



Moulton Niguel Water
Leading the Way in Service

CONDITION ASSESSMENT OF THE CENTRAL INTERTIE PIPELINE

Engineering & Operations Board Meeting

February 16, 2016

PROJECT FACILITY

- CIP- Central Intertie Pipeline
- 54-inch cement mortar lined and coated welded steel pipeline
- Constructed throughout 1990s (4 contracts)



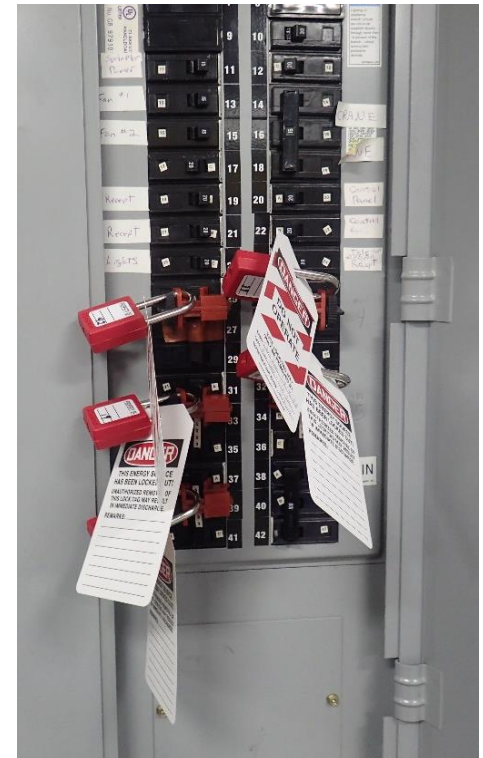
PROJECT HISTORY

- Previous Studies:
 - 2012 CH2M Hill Corrosion Assessment
 - 2014 Current Interruption Study
- Evaluation of available technologies
- Current Study: 2015/2016 Magnetic Flux Leakage (MFL) Condition Assessment
- Why MFL?

GOALS, SCOPE & CHALLENGES

- Goals
 - True condition assessment
 - Strategic repairs
 - Establish “baseline”
- Scope
 - Dewatering
 - Appurtenance removal
 - Pipe ovality inspection
 - MFL inspection
 - Engineering analyses
 - Welded steel patch repairs
 - Commissioning CIP
- Challenges

