

**Colorado River Basin Regional Water Quality Control Board**

**TO:** Alexa Kleysteuber  
CalEPA Deputy Secretary, Border and Intergovernmental Relations

**FROM:** Jose L. Angel, P.E.  
Executive Officer

**DATE:** April 17, 2017

**SUBJECT:** Mexicali Sewage Infrastructure –Equipment to Eliminate and Minimize Bypasses

Nancy Wright and I appreciated meeting with you and your staff this past Friday to discuss the subject matter and the upcoming meeting with USEPA and US-IBWC. This memorandum follows up on the meeting and provides you with our recommendations on the subject matter.

**Background**

The Comision Estatal de Servicios Publicos de Mexicali (CESPM) owns and operates the sewage collection and wastewater treatment system for Mexicali, Mexico. Table 1, below, list the major components of the system:

Table 1 – CESPM Key Sewage Infrastructure	
Key Sewage Infrastructure	Quantity
Major Pumping Plants	12
Lift Stations	27
Sewage pipes	800 Km
Wastewater Treatment Plants	2
Sewer Vac Trucks	2

In 2015, the North American Development Bank (NADBank) commissioned Servicios de Ingenieria e Informatica (SII) to conduct an engineering study (Study) to characterize the condition of the system as it relates to its threat of bypasses of raw sewage into the New River. The results of the Study indicate a series of endemic problems with the age, design, and operation and maintenance (O&M) of the infrastructure:

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1. Three (3) PPs have exceeded its useful life and there are O&M problems in several of them. It is estimated that CESPMS needs \$3.18M to take care of these problems;
2. Fourteen (14) lift stations are in bad shape and/or have exceeded their useful life. It is estimated that fixing this problem will cost \$1.30M;
3. Forty-one percent (41%) of the collection system has less than 1/1000 slope, and thirty-one percent (31%) of the system is projected to operate with velocities of < 0.30 m/sec. It is estimated that the system currently has 90,000 cubic meters of (approx. 90,000 cubic yards) of grit (actually sand and silt) accumulated in it. These conditions cause significant accumulation of grit and debris in the system, which in turn increases the need for O&M. They also cause backflow conditions. Whenever the debris ends up at pumping plants and lift stations, it has the potential to cause significant damage to them;
4. The Study found that 610 km have exceeded their useful life. It is estimated that CESPMS will need approximately \$60M to repair, replace, and retrofit the system; and
5. CESPMS does not have enough Sewer Vac Trucks to provide optimum O&M of the collection system. CESPMS would need at least 6, but preferably 8-10 Sewer Vac Trucks to do so. The price of these trucks is estimated to be \$300,000-\$400,000/each, depending on brand and cleaning capacity.

The aforementioned problems with the sewage infrastructure are resulting in bypasses of raw sewage into the New River. Since November 2016, there has been an average of 1 bypass of raw sewage per month. The bypasses have ranged in magnitude and duration 1-13 mgd and from a few hours to several days, respectively. The bypasses pose a serious health threat to California residents and people in the Imperial Valley. They also have a significant adverse water quality impact not just on the New River, but also on the Salton Sea. This year alone we have had 3 reported bypasses.

## **Recommendations**

It is my understanding that Mexico is applying to the NADBank/BECC for financial assistance to address some of the aforementioned problems. The NADBank/BECC certification process is a lengthy process that can take up to 2 years, and it does not provide for funding O&M. Implementing projects to address the pumping facilities and sewage pipes problems is bound to take years (presuming financing is in place, it could take more than 5 years). In the meantime, if nothing is done, we can expect additional failures of the system, which in turn will likely result in additional discharges of raw sewage into the New River. Therefore, I recommend the following to minimize and eliminate to the extent practicable bypasses of raw sewage and adverse water quality impacts on waters of the State.

1. It is critical that we request Mexico develop and implement a sound spill/bypass prevention plan<sup>1</sup> to prevent additional bypasses of raw sewage into the New River. All of our Dischargers have standard plans to deal with collapsed collectors and problems at their pumping facilities.
2. We should request that USEPA , US IBWC, and NADBank/BECC assist Mexico in acquiring bypass pumping equipment not just to deal with failing sewage pipes, but also to protect the rest of the infrastructure when maintenance of the system must take place. This equipment is standard equipment that we expect owners and operators of municipal sewage collection systems to have and deploy when a pipe breaks or they need to perform maintenance. For example, there are 6-inch to 12-inch trailer-mounted pumps that can be coupled to portable hose of different diameters and lengths when a sewage pipe breaks. Such set up enables one to “bypass” the broken section of pipe and continue to keep the sewage in the system, while repairs/replacement take place. The smaller pumps can handle anywhere from 1 to 10-million gallons per day, which is what we can expect from most of the sewage pipes in Mexicali.
3. The aforementioned portable pumps can also be deployed at most of the lift stations and several of the smaller pumping plants, whenever maintenance and/or repairs need to take place at the stations or plants. Prices for these portable equipment range from \$35,000 to \$175,000 depending on the size of the pump. I’d recommend the following equipment not just to deal with the current problems, but also as part of the standard sewage infrastructure assets that CESPM should have:

Equipment	Quantity	Price/Unit	Total
4-inch Trash Pump	2	\$35,000	\$70,000
6-inch Trash Pump	3	\$45,000	\$90,000
8-inch Trash Pump	1	\$100,000	\$100,000
12-inch Trash Pump <sup>2</sup>	1	\$175,000	\$175,000
Inflatable Plugs, connections, and hoses [to deal with broken pipes]	1	\$50,000	\$50,000
Total <sup>3</sup>			\$485,000

<sup>1</sup> I believe CESPM has a plan, but my sense is that lack of bypass equipment (e.g., portable pumping facilities) is the main reason why we are still getting raw sewage into the New River when a pipe fails.

<sup>2</sup> Actually, several companies provide “package lift stations” and pumps that can handle 20 mgd. Please see: <http://www.grpumps.ca/pumptype>.

<sup>3</sup> Prices for pumps include the prices for the associated hoses and connection hardware.

4. I also recommend that USEPA, IBWC, and NADBank/BECC enable Mexico to purchase additional equipment to remove the grit and sand accumulated in the collection system. Otherwise, what is currently an estimated \$75M-\$80M problem will soon turn into a \$100M problem in a couple of years. I recommend the following equipment for that purpose:

Equipment	Quantity	Price/Unit	Total
Sewer Vac Truck	1	\$350,000	\$350,000
Power Bucket Machine	2	\$100,000	\$200,000
Total			\$550,000

The foregoing recommendations are necessary to prevent ongoing bypasses of raw sewage into the New River, protect public health on both sides of the Border, and protect the rest of the sewage infrastructure in Mexicali, as well as any new US investment on the infrastructure.

Thanks for your considerations to the foregoing and please call me at your convenience at (760) 776-8932 if you would like to discuss it in more details.

cc: Nancy Wright, Colorado River Basin Water Board Chair  
Alex Rodarte, CalEPA Assistant Secretary  
Frank Gonzalez, Colorado River Basin Water Board AEO  
Adriana Nunez, OCC, State Water Board