


AGENDA

**ENGINEERING COMMITTEE MEETING
LEUCADIA WASTEWATER DISTRICT**
Wednesday, June 6, 2018 – 8:30 a.m.
1960 La Costa Avenue, Carlsbad, CA 92009

1. **Call to Order**
2. **Roll Call**
3. **Public Comment**
4. **New Business**
 - A. Receive and file the 2018 Asset Management Plan completed by Dexter Wilson Engineering. (Pages 2 - 14)
5. **Information Items**
 - A. Update of the Poinsettia Train Station Parallel Gravity Pipeline Project. (verbal)
 - B. May 22, 2018 Spill Report. (verbal)
6. **Directors' Comments**
7. **General Manager's Comments**
8. **Adjournment**

MEMORANDUM

DATE: May 31, 2018
 TO: Engineering Committee
 FROM: Paul J. Bushee, General Manager
 SUBJECT: 2018 Update of the Asset Management Plan


RECOMMENDATION:

Staff requests that the Engineering Committee recommend that the Board of Directors:

1. Receive and file the 2018 Asset Management Plan completed by Dexter Wilson Engineering Incorporated.

DISCUSSION:**Tactical Goal: Infrastructure and Technology / Asset Management Plan Update**

The Asset Management Plan (AMP) is one of three District cornerstone documents. Staff has been working with Dexter Wilson Engineering Incorporated (DWEI) to update the District's 2013 AMP. The implementation of the 2013 AMP resulted in the completion and/or implementation of the following District Capital Improvement Program (CIP) projects over the past five years:

- Lanikai and Occidental Line Repair
- La Costa Pump Station Rehabilitation
- Leucadia Pump Station Emergency Generator Replacement
- Gravity Pipeline Trial Lining
- FY 14 Gravity Pipeline Rehabilitation
- FY 15 Gravity Pipeline Rehabilitation
- FY 16 Gravity Pipeline Rehabilitation
- FY 18 Gravity Pipeline Cured-In-Place Pipe (CIPP) Rehabilitation
- Batiquitos (B1/B2) Force Main Replacement Project
- Recycled Water Effluent Line Valve & Creek Crossing Repair
- Scott's Valley Pipeline Repair
- Saxony Pump Station Rehabilitation
- Leucadia (L1) Force Main West Section Replacement
- Leucadia Scenic Pipeline Cured-In-Place Pipe (CIPP) Lining
- Village Park Number 5 Pump Station Replacement
- Leucadia Force Main (L2) Anode Replacement
- Gafner Advanced Water Treatment (AWT) Improvements
- Poinsettia Station Parallel Gravity Pipeline

It is important to keep in mind that the AMP requires updating on a periodic basis, generally every five years, as it is implemented and projects are completed. The 2018 AMP update organizes the District's wastewater assets into five distinct categories: 1) gravity lines & manholes; 2) pump stations; 3) force mains; 4) jointly-owned facilities; and 5) recycled water facilities. Additionally, the AMP accounts for the predicted District's share in Encina Wastewater Authority's CIP expenditures.

The 2018 AMP incorporates the District's shift in operational focus from hydro-cleaning to Close Circuit Television (CCTV) inspection of gravity lines and the implementation of the Repair Priority List for gravity lines and manholes. Furthermore, it methodically addresses future rehabilitation and/or replacement of force mains and pump stations based on estimated life cycles of their components, such as structural materials, electronic controls, and mechanical equipment. The AMP provides 1) recommendations for operations and maintenance of the District's assets by category, 2) short-term expenditures of capital funds in a 5 year CIP projects plan and 3) long-term, 20 year, estimates of capital fund expenditures. In the long run, staff believes that managing assets by replacing or rehabilitating them before failure is a prudent and cost effective way of conducting business.

The 2018 update includes an evaluation of the District's Equivalent Dwelling Units (EDU) and related flow rate. The District's current average generation rate is 133 gallons per day per EDU which is lower than the 149 gallons per day per EDU rate calculated in the 2013 AMP. The reduced generation rate can be attributed to the impact of water conservation on the collection system. Additionally, DWEL developed and ran a hydraulic model analysis of the buildout flows. Based on LWD's hydraulic analysis, projected buildout flow is 4.7 million gallons per day (MGD). By comparison, the last hydraulic analysis done as part of the 1999 Wastewater Master Plan projected a buildout flow of 6.5 MGD.

