to GMP, Construction TBD
Project Delivery: Progressive Design Build
Project Team: Ballard Marine – Contractor and Prime; Brierly and Associates – Designer of Record;
GLWA PM: Todd King, P.E.
Scope: Evaluation and repair of the raw water tunnels near Springwells WTP, Northeast WTP, and the combined Pennsylvania Tunnel that feeds same. This initial project includes supplemental investigation and production of 30-percent design to facilitate negotiation of GMP.
Procurement Method: Quality Based Selection
Original Contract Upper Limit: $10.7 million
Original/Current Budget Estimate: $30 million / $67 to 105 million (50% contingency)
Current Estimated Duration: Five Years



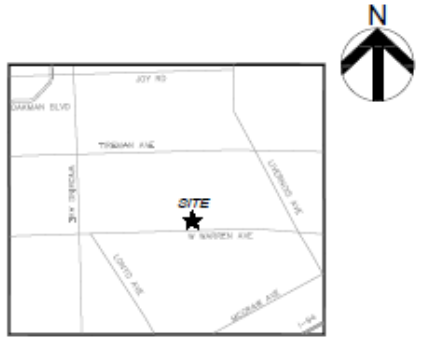
PROJECT KEY PLAN

SCALE: NTS



PENNSYLVANIA SITE KEY PLAN

SCALE: NTS



SPRINGWELLS SITE KEY PLAN

SCALE: NTS

NORTHEAST SITE KEY PLAN

SCALE: NTS

30% DRAWING SUBMITTAL- NOT FOR CONSTRUCTION

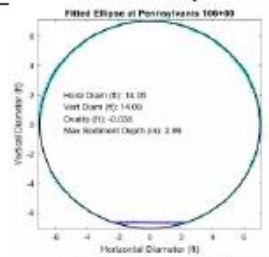
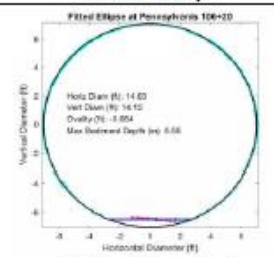
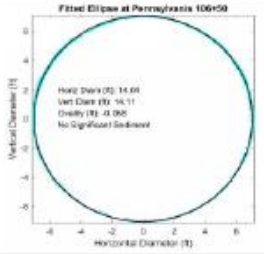
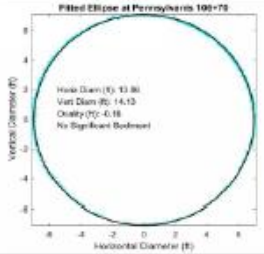
GLWA

BALLARD MARINE CONSTRUCTION | BRIERLEY ASSOCIATES

Diver Tunnel Inspection/Mapping Sheet

Tunnel: Pennsylvania **Start Station:** 105+75 (center of shaft) **End Station:** 107+00 **Inspection Date/Time:** 10/9-10/10 @ 18:00

Video File Name: _____ **Video Start Time:** _____ **Video End Time:** _____

		Anomaly Photo	Tunnel Ovality			Anomaly Photo	Tunnel Ovality
Anomaly 1				Anomaly 2			
Start Station	106+05			Start Station	106+20		
End Station	106+05			End Station	106+20		
Anomaly 3				Anomaly 4			
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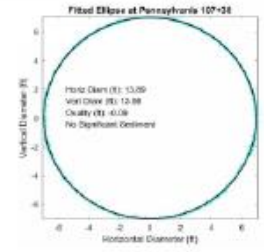
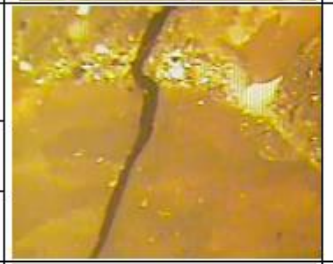
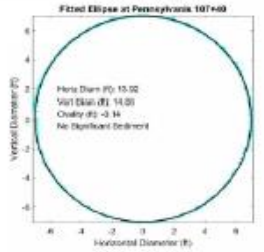
End Station	106+50			End Station	106+70		
Anomaly 5				Anomaly 6			
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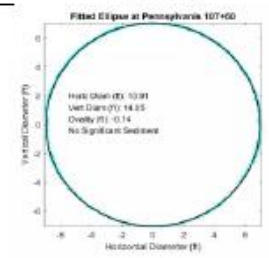
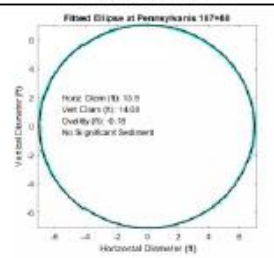
End Station	107+30			End Station	107+40		
Anomaly 7				Anomaly 8			
Start Station	107+60			Start Station	107+80		
End Station	107+60			End Station	107+80		

