

AGENDA

**ENGINEERING COMMITTEE MEETING
LEUCADIA WASTEWATER DISTRICT
Monday, June 6, 2011 – 8:30 a.m.
1960 La Costa Avenue, Carlsbad, CA 92009**


- 1. Call to Order**
- 2. Roll Call**
- 3. Public Comment**
- 4. Old Business**

None.
- 5. New Business**

None.
- 6. Information Items**
 - A. Investigating the Replacement of the Batiquitos Pump Stations and its Force Mains with Gravity Flow Pipelines. (Pages 1 - 5)
 - B. April 2011 Batiquitos PS Spill - Replacement of Air/Vacuum Release Valve Mounting Flanges. (Page 6)
- 7. Director's Comments**
- 8. General Manager's Comments**
- 9. Adjournment**

MEMORANDUM

Ref: 11-2907

DATE: June 2, 2011
TO: Engineering Committee
FROM: Paul J. Bushee, General Manager 
SUBJECT: Investigating the Replacement of the Batiquitos Pump Stations and Force Mains with Gravity Flow Pipelines

RECOMMENDATION:

This item is presented for information purposes.

DISCUSSION:

At the May 2011 meeting, the Engineering Committee directed staff to report back on the concept of replacing Batiquitos Pump Station and its associated force mains with a gravity flow system to the Encina Water Pollution Control Facility (Encina). Infrastructure Engineering Corporation (IEC) conducted a preliminary evaluation of that concept. Based on the elevations of the facilities and topographic restrictions, it has been determined that it is not feasible to replace Batiquitos Pump Station and its force mains with a gravity system. Additionally, a cursory evaluation indicated that a gravity system from the District's Site to Encina was also not feasible due to the elevations of the facilities. The IEC Technical Memorandum is attached for your review. Rob Weber from IEC will attend the June committee meeting to present these conclusions

rym:PJB

Attachment



**LEUCADIA WASTEWATER DISTRICT
BATIQUITOS FORCE MAIN REPAIR PROJECT**

TECHNICAL MEMORANDUM

Date: May 31, 2011 – **First Draft**
June 1, 2011 – **Final**

Subject: **CONCEPTUAL FEASIBILITY OF GRAVITY FLOW FROM BATIQUITOS PUMP STATION TO ENCINA WASTEWATER AUTHORITY TREATMENT PLANT**

Prepared By: Jamie Taylor
Reviewed By: Robert S. Weber, P.E.

PURPOSE

The purpose of this technical memorandum is to evaluate the feasibility of constructing and operating a gravity sewer main from the current Batiquitos Pump Station Site to the Encina Wastewater Authority (EWA) Treatment Plant.

SUMMARY

Due to the topographic restriction of the Batiquitos Lagoon and existing elevation of the influent facilities at the EWA plant, it is not feasible to construct a gravity system from the Batiquitos Pump Station to the EWA plant.

BACKGROUND

The Batiquitos Pump Station and Force Mains convey sewage from the Leucadia Wastewater District's L1/L2 system and the City of Encinitas Moonlight pump station and force main to the Occidental Gravity Trunk Sewer and ultimately to the Encina Wastewater Treatment Plant.

The Batiquitos Pump Station is located near the intersection of La Costa Avenue and Coast Highway 101/Carlsbad Blvd. The existing Batiquitos Pump Station has been retrofitted and expanded multiple times. The current configuration consists of 4 pumps. Pumps #1, 3 and 4 are identical, 250 horsepower, Allis-Chalmers pumps with variable frequency drives (VFD) and were installed as part of the Phase III Expansion in 1986. Pump #2 is a 250 HP Fairbanks-Morse pump with VFD and was installed in 2004. Pump #2 operates at 8,440 gpm at 93 feet of head. Currently in the design phase, the Batiquitos Pump Station Improvement Project, valued at \$3.4 million dollars would replace the existing pumps, piping and valves, reline the wet well and overflow storage basin, replace the meter valve vault and install miscellaneous site improvements.