Attached is the Executive Summary for you review. A copy of the AMP is available upon request. It is important to keep in mind that the AMP is a working plan that will be modified over time as it is implemented and new data is collected. Natalie Frascchetti, of DWEL, will present an overview of the 2018 Asset Management Plan.

rym:PJB

Attachment

EXECUTIVE SUMMARY

The Leucadia Wastewater District (District) covers a total service area of 10,200 acres (16 square miles) which includes southern portions of the City of Carlsbad (Carlsbad) and northern portions of the City of Encinitas (Encinitas). The District provides wastewater collection, treatment, disposal and service to a population of approximately 60,000.

The District presently serves 28,477 equivalent dwelling units (EDUs), at 89.1% of buildout, with a buildout projection of 31,974 EDUs. This is an increase to the prior (1999) buildout projection, with a significant portion due to the potential for accessory dwelling units on single-family residential parcels, particularly in the City of Encinitas.

At present, wastewater flows are approximately 3.8 mgd, a generation rate of 133 gpd/EDU on average across the District. The generation rate has declined in recent years. In comparison, existing flows at the time of the 1999 Master Plan were approximately 4.0 mgd; which equates to a generation rate of 185 gpd/EDU at that time.

Buildout flows for the District are projected to be 4.7 mgd (based on 133 gpd/EDU and a 10% safety factor). In comparison, the 1985 Planning Study projected 9.6 mgd (based on 238 gpd/EDU) and the 1999 Master Plan projected 6.5 mgd (based on 215 gpd/EDU) for buildout flows.

Long-term pipeline model capacity evaluations are based on measured flows and attenuated pump flows to better model actual conditions. Based on these conditions, there are no pipeline capacity projects recommended.

The District prepares its asset management plans (AMP) on a 5-year cycle in order to: (1) capture the District's progress in the management of its wastewater and recycled water assets, (2) provide recommendations for operation and assessment/replacement cycle improvements to each of the asset classes, and (3) develop the recommended 5-Year and 20-Year CIP.

The District's existing wastewater system encompasses approximately 200 miles of gravity sewer pipeline, 5,000 manholes, 10 pump stations, and 11 miles of force mains. The District is one of six owners of the Encina Water Pollution Control Facility (WPCF) which is operated and administered by the Encina Wastewater Authority (EWA). Additionally, the District pumps secondary treated wastewater from the Encina WPCF to its Gafner Water Reclamation Plant (WRP) for tertiary treatment and then distributes the recycled water to the South La Costa Golf Course.

The following paragraphs summarize the recommendations of this asset management plan by asset category highlighting operation and maintenance recommendations (where appropriate) and providing short-term expenditures of capital funds (i.e., 5-Year Capital Improvement Program projects). Long-term (20 year) estimates of expenditures are also provided. Note that no growth-related capital improvement projects are recommended for the District at this time based on (1) the District approaching the estimated number of buildout EDUs and (2) the quantity of wastewater per EDU on a District-wide basis has not increased.

GRAVITY SEWER PIPELINES

- Track areas, frequency, and cost of where root foam is used as part of the SSMP process (treatments to date are \$4,959 in December 2015 and \$3,791 in March 2017). Conduct financial evaluation comparing the cost of root foam treatment against lining these areas with top hats. Confirm if root foam areas are on Repair Priority List.

- Consider submetering of Drainage Basin 2 to continue identifying the source of inflow and infiltration.

- Improve accessibility of prior CCTV Inspections on a particular line segment to aid in planning and understanding of the individual asset. This could be done when placing a segment on the Repair Priority List for review.

- Add pipeline Install Date and Age columns to Repair Priority List.

- Add step to Rating Repair Lines/Manholes SOP to review previous repairs in the pipeline or manhole which is being added to Repair Priority List. Add "Yes/No" column to indicate whether the line has previously been repaired.

