

Cathodic Protection Program

- In 2010, Long Beach Water completed a Corrosion Protection Study of its potable and recycled water pipelines
- Following the 2010 study, the Department established its Cathodic Protection Program
- Goal of the program is to protect Long Beach Water's metallic pipelines from corrosion

CATHODIC PROTECTION STUDY OF WATER AND RECYCLED WATER LINES



PREPARED FOR:

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Revision 3

Corrpro Reference No. 162343

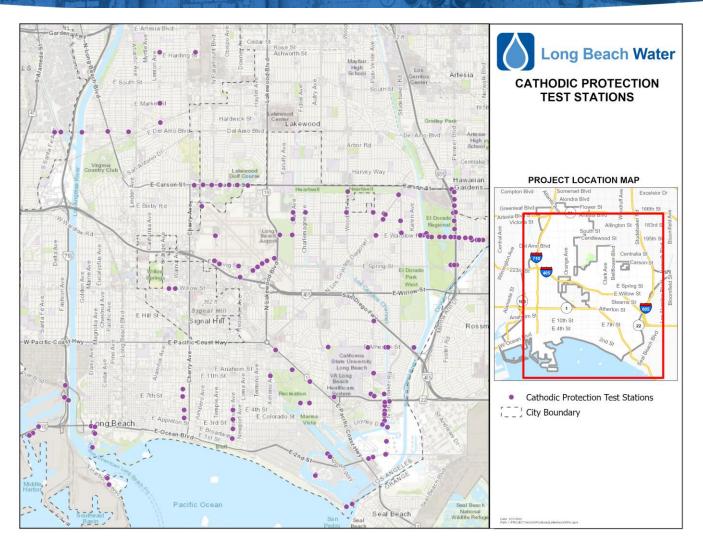
March 2010







Cathodic Protection Program

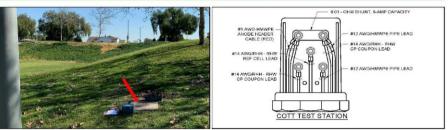


CATHODIC PROTECTION

TEST STATION: G36-CTS-001

| TEST STATION TYPE | Flush Mounted | GPS LOCATION | Latitude: 33.8637825 |
|--------------------------|---------------|------------------------------|-------------------------|
| PIPE LINE NAME / JOB NO. | MC-2636 | | Longitude: -118.1942034 |
| PIPE LINE SIZE | 30" CML&C | MAP: | |
| YEAR INSTALLED | 1954 | | 25 08 |
| CP JOB NAME / JOB NO. | CP 4, EO-3402 | | 1 00 M |
| TEST BOX STATUS | Working | Att Varies | |
| DAMAGE DESCRIPTION | | No. | |
| | | | |
| | | He. | |
| | | 125959 1050 PL 1250 PL | 550 |
| | | 7 08 43 8 | 000 000 000 |

| DATE SAMPLED | PH | | SOLUBLE SULFATES PER CA 417 (ppm) | | SOLUBLE CHLORIDES PER CA 422 (ppm) | | SOIL RESISTIVITY PER CA 643 (ohm-cm) | |
|-----------------|--------|-----------------------------|-----------------------------------|-----------------------------|--|-----------------------------|--|-----------------------------|
| | Result | Specs-Soil Reinforcement | Result | Specs-Soil Reinforcement | Result | Specs-Soil Reinforcement | Result | Specs-Soil Reinforcement |
| 10/30/19 | 8.0 | 5.5-10.0 | 275 | Less than 500 | 114 | Less than 250 | 1,150 | 2000 ohm-cm mir |



| Date Tested | Structure | VS. PORTABLE REFERENCE CELL | | | VS. PERMANENT REFERENCE CELL | | | |
|----------------|-----------|-----------------------------|----------------------|--|------------------------------|-----------------------|---------------------------------------|---------|
| | | Native Potential mV) | (ON Potential (-mV) | Anode Open Circuit Potential (-mV) | Native Potential (-mV) | ON Potential (-mV) | Anode Open Circuit Potential (-mV) | Remarks |
| | Water | | | | | | | 2 Leads |
| | Anode | | | | | | | 2 Leads |
| | Coupon | | | | | | | 2 Leads |
| | Perm Ref. | | | | | | | |

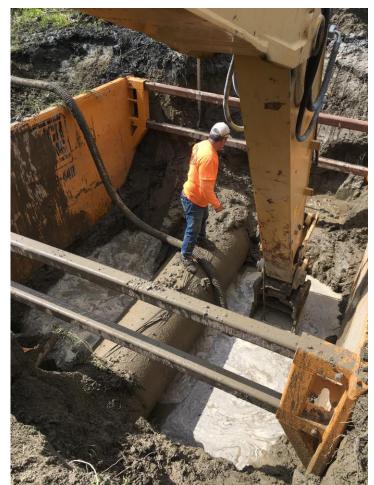
Summary of Work

- Installation of 12 new monitoring CP Test Stations
- Installation of 99 magnesium sacrificial anodes
- Installation of one isolation flange kit on a 24-inch pipe
- Surface restoration
- Traffic control









Recommendation

Adopt Specifications WD-33-22 for the Cathodic Protection Improvement of Recycled Water Systems Project — Phase 5 (REO-0204) and authorize the General Manager to sign a construction contract with Farwest Corrosion Control Company, Inc., in the amount of \$462,870.