The B2 and B3 force mains are redundant 24" PVC and ductile iron pipe force mains that convey raw sewage from the Batiquitos Pump Station along Carlsbad Boulevard/Coast Highway 101 approximately 10,000 feet to the North Lanikai Interceptor Sewer. The B2 and B3 force mains are jointly owned by Leucadia Wastewater District and the City of Encinitas. The District owns 79.97 percent of B2 and 66.81 percent of B3. B2 was installed in 1979. B3 was installed in 1988. In 1996 B2 and B3 were relocated at

the Batiqitos Lagoon bridge. In 2011, B2 and B3 were replaced from the Batiqitos Pump Station to approximately 500 feet north of the San Marcos Creek Bridge with new 24" DR 18, C905 PVC. A recent technical memorandum titled Evaluation of Remaining Service Life of B2 and B3 Force Mains by Infrastructure Engineering Corporation (IEC) dated May 2, 2011 estimated a remaining service life of 12-14 years for the remainder of the existing 24" ductile iron portions of the mains. The estimated cost of replacement of the force mains is \$2.6 million dollars per force main (in 2011 dollars).

In light of the upcoming expenditures of the Batiqitos Pump Station and Force Mains totaling \$8.6 million in capital improvements with additional costs such as maintenance and operating it was requested for IEC to evaluate the feasibility of replacing the pump station/force main system with a gravity system.

GRAVITY SYSTEM FROM BATIQUITOS PUMP STATION

As requested, IEC has conducted a limited conceptual evaluation of the feasibility of a gravity sewer system from the Batiqitos Pump Station to the Encina Wastewater Treatment Plant. Figures 1 and 2 illustrate a gravity system along Coast Highway 101. As depicted on the figures, the main limiting factor for a gravity main through this area is the requirement for vertical clearance below Batiqitos Lagoon. This profile was generated by assuming the pipe would be located minimum 15 feet below the Batiqitos Lagoon to protect the sewer main from streambed and local scour and assuming a minimum 0.4% slope. This results in the gravity sewer terminating at the EWA plant at an incoming elevation nearly 35 feet below the existing influent structure. Although this would eliminate the Batiqitos Pump Station and force mains, this would require a pump station to be built at the Encina Plant to bring the influent up to the elevation of the Encina treatment process.

Furthermore, the cost of the trenchless construction to install the gravity system would be significant. Construction using conventional tunneling or microtunneling would require a number of access portals to be constructed along the alignment, many of them deep. A conceptual, rough order of magnitude cost for planning, design, permitting, and construction of the gravity main is estimated to be in the \$40 to \$50 million range. An additional \$8 to \$10 million would be required to construct a new, deep influent pump station at the Encina plant.

Finally, this type of construction and maintenance at the depths required is considered to be high risk. No geotechnical report can account for the possible variations of soil conditions at depths up to 80 feet along an alignment of over 14,000 feet. Isolated pockets of cobbles may bind up a microtunneling machine or set it off course resulting in improper installation or change orders during construction. Once installed, if the sewer main developed sags due to settlement it could result in clogging, it would not be able to be repaired, and would be very difficult to clean.

In addition, we conceptually evaluated the feasibility of constructing a gravity line from the Leucadia Pump Station to the EWA plant. However, the elevation of Leucadia Pump Station is such that it is not feasible to construct a gravity line to EWA, based on the current elevations of both facilities.