- Track Repair Priority List Completions, Miscellaneous Line Repairs, and Capital Improvement Projects in GIS/Inframap to aid in decision making as to how best repair/replace an asset. This will provide field services staff with knowledge of linings, top hats, etc., to exercise caution when hydrocleaning. Additionally, it will provide staff with the ability to view previous repairs within a line segment to decide whether spot repairs should continue or a pipeline/manhole should be replaced.

A sample of the database is shown below.

Line Segment	Street	Defect(s)	Repair Type	Repair Priority	Pipe Size, inches	Repair Length, ft	Repair Location, ft from DwnMH	Completed By	Completed Date	Cost	Source of Funds
04-2850_04-2840	La Costa Ave Esmnt	Asbestos Pipe	CIPPL	3	12						

- Export CMMS repair data from Repair Priority List Completions and Miscellaneous Line Repairs to GIS.
- When lining a pipeline in an area with chronic root issues, the lateral joints should be addressed, via either a top hat, T-liner, or other means.
- When possible, spot repairs of pipelines should be addressed by lining the entire pipe segment, particularly on pipes greater than 40 years in age.
- Consider repair of all Grade 2 and Grade 1 defects and/or programmatic VCP replacement in Drainage Basins 1, 2, 3, and 11. Repair/replacement of Grade 3 and Grade 4 defects discovered within the 5-year time frame would take precedence.
- Procure mylar and electronic (PDF and DWG) record drawings for all CIP projects. AMP process identified the need for electronic record drawings for the FY16 Gravity Rehabilitation Project.
- Historical bid results indicate significant unit cost savings when CIP projects include several thousand feet of lining.

MANHOLES

- Procure mylar and electronic (PDF and DWG) record drawings for all CIP projects. AMP process identified the need for electronic record drawings for the FY16 Gravity Rehabilitation Project.
- Transfer manhole lining data from Sussex to Inframap.

- Consider revising the CCTV and/or Hydrocleaning SOPs to include notations as to whether a manhole is lined or not.
- Add the installation date and age to the Repair Priority List for each manhole to aid in facility planning.
- Consider an additional column on the Repair Priority List to note whether repairs have occurred previously within the manhole. Alternatively, revise the CMMS form to require completion of the lining field prior to closing the work order.
- Consider revising the CCTV and/or Hydrocleaning SOPs to include notations as to whether an inflow dome is present on a manhole. Alternatively, revise the CMMS form to require completion of the inflow dome field prior to closing the work order.
- Track Repair Priority List Completions, Miscellaneous Line Repairs, and Capital Improvement Projects in GIS/Inframap to aid in decision making as to how best repair/replace an asset.
- Consider increasing the quality of manhole inspections by maximizing the use of their camera equipment to photograph and videotape manholes. As with the gravity sewer pipelines, photos and videos taken during manhole condition evaluations could be organized with a GIS-centric software system. This would allow quick access to prior inspections of the manhole for comparison of condition degradation.

PUMP STATIONS

- Reevaluate pump size at each station based on actual flow generation rates and anticipated peak buildout flows.
- Consider bypassing the Batiquitos Pump Station (for a portion of the District's flow) by pumping directly from the Leucadia Pump Station into one of the Batiquitos force mains.
- Stagger future inspection efforts be based on the previous inspection, age of the asset, needs identified by the District, and the projected date of project implementation.

- The District should consider the preparation of a detailed checklist of component inspection for each station. The basis for this would be prior inspection reports by Infrastructure Engineering Corporation (IEC), and others, with additions by staff as appropriate.
- The District should also consider the maintenance of a pump station component tracking database. This would be used to track improvements and associated costs to better project future spending.
- The following replacement-based capital improvement projects are included in the District's 5-Year CIP:
 - Avocado Pump Station Upgrade Project
 - Avocado Emergency Overflow
 - Batiquitos Generator Replacement Project
 - Diana Pump Station Upgrade Project
 - Diana Emergency Overflow Project
 - Diana Emergency Generator Project
 - Encinitas Estates Pump Station Replacement Project
 - Leucadia Pump Station Rehabilitation Project
 - Rancho Verde Pump Station Improvement Project
 - Village Park 5 Pump Station Replacement Project (completed)
 - Village Park 7 Pump Station Rehabilitation Project
 - L07 Meter Relocation
 - Pump Station Condition Assessment
 - The 5-Year CIP also includes place holder expenses for improvements which are expected to result from the condition assessment ("General Pump Station Improvements")
- For long-term financial planning, District pump station expenditures (including force mains) are expected to total approximately \$48 million over the next 20 years.