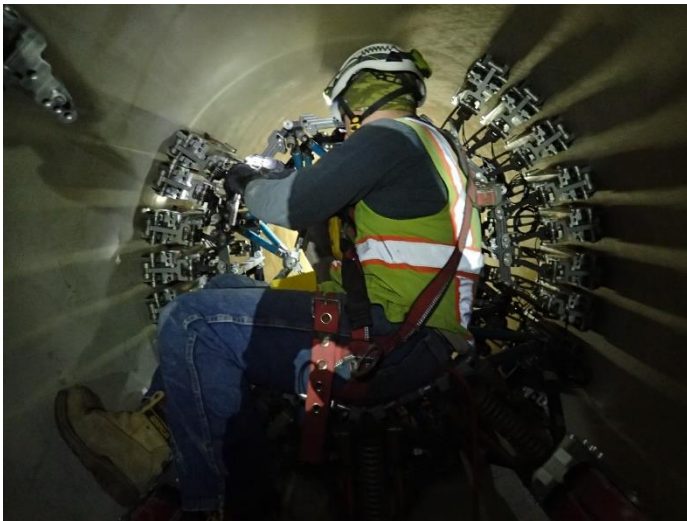
SAFETY PRECAUTIONS



PIPELINE PREPARATION: APPURTENANCE REMOVAL



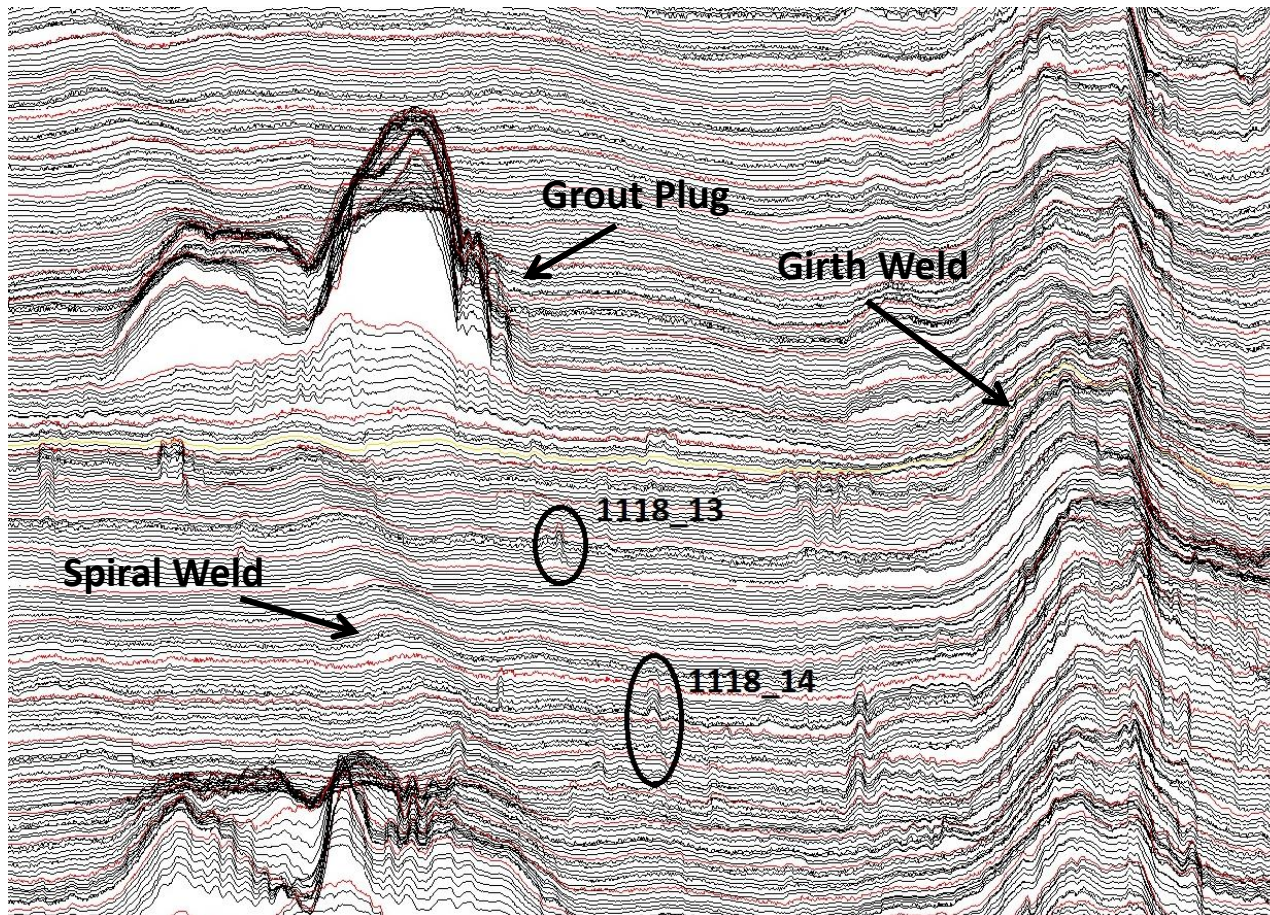
MFL TOOL BUILD



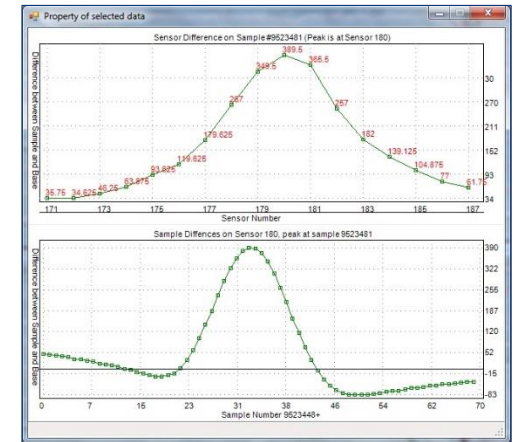
MFL INSPECTION



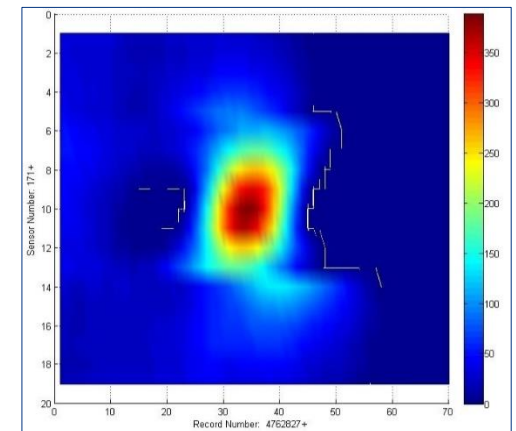
MFL DATA ANALYSIS



Raw Data (Location)



Trace Plot (Depth)



Contour Plot (Area)