Form No. TME-C42
Revision No. 0
Revision Date: 11/30/2018

OBTAINING AND TESTING DRILLED CORES AND SAWED BEAMS OF CONCRETE

Quality Assurance

S&ME, Inc. - Columbus *6190 Enterprise Court, Dublin, Ohio 43016*

Project No.:	1117-18-022	Date Photos Taken:	12/3/2018
Project Name:	GLWA Detroit Raw Water Tunnels	Log No:	
Description:	Concrete Cores		

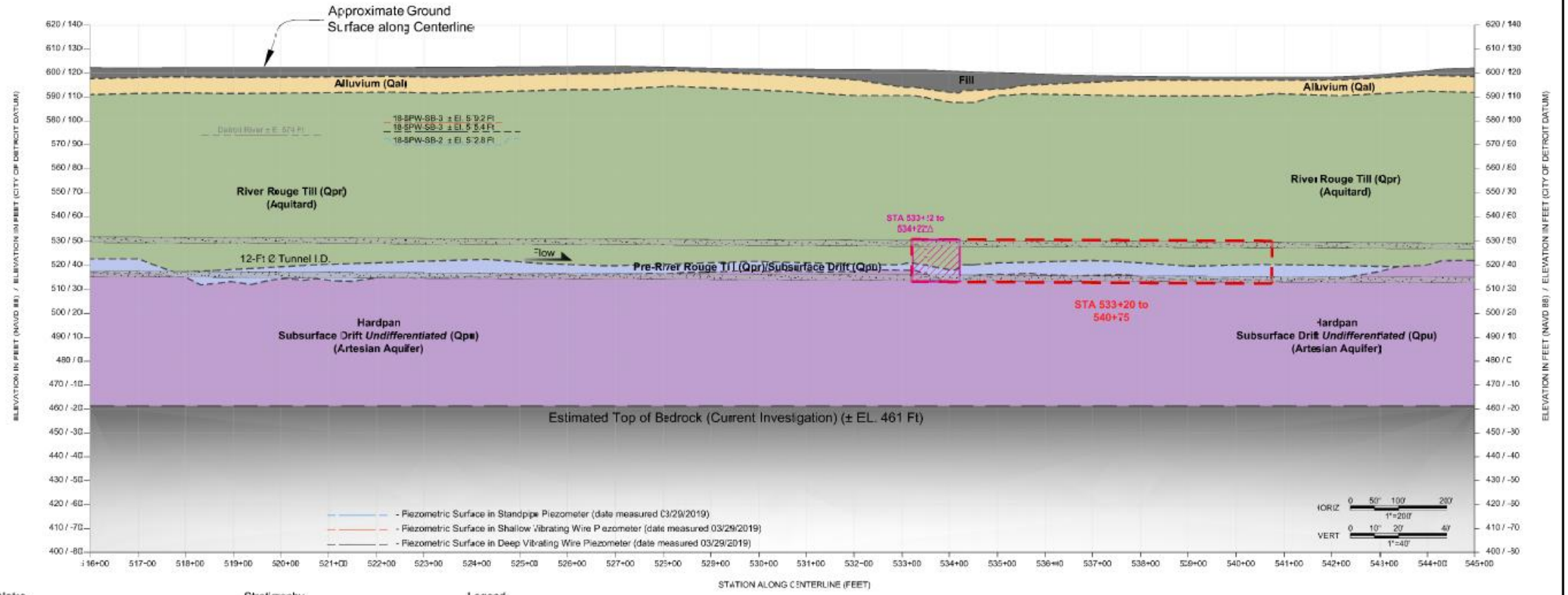
Specimen No.: 18-SPW CC-1 Sample 1

Compressive Strength: 6379 psi

Specimen No.: 18-SPW CC-1 Sample 2

Compressive Strength: 8424 psi

Paula J. Manning	11/30/2018	Erica Goodyear	12/4/2018
Performed By	*Date*	*Checked By*	*Date*



Notes

Profile represents generalized conditions based on test borings and field observations. Formation contacts and other boundaries as shown do not imply exact locations nor that the portrayed formations are necessarily continuous between borings. Borings drilled in 1928 by Ohio Drilling Company & Pennsylvania Drilling Company, borings drilled in 2016 by DLZ - American Drilling, Inc.. NAVD 88 elevation has a correction of +479.233 ft from the Detroit Datum at the Springwells WTP.

Stratigraphy

- Fill
- Alluvium (Qal)
- River Rouge Till (Qpr)
- Pre-River Rouge Till (Qpr)/Subsurface Drift *Undifferentiated* (Qpu)
- Hardpan Subsurface Drift *Undifferentiated* (Qpu)

Legend

= Area of Contracted Portion of Tunnel
= Area of Distressed Tunnel Section Identified in Video Review
Δ denotes area to be confirmed

BRIERLEY ASSOCIATES
Creating Space Underground
15808 Ranch Rd 620 N, Ste 210, Austin, TX 78717
PHONE: 512.219.1733 FAX: 512.219.1759

CLIENT: Great Lakes Water Authority
735 Randolph Street Suite 1900
Detroit, MI 48226