FORCE MAINS

- The following replacement-based capital improvement projects are recommended or are planned by the District and are included in the District's 5-Year CIP.
 - Force Main Corrosion Control
 - Batiquitos (B3) Rehab/Replacement Project – Phase 1
 - Leucadia (L1) West Section Replacement (completed)
 - Leucadia (L1) Final Replacement

JOINTLY-OWNED GRAVITY SEWERS

- Recommendations regarding the Batiquitos Influent Sewer
 - Ensure that maintenance work orders are generated at the frequency that is necessary for this particular asset.
- Recommendations regarding the Lanikai Gravity Sewer
 - Ensure that maintenance work orders are generated at the frequency that is necessary for the particular asset (in this case once every five years).
 - Continue to maintain a chronological summary of operation/maintenance and repair/replacement tasks associated with this line as part of the District's annual SSMP audit.
 - The following capital improvement projects are included in the District's 5-Year CIP (District's share of cost only): Poinsettia Station Gravity Pipeline.
- Recommendations regarding the Occidental Sewer
 - Continue to maintain a chronological summary of operation/maintenance and repair/replacement tasks associated with this line and should confirm that Carlsbad is executing their maintenance schedule as planned.
- For long-term financial planning, the District's share of the Lanikai Gravity Sewer expenditures is expected to total \$200,000 and for the Occidental Sewer, \$680,000. Long-term financial planning for the Batiquitos Influent Sewer is included with the remaining District gravity pipelines.

RECYCLED WATER

- The District should inspect portions of the Encina Secondary Effluent Pump Station as part of the overall FY19 pump station condition assessment to confirm the project scope.
- Continue coordinating with other North County agencies on the North San Diego Water Reuse Coalition (NSDWRC) Regional Recycled Water Project.
- The following capital improvement projects are included in the District's 5-Year CIP.
 - General Secondary Effluent Pump Station and Force Main Improvements
 - Relocation of the portion of B1 within the Encina WPCF
 - FY18 Gafner AWT Improvement Project (completed)
- For long-term financial planning, District recycled water expenditures for pumpback facilities at Encina are estimated to total \$10,775,000 over the next 20 years. The Gafner Water Reclamation Plant expenses are expected to total \$6,925,000 over the next 20 years.

ENCINA WASTEWATER AUTHORITY

- The District's average annual share of EWA's capital projects should be estimated by adjusting the EWA's planned costs for the next 10 years. Beyond 2028, the District's annual share should be estimated as 1,540,806 based on the average cost from the past 5 fiscal years.
- For long-term financial planning, the District's share of EWA projects is estimated to be \$40,051,686 over the next 20 years.

5-YEAR CIP

Table ES-1 presents the District's recommended 5-Year CIP as a culmination of all CIP projects discussed throughout the report.