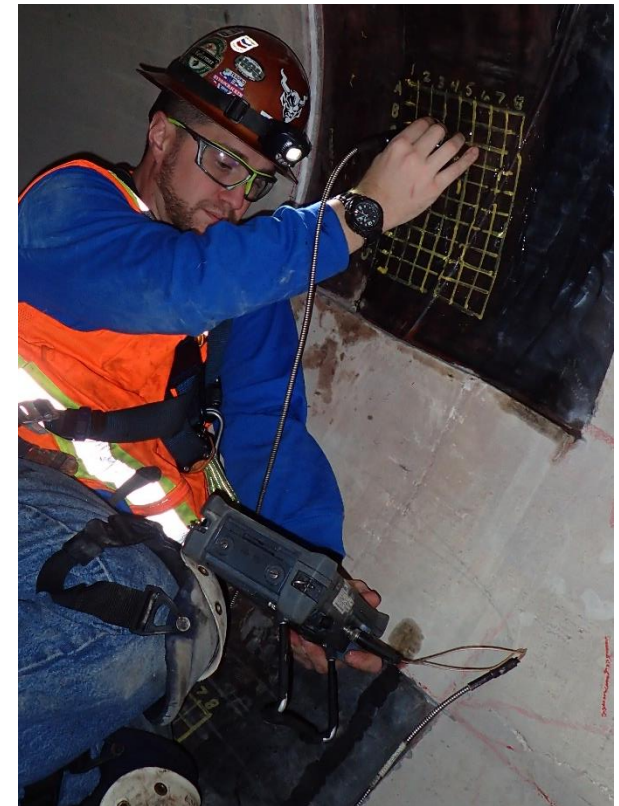
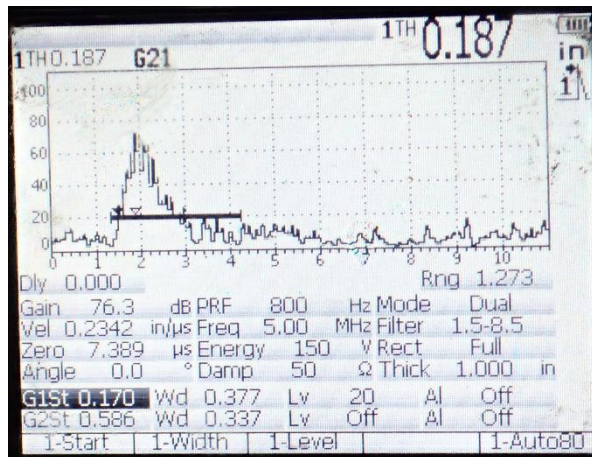
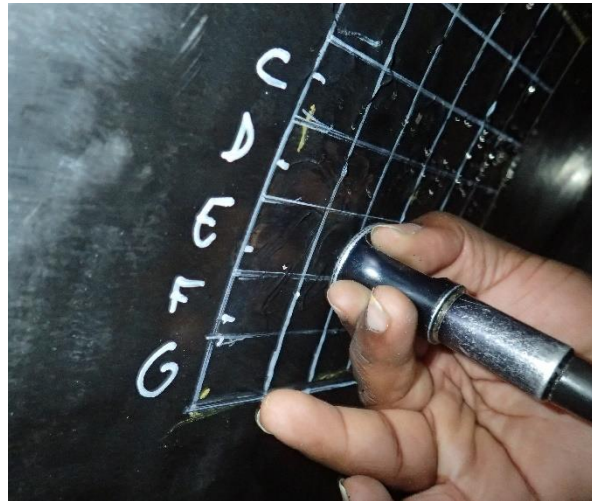
VISIBLE DEFECTS



MARKING DEFECTS AND REMOVING MORTAR



ULTRASONIC THICKNESS TESTING



WELDED STEEL PATCH REPAIR



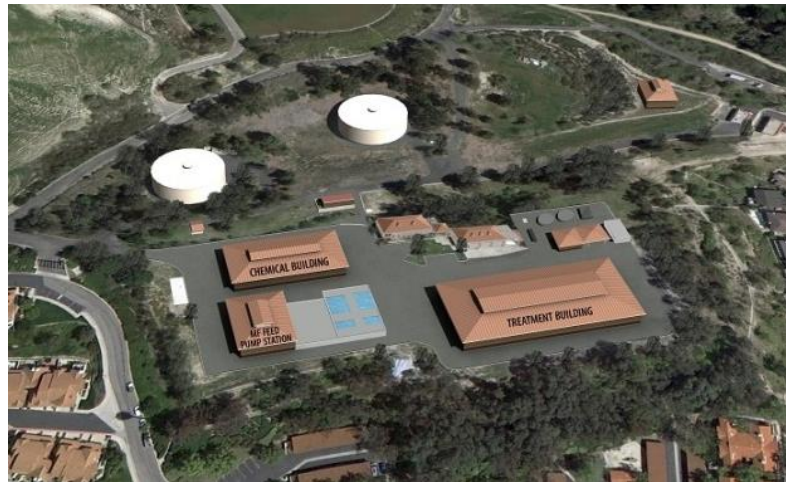
RESULTS AND CONCLUSIONS

- Multiple engineering analyses performed
- A number of “anomalies” identified
- 31 repairs (i.e. steel patches) performed
- Worthwhile investment in critical District asset
- Uncertainty has been eliminated
- True 2015 “baseline” has been established
- Despite repairs, action is still required
 - Repairs to pipeline appurtenances
 - Installation of active cathodic protection (CP) system
 - Establishment of future assessment schedule for CIP
 - Evaluation of CP program for other District assets



