Attorney – Client Privileged Communication

**Department of Water Quality**
**CONFIDENTIAL MEMORANDUM**

Date: January 11, 2020

To: John Pietig, City Manager
Phil Kohn, City Attorney

From: David Shissler, Director of Water Quality

Subject: North Coast Interceptor Transmission Line Leak Repair Considerations
November 27 - 28, 2019

The following documentation is provided to confirm the in-field emergency response investigations performed on Wednesday, November 27 and Thursday, November 28, 2019. The investigations were conducted to determine the most rapid, efficacious and reliable action to bypass the pressurized sewer main for the purpose of halting the active sewer spill, assessing the cause of the failure, and repairing the infrastructure.

In general, a summary of our response to the emergency is outlined below:

Step 1: Set up a bypass of the pressurized transmission pipeline. We chose bypass option 6 "Bypass Low-Flow from Bluebird SOCWA Lift Station to Bluebird Canyon Outfall" after considering the pros and cons of each option. See Table 1 below.

Step 2: Dewater the sewer main and evaluate the cause of the failure.

Step 3: Fix the failure. In this case, we capped a 3" connection to the 24" pipe from an abandoned Air Release Valve assembly that failed, possibly due to (in part) corrosion and the age of the pipe material.

Step 4: Disassemble the bypass and return the sewer main to normal operation.

The following bypass possibilities were investigated to dewater the pressurized sewer main so that the failure could be assessed and repaired:

1. High line bypass from upstream of the failure to the Coastal Treatment Plant.
2. High line bypass across the failure location in the vault.
3. Bypass with a connection to South Coast Water District Lift Station No 2 to direct all sewer flows through the SCWD force main to the Coastal Treatment Plant.
4. Bypass with a connection to SOCWA's Aliso Creek Ocean Outfall to divert all sewer flows to Pacific Ocean.
5. Truck all sewer flows from Bluebird SOCWA lift station to JB Latham WWTP (SOCWA facility).
6. Activate Bluebird SOCWA Lift Station bypass to divert all sewer flows from the North Coast Interceptor (NCI) into the 84-inch storm drain to Pacific Ocean at Bluebird Beach.

Concurrently, the following preparations were coordinated and made readily available as repair options while the bypass was being set up:

A. Install a sectional liner through the location of the failure on the NCI in case the asbestos cement pipe (ACP) was cracked (which would require replacing a section of the NCI with PVC pipe).
B. Plug the valve stem assembly in case the abandoned air vacuum release system failed.
C. Install a repair clamp around the force main in case the ACP was cracked (assuming there was exposed pipe; however, the pipe in the vault was encased in concrete except for the top of pipe).

***Emergency Response Note #1**: All options were evaluated on-site by the contractor who has worked on other emergency operations. City staff was on-site to identify and evaluate all feasible options. SOCWA and SCWD staff were either contacted by phone while on-scene or were available in the field to review the options.*

***Emergency Response Note #2**: All resources available for the emergency response were limited. The pipeline repair and pumping supply resources were impacted by the Thanksgiving holiday.*

The following is a detail describing the pros and cons of each bypass option in the first table and repair contingency plans in the second table:

**Table 1**
**NCI Emergency Bypass Options**
**November 27-29, 2019**

| | Bypass Option | PRO | CON |
|---|---|---|---|
| 1<br><br><br><br><br><br><br><br><br>1 | High Line Bypass to Coastal Treatment Plant | a) Directly connects to Coastal Treatment Plant in 18-inch HDPE pipeline.<br><br>b) Room to fuse pipe available near Coastal Treatment Plant.<br><br>c) Bypassed sewer flow would be sent to the Coastal Treatment Plant | a) Time to fuse approx. 2,600 ft of 18-inch HDPE pipeline approximately 48 hours (minimum) because of number of welds, size of pipe, and available crews<br><br>b) Wet conditions impact the pipe welding process and quality of the welds – slows progress |

| | Bypass Option | PRO | CON |
|---|---|---|---|
| | High Line Bypass to Coastal Treatment Plant (continued) | | c) Would require significant excavations near several close-proximity utility lines including three pressurized lines (SCWD Recycled Water, SCWD Force Main, and SCWD Potable Transmission Pipeline).<br><br>d) Exposed portion of NCI was all short segments (28-inch length segments)= too short to use for line stop or bypass clamp & hot-tap saddle.<br><br>e) Would require significant thrust blocks poured-in-place and 24 hours for the concrete to set-up around the bypass clamps & saddles. Required tapping saddles estimated delivery schedule 12/4/19 (approx. 7 days after spill began).<br><br>f) Bypass estimated to be operational by 12/6/19. |
| 2 | High Line Bypass Across Vault | a) Short distance around ruptured valve stem.<br><br>b) Once line stop successful, the time to connect short distance is short. | a) Short segments of ACP pipe <u>HIGHLY unreliable</u> to use for line stop and clamp & hot-tap saddle.<br><br>b) The exposed portion of NCI was all short segments (28-inch length segments)= too short |