TABLE ES-1 DISTRICT 5-YEAR CIP PROJECTS ¹					
Wastewater Program	FY2018	FY2019	FY2020	FY2021	FY2022
Gravity Pipelines and Manholes					
FY 2016 Gravity Pipeline Rehab.*	92.9	-	-	-	-
Orchard Wood Rd. Sewer Rehab.	-	194.7	-	-	-
FY17/FY18 CIPP Project	800.0	-	-	-	-
La Costa Alteration and Quebrada	475.0	-	-	-	-
Pipeline Repair Priority List - CIPP	-	-	675.0	-	-
Pipeline Repair Priority List - Open Trench	-	-	-	675.0	-
Pipeline Repair Priority List - CIPP	-	-	-	-	675.0
Misc. Pipeline/Manhole Rehab.	163.0	163.0	163.0	163.0	163.0
Asset Management Plan Update	100.0	-	-	-	-
HQ Building Metering Switchboard Install.	69.9	-	-	-	-
Lateral Repl./Backflow Preventer Prog.	102.0	102.0	102.0	102.0	102.0
Pump Stations					
Avocado PS Upgrade Project	-	-	452.3	-	-
Batiquitos Generator Replacement	-	-	700.0	-	-
Diana PS Upgrade Project	-	-	600.8	-	-
Encinitas Estates PS Replacement	-	1,195.0	-	-	-
Leucadia PS Rehabilitation	3,670.0	-	-	-	-
Rancho Verde Improvements	-	-	-	371.3	-
Village Park No. 5 PS Replacement*	814.6	-	-	-	-
Village Park No. 7 PS Rehab Project	-	-	-	-	625.0
L07 Meter Relocation	-	20.0	-	-	-
Pump Station Condition Assessment	-	30.0	-	-	-
General Pump Station Improvements	-	1,670.8	-	576.0	1,601.1
Additional Pump Station Projects					
Avocado Emergency Overflow	-	-	348.8	-	-
Diana Emergency Generator	-	350.0	-	-	-
Diana Emergency Overflow	-	-	-	-	900.0
Force Mains					
Leucadia (L1) West Section Replacement*	100.0	-	-	-	-
Force Main Corrosion Control	35.0	-	-	-	-
L1 Final Replacement	-	-	-	2,880.0	-
B3 Rehab/Replace Project - Phase 1	-	115.0	1,378.0	-	-
Jointly-Owned Gravity Sewers					
Poinsettia Station Gravity Pipeline Project (Lanikai)	714.4	-	-	-	-
General Lanikai Replacement (District Share)	10.0	10.0	10.0	10.0	10.0
General Occidental Replacement (District Share)	34.0	34.0	34.0	34.0	34.0
Subtotal Wastewater Program					
	7,180.8	3,884.5	4,463.8	4,811.3	4,110.1
District Share of Encina CIP	1,875.1	2,725.6	2,779.4	1,970.4	1,802.6
Total Wastewater Program	9,055.9	6,610.1	7,243.2	6,781.6	5,912.7

TABLE ES-1 DISTRICT 5-YEAR CIP PROJECTS ¹					
Recycled Water Program	FY2018	FY2019	FY2020	FY2021	FY2022
Encina Secondary Effluent PS Rehab Project	-	-	370.0	-	-
General Encina Secondary Improvements (less FM)	-	-	98.3	34.0	34.0
B1 Force Main - North Section Replacement.	-	440.0	-	-	-
Gafner AWT Improv.	758.2	-	-	-	-
North SD Water Reuse Coalition Project	109.1	-	-	-	-
B1 Force Main Final Replacement	-	-	-	-	2,198.6
No. SD County Regional RW Project	-	392.0	-	-	-
Total Recycled Water Program	867.3	832.0	468.3	34.0	2,232.6
District Total CIP Expenses	9,923.2	7,442.1	7,711.5	6,815.6	8,145.3
Optional Projects	FY2018	FY2019	FY2020	FY2021	FY2022
Drainage Basin #11 VCP Line/Replace	-	-	-	-	-
Island Area Implementation - Eolus North	-	-	-	1577.3	-
Island Area Implementation - Eolus/Glaucus	-	-	-	-	1163.3
Island Area Implementation - Naiad	-	-	-	-	-
Total Optional Projects	0.0	0.0	0.0	1,577.3	1,163.3

¹ All numbers are in thousands of dollars
* Completed project, actual cost

20-YEAR CIP

Table ES-2 and Table ES-3 present a summary of the estimated wastewater and recycled water program expenditures by asset class, respectively, over the next 20 years (through FY2037). Table ES-4 presents the 20-Year CIP.

TABLE ES-2 20-YEAR SUMMARY OF WASTEWATER CIP EXPENDITURES	
Asset Category	Expenditures over 20 Years
Gravity Sewer Pipelines and Manholes	\$ 21,790,421
Pump Stations and Force Mains	\$ 47,958,087
Joints-Owned Gravity Sewers	\$ 1,594,400
Encina Wastewater Authority Projects	\$ 40,051,686
TOTAL	\$111,394,594

TABLE ES-3
20-YEAR SUMMARY OF
RECYCLED WATER CIP EXPENDITURES

Asset Category	Expenditures over 20 Years
Recycled Water Pump Station and Force Main	\$ 1,941,333
Gafner Water Reclamation Plant	\$ 4,327,300
North County Regional Recycled Water Project	\$ 8,849,235
TOTAL	\$15,117,868