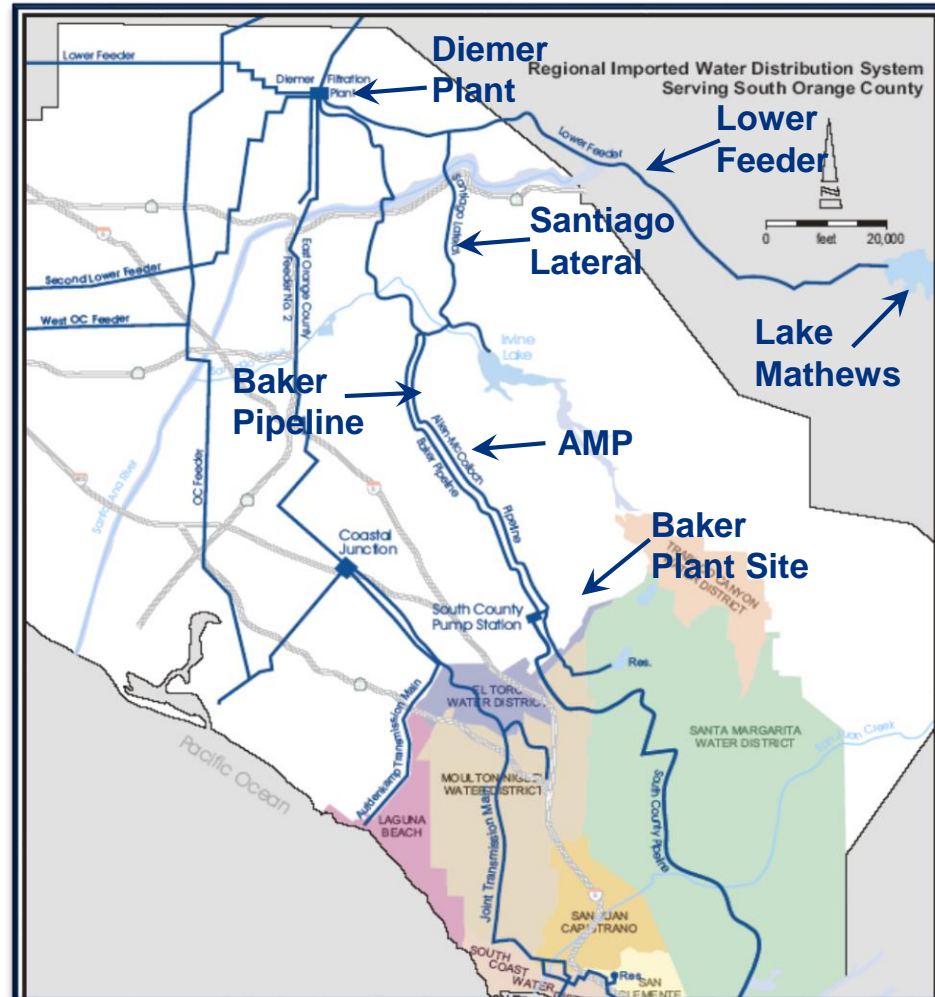
BAKER WATER TREATMENT PLANT PROJECT UPDATE

February 16, 2016



BAKER WATER TREATMENT PLANT PROJECT

- Capacity 43.5 cfs (28.1 mgd)
- IRWD acts as lead agency
- Raw Water through Baker Pipeline
- Independent of Diemer WTP
- Alternative Source includes Irvine Lake Water
- Two Project Components:
 - Baker Plant
 - Raw Water Conveyance
- Construction in progress



Major Project Components

Baker WTP

- Chlorine Dioxide System
- Forebay
- Feedwater Pump Station
- Treatment Building
- Membrane and UV Process
- Chemical Building
- Dewatering Building
- Disposal Equalization Basin
- Backwash Treatment System
- Product Water Pump Station
- Electrical / Power / Utilities

RWCF

- Flow Control Facility
- Raw Water Pump Station
- TCWD Pump Station
- OC-33 Meter Replacement
- Pipeline Tie-ins

Project Overview – thru Dec 2015

Project Info:

Contractor:

WTP
PCL Construction

RWCF
Pacific Hydrotech

Contract Duration:

820 days

455 days

Notice of Award:

Jan 6, 2014

Jan 6, 2014

Notice to Proceed:

Feb 5, 2014

Jan 22, 2014

Revised Contract Completion:

Apr 8, 2016

Apr 6, 2016

Original Contract Amount:

\$77,520,613

\$4,995,744

Approved Change Orders:

\$198,063

\$195,024

Revised Contract Amount:

\$77,718,676

\$5,190,768

Invoiced to Date:

\$61,799,824

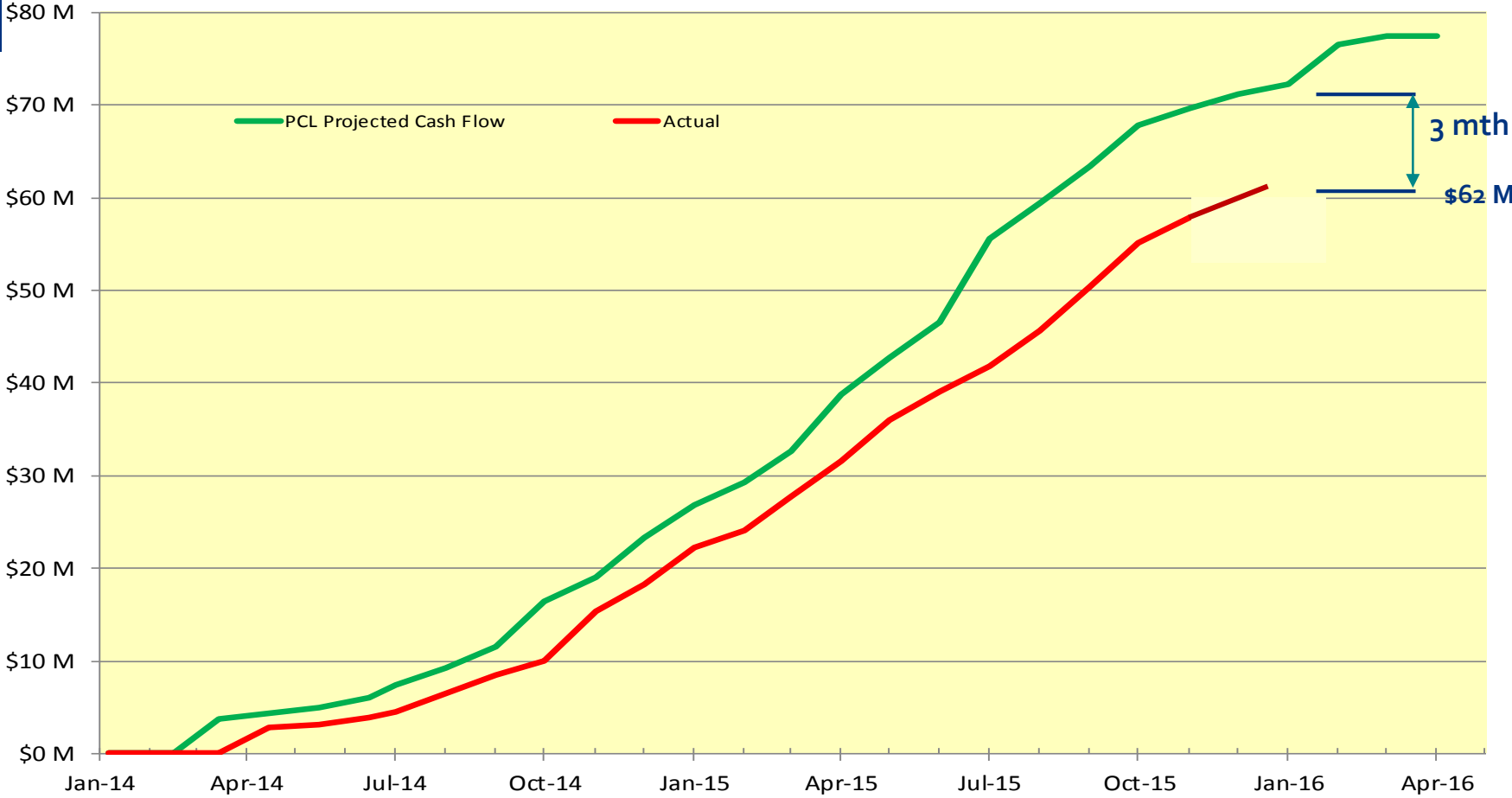
\$4,886,052

Percent to Date:

79.5%

94.1%

Baker Water Treatment Plant PCL Cumulative Expenditures



SITE OVERVIEW



TCWD PUMP INSTALLATION



TCWD PUMP STATION



MF FEED PUMP STATION AND FOREBAY



MF FEED PUMP STATION



TREATMENT BUILDING



11/23/2015 11:01

TREATMENT BUILDING – INTERIOR



TREATMENT BLDG. – MEMBRANE RACKS



PRODUCT WATER PUMP STATION



11/23/2015 11:20

PWPS – GENERATOR BUILDING



11/23/2015 11:22

CHEMICAL BUILDING

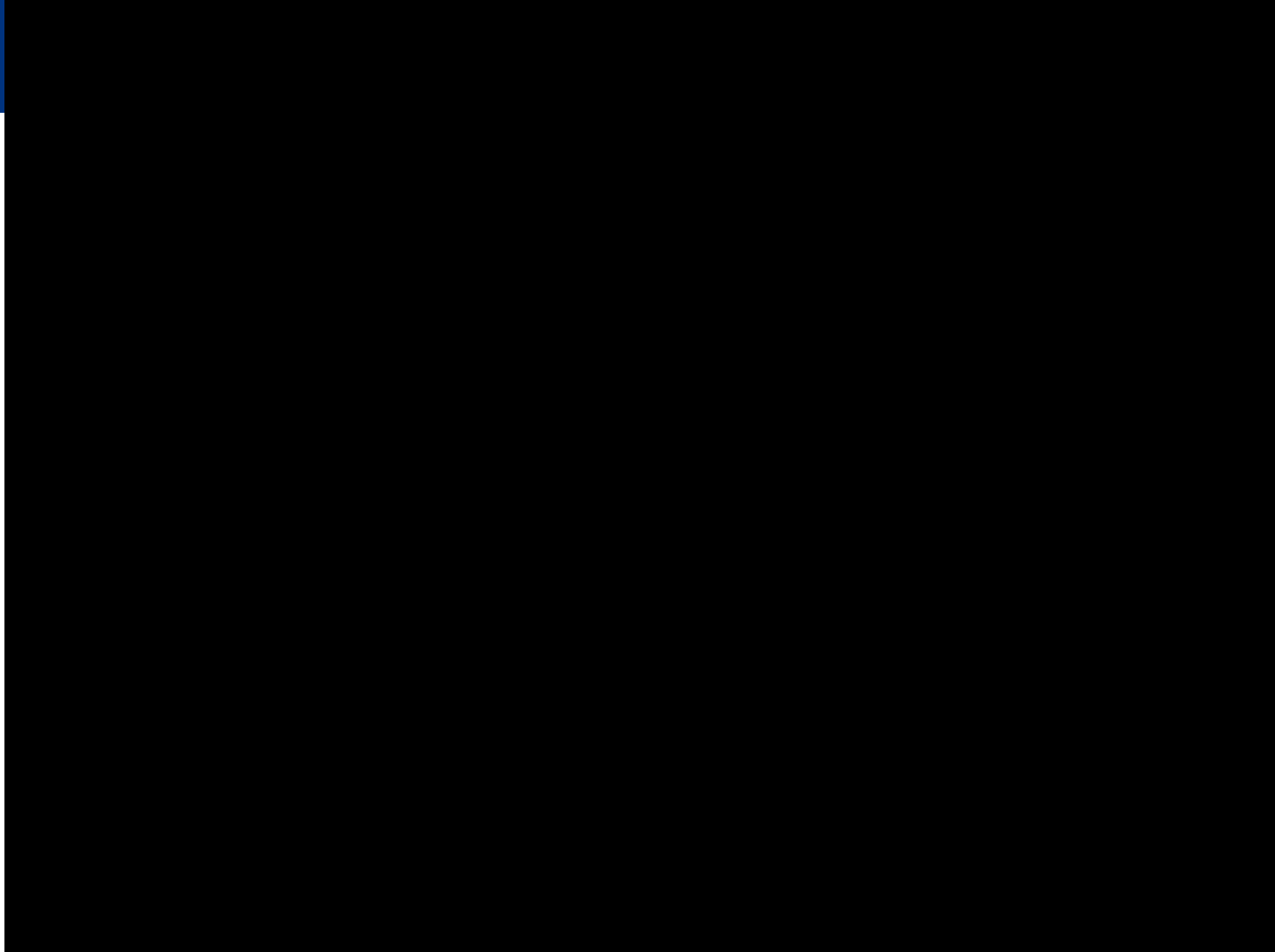


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DEWATERING BLDG. AND TRUCK LOADING AREA



AERIAL – FLOWN OCTOBER 2015



Questions?



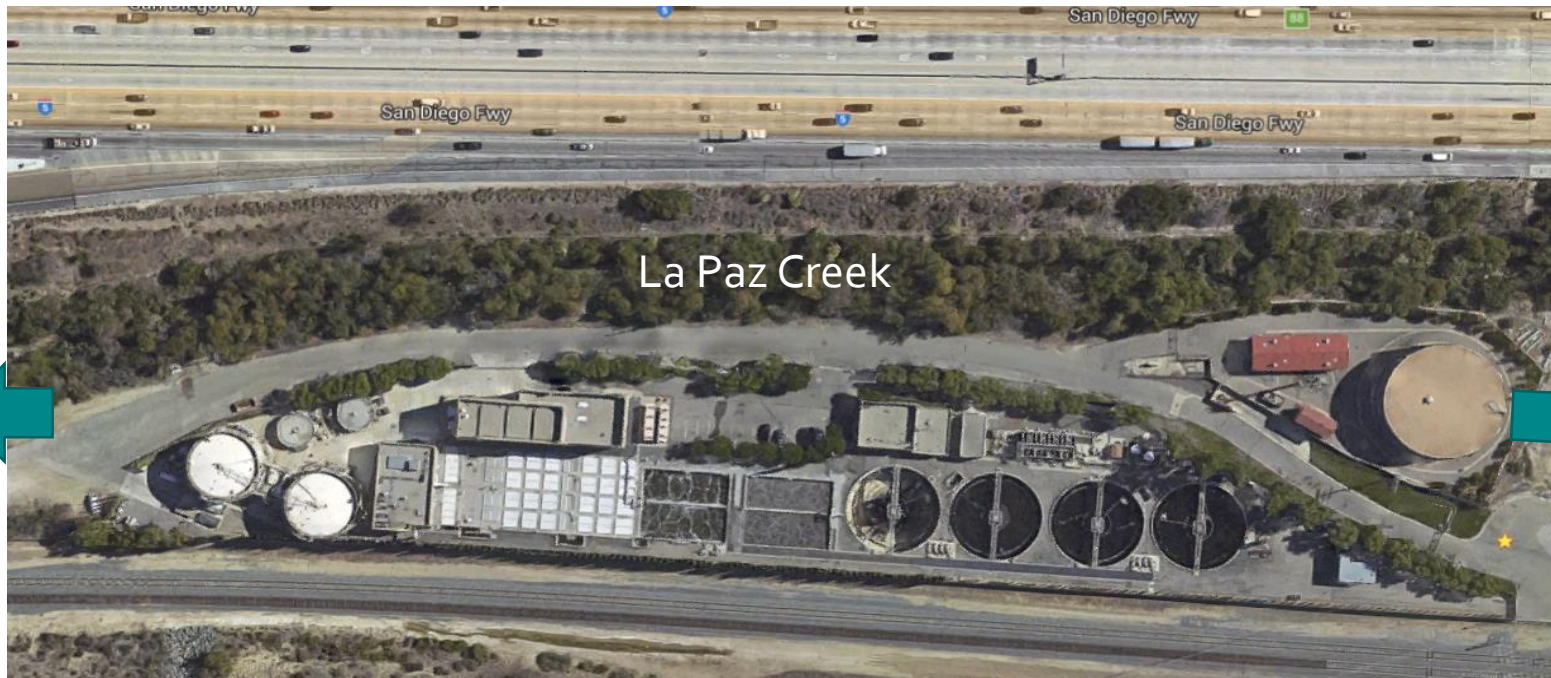
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PLANT 3A CREEK MITIGATION PLAN