| | Bypass Option | PRO | CON |
|---|---|---|---|
| | | c) Bypass sewer flow would be sent to the Coastal Treatment Plant | to use for line stop or bypass clamp & hot-tap saddle.<br><br>c) Would require significant thrust blocks poured-in-place and 24 hours for the concrete to set-up around the bypass clamps & saddles. Required tapping saddles estimated delivery schedule 12/4/19 (approx. 7 days after spill began).<br><br>d) Would require significant excavations near several close-proximity utility lines, including three pressurized lines (Recycling, Force Main, and Potable Transmission Pipeline).<br><br>e) Bypass estimated to be operational by 12/6/19. |
| 3 | Connection to South Coast Water District Lift Station No 2 | a) Possible connection near SCWD Lift Station No. 2 along Country Club Lane.<br><br>b) Location of SCWD Lift Station No. 2 in relation to the NCI would minimize bypass high line length. | a) Significant public and emergency access restrictions to resort ingress and egress.<br><br>b) Location of NCI and other utilities requiring slow, careful potholing for location and excavation required for hot tapping the force main. |

| | Bypass Option | PRO | CON |
|---|---|---|---|
| | | c) Bypassed sewer flow would be sent to the Coastal Treatment Plant | c) Would require significant thrust blocks poured-in-place and 24 hours for the concrete to set-up around the bypass clamps & saddles. Required tapping saddles estimated delivery schedule 12/4/19 (approx. 7 days after spill began).<br><br>d) Bypass estimated to be operational by 12/6/19.<br><br>e) SCWD ran calculations. Added flow would exceed force main capacity. |
| 4 | Connection to SOCWA's Aliso Creek Ocean Outfall | a) Possibility of mechanically connecting to the ACOO to minimize distance for bypassing. Adjacent to Country Club Drive and routed to OC Parks parking lot inland side. | a) Access to ACOO blind-flange requires LOW-LOW tide and coordination to stop flow from upstream WWTP's.<br><br>b) Would require significant thrust blocks poured-in-place and 24 hours for the concrete to set-up around the bypass clamps & saddles. Required tapping saddles estimated delivery schedule 12/4/19 (approx. 7 days after spill began).<br><br>c) Sewer flows would be sent to the Pacific Ocean |

| | Bypass Option | PRO | CON |
|---|---|---|---|
| | | | d) Bypass estimated to be operational by 12/6/19. |
| 5 | Trucking from Bluebird SOCWA | a) Possibility of tanker trucks hauling Bluebird SOCWA lift station volume. Diverting flow back into sewer system.<br><br>b) Sewer flows would be transported to JB Lathan Treatment Plant | a) Recognized to require a large staging area for trucks to by filled, and in a queue to be filled, in residential streets along Glenneyre and Calliope, and Bluebird Canyon Dr.<br><br>b) Recognized to require a fleet of tanker trucks to continuously cycle up and down Coast Highway to Dana Point [JBLatham Plant]<br><br>c) Recognized to require multi-hose manifold system to fill multiple tankers at a time.<br><br>d) The time to build the manifold system was estimated to take a full day or more. |
| 5 | Trucking from Bluebird SOCWA (continued | | e) Recognized for potential spills in the vicinity of private residences during the filling/connect and disconnect procedure.<br><br>f) Recognized to cause significant, noise, air quality, and traffic impacts to all residents in the vicinity of the lift station. |

| | Bypass Option | PRO | CON |
|---|---|---|---|
| 6 | Bypass Low-Flow from Bluebird SOCWA Lift Station to Bluebird Canyon Outfall | a) Highest reliability to succeed!<br><br>b) Quickest bypass is can "return to normal" conditions to minimize spill. Bypass estimated to be operational by 11/28/19.<br><br>c) Directs flow directly into the 84-in storm drain minimizing human contact.<br><br>d) Marine Safety fully engaged to enforce beach closure and in coordination of adjacent agencies upcoast and downcoast.<br><br>e) Utilizes existing Lift Station Bypass setup ready by next low-flow cycle<br><br>f) Charles King Dewatering already on-scene as a resource with staff & pumps at the ready.<br><br>g) Cold and Rainy weather NOT conducive to recreational coastline activity. | a) Creates an additional point of discharge to the coastline.<br><br>b) Discharges to the Pacific Ocean.<br><br>c) Possible marine habitat impacts.<br><br>d) Possible human contact exposure. |

The summarized evaluations and contingencies took place between Wednesday, November 27, 2019 from approximately 1500 hrs., to Thursday, November 28, 2019 until about 830 hrs. Input was received by experts in wastewater operations from South Orange County Wastewater Authority, South Coast Water District, Don Jamison Engineering Contractors, Charles King Dewatering, and the staff of the City of Laguna Beach.

Based on the decision made, it is currently estimated that up to 2.3 million gallons of additional spill volume was prevented. The detail for this volume estimate is provided by separate documentation.

cc: Distribution

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