FIGURE

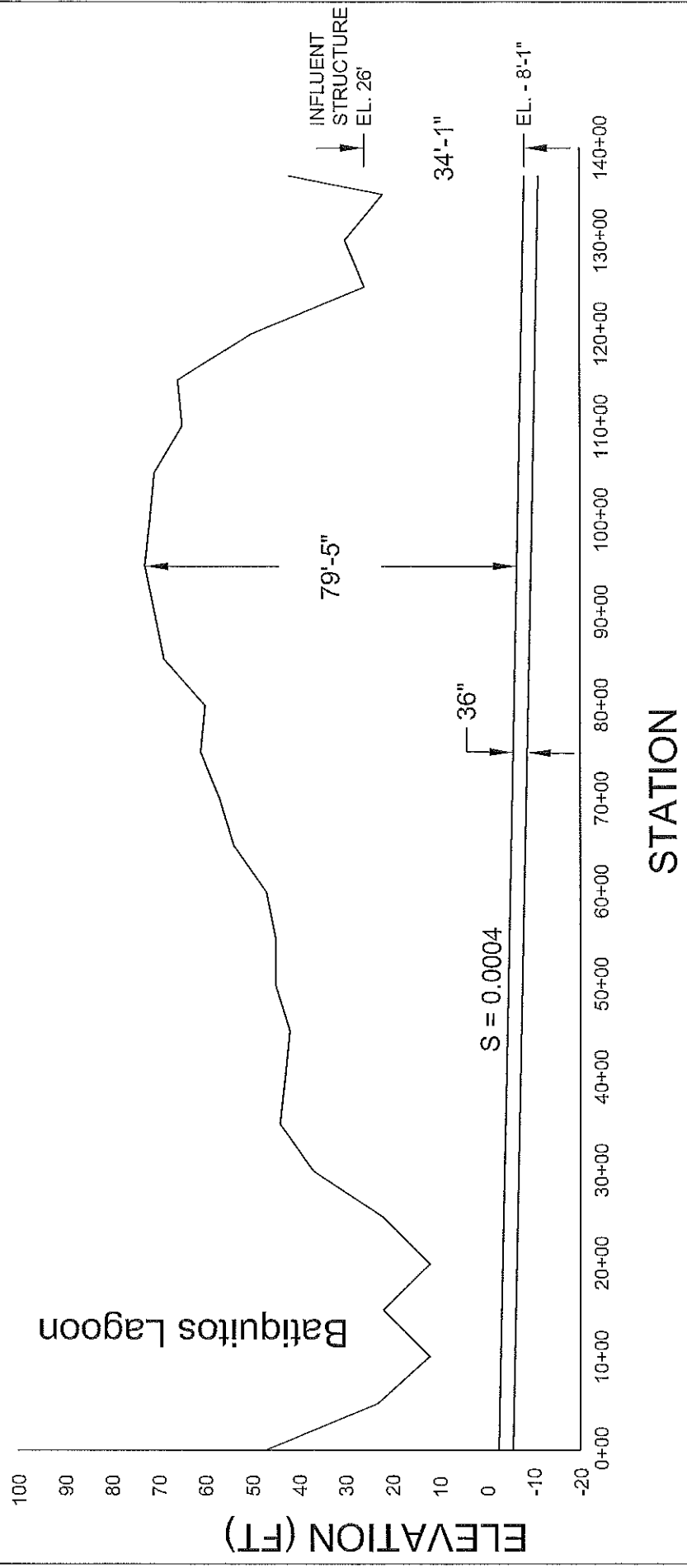
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Leucadia Wastewater District
 Batiquitos Gravity Main Feasibility

EVALUATED GRAVITY MAIN ALIGNMENT

Infrastructure
 ENGINEERING CORPORATION

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 Poway, California 92064
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STATION

FIGURE
2

Leucadia Wastewater District
Batiquitos Gravity Main Feasibility
EVALUATED GRAVITY MAIN PROFILE

MEMORANDUM

Ref: 11-2908

DATE: June 2, 2011
TO: Engineering Committee
FROM: Paul J. Bushee, General Manager 
SUBJECT: April 2011 Batiquitos PS Spill - Replacement of Air/Vacuum Release Valve Mounting Flanges

RECOMMENDATION:

This item is presented for information purposes.

DISCUSSION:

At the May 2011 meeting, staff briefed the Engineering Committee on the April 27, 2011 sewer spill at the Batiquitos Pump Station. The spill was caused by the failure of the Air/Vacuum Release Valve (AirVac) mounting flange. The flange that failed was made of polyvinyl chloride (PVC). The PVC flange was installed as specified in the 2004 pump station upgrade.

At the meeting, the Engineering Committee requested that staff report back on the status of its follow-up inspection of the other AirVacs in the LWD forcemain system. Staff's investigation found a total of 12 PVC flanges and all were located on the Leucadia Force Mains L1 and L2. To prevent the occurrence of a similar SSO, staff will replace the PVC flanges with stainless steel flanges kits at an estimated cost of \$3,800. The work will occur in early Fiscal Year 12, will be done in-house, and take approximately 1 month.

Operations Superintendent Jeff Stecker will present an overview of the findings at the meeting.

rym:PJB