February 16, 2016

3A WASTEWATER TREATMENT PLANT

- Secondary and advance treatment capacity
- Constructed in 1986
- Capacity owned by MNWD and SMWD



To Oso Parkway

To Crown Valley Parkway

ISSUE

- La Paz Creek Flooding of Plant 3A

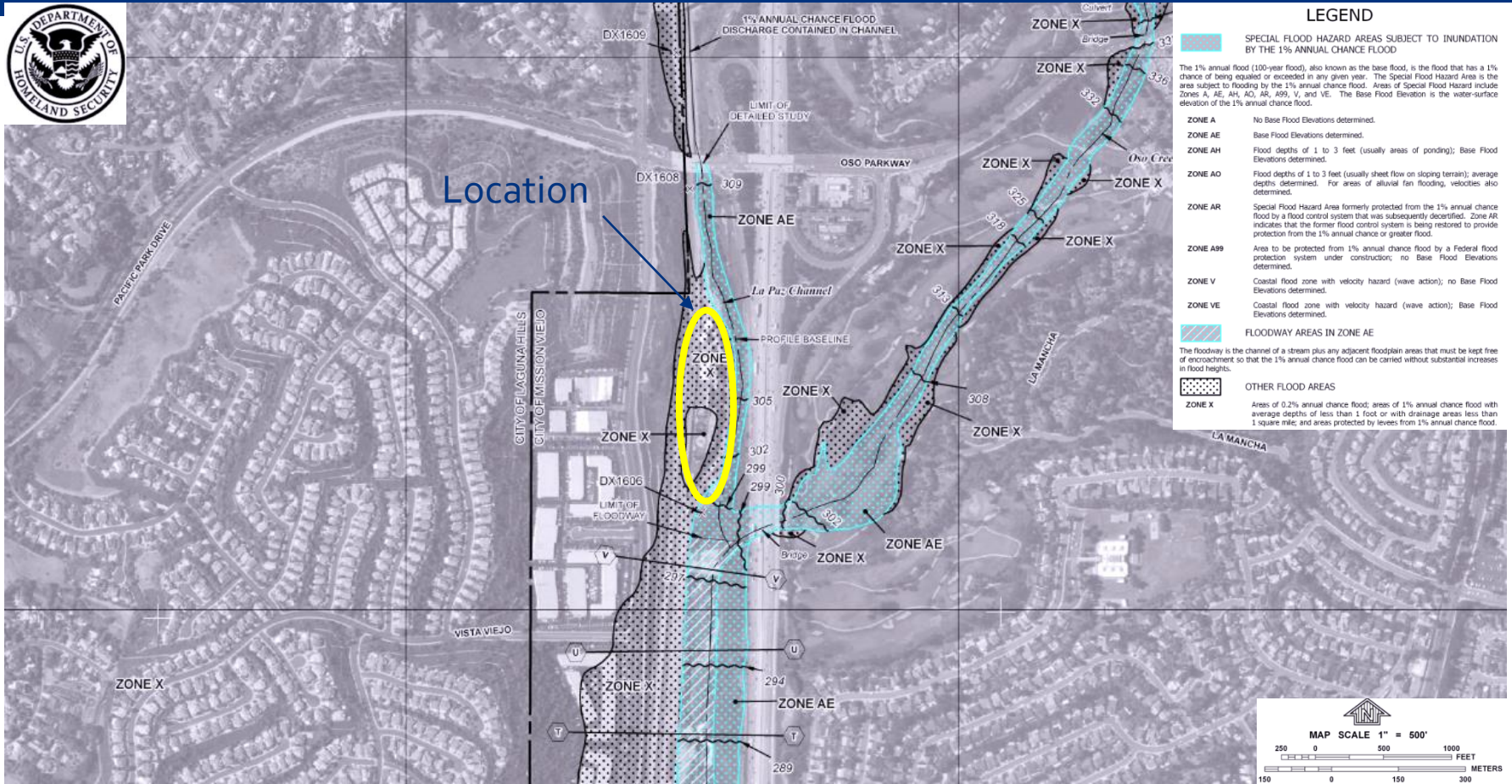


Historical



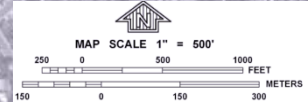
Recent – September 2015

FLOOD EXTENTS



LEGEND

- SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD
- The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equal or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.
- ZONE A** No Base Flood Elevations determined.
- ZONE AE** Base Flood Elevations determined.
- ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- ZONE AR** Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- ZONE A99** Areas to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.
- FLOODWAY AREAS IN ZONE AE
- The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.
- OTHER FLOOD AREAS