PROJECT NUMBER: SLWA-DB-150, Design-Build
717002-000

FIGURE/PLATE TITLE: SPRINGWELLS TUNNEL
STRATIGRAPHIC CONDITIONS

FIGURE/PLATE: TM-GEO-1.4

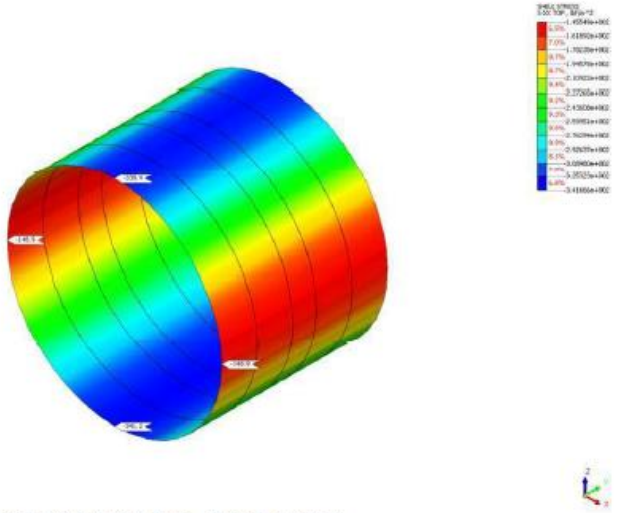


Figure 19: CIP Liner Circumferential Stress Outside Face – Tunnel Dewatered

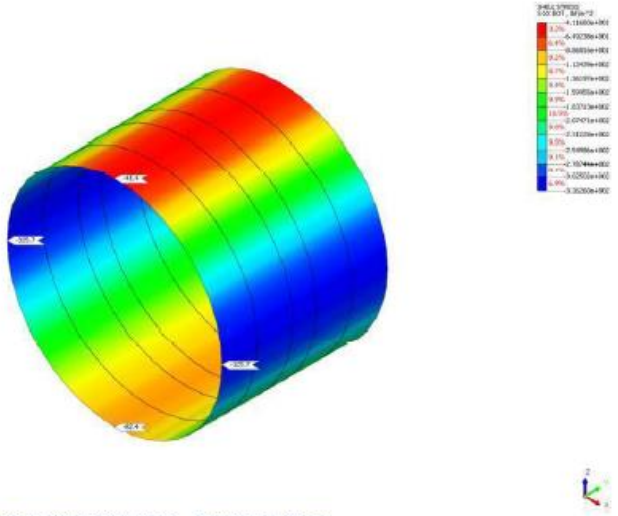


Figure 20: CIP Liner Circumferential Stress Inside Face – Tunnel Dewatered

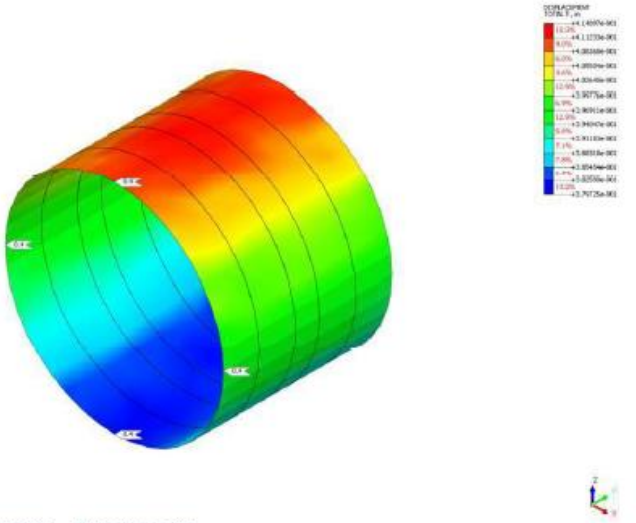


Figure 13: CIP Liner Total Deformation – Tunnel In-service

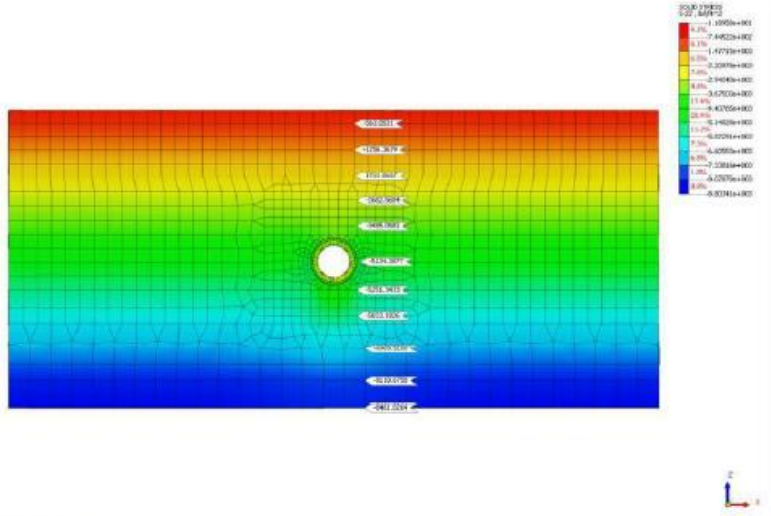


Figure 14: Vertical Effective Stress – Tunnel Dewatered

BRIERLEY ASSOCIATES
Creating Space Underground

DB-150 Significant Variations

Scope Item	Original RFP	30 % BOD	Estimated Costs
Springwells Tunnel Repairs	270 LF (in two locations)	755 LF (combined)	$40.6 to 60.9 million
Pennsylvania Tunnel Repairs	225 LF	225 LF	
Access Shafts	Temporary	Permanent	
Northeast Tunnel	400 LF	500 LF	$26.4 to 39.6 million

DB-150 Next Steps

1) Will receive detailed cost breakdowns for GMP negotiation on June 14, 2019.
2) GLWA staff and FK Engineers will review and develop negotiation strategy for GMP
3) A decision will need to be made on the Northeast Tunnel in conjunction with the outcome of the Northeast WTP cost benefit analysis
4) Will present to Board as Change Order No. 2 for DB-150 by late summer

GLWA

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Questions?