- ZONE X** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.



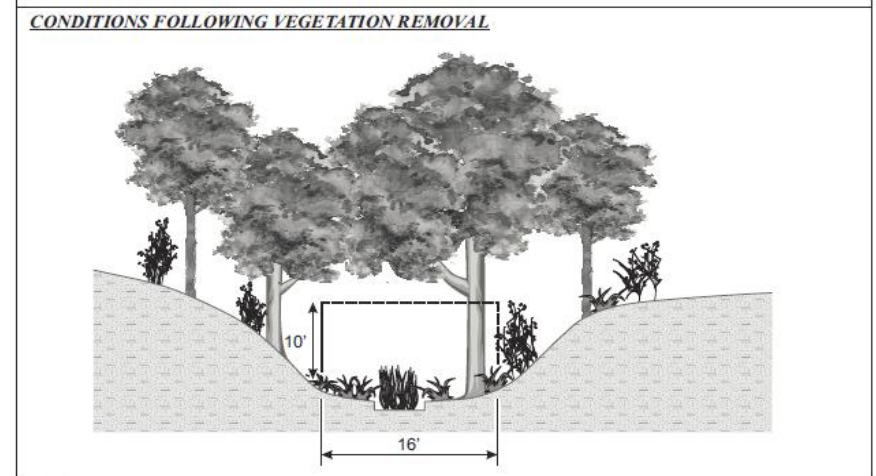
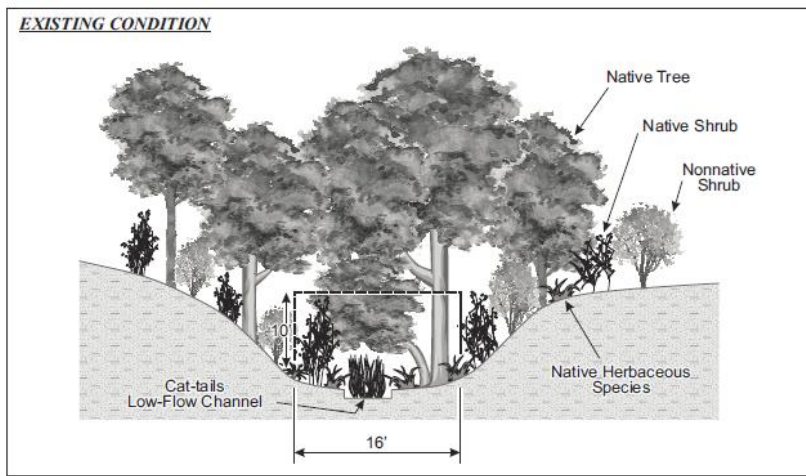
PROTECTION PLAN

- Short term
- Long term permanent solution



SHORT TERM

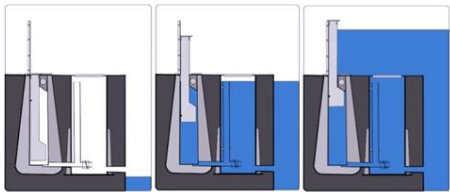
- California Fish and Wildlife permit
- Caltrans permit
- Potentially clear the creek – 5 year obligation to mitigate



- Cost : up to \$200,000 for 5 years

PERMANENT SOLUTION

- Assess flooding extents
- Identify best permanent solution
- Seek grant funding such as FEMA



HYFLO Self Closing Flood Barrier SCFB™



Thames Barrier, London



Flood Control International



Flood Control International



Hesco Cart

Hesco Earth Filled



Tiger Dam



Sandbags



UPCOMING ACTIONS

- Continue to work with permitting agencies on short term solution
- If vegetation removal limits agreed upon by California Fish and Wildlife, hire removal firm and monitors
- Initiate evaluation of permanent solution