Tijuana Wastewater Flows- Impact on CBP Operations

Overview and Status Briefing

U.S. Border Patrol, San Diego Sector

March 13, 2019

U.S. Customs and Border Protection

Wastewater Flows

U.S. Customs and Border Protection

Wastewater Flows

U.S. Customs and Border Protection

Overview

Purpose: To provide an update on the efforts made to date by U.S. Customs and Border Protection (CBP) with respect to the Tijuana River transboundary flows issue, describe the key actions identified as being needed to address the issue for the health and safety of its employees, and share results from water sampling contracted by CBP.

- Known and unknown contaminants pose operational and health risks to Border Patrol Agents operating in the area and contractors working on infrastructure.
- CBP established three goals, which if fulfilled would significantly reduce the short and long-term risks of transboundary flows to its mission.

Goal 1: Enhance Near-Term Prevention & Mitigation
Enhance capabilities within CBP's control

Goal 2: Identify Needed Infrastructure Investment & Enforcement
Direct resources and diplomatic pressure to root causes in Mexico

Goal 3: Increase Testing & Data Gathering
Develop the right data set to drive decision-making on solutions

CBP Update: Goal 1

Goal 1: Near-Term Prevention & Mitigation

- ***Mobile Assets*** – To provide a safer and more comfortable environment within the vehicles, cabin filtration upgrades were installed in patrol vehicles.

- ***Facilities*** – Purpose-built personal wash stations were installed to reduce exposure to contaminants and minimize cross contamination. Nozzle attachments for vehicle wash stations have been added to improve upon under-carriage cleaning prior to CBP mechanics servicing vehicles.

- ***Personal Protective Equipment (PPE)*** – To reduce and mitigate exposure, a clean-up kit complete with gloves, respirators, masks, privacy tent, disposable clothing, and towel has been deployed to vehicles that patrol the river and collector areas. Respirators and helmets for ATV riders have been purchased, though a comfortable/good fit is yet to be identified.

- ***Services*** – A disposal service and associated procedures were identified to safely dispose of contaminated uniforms and gear.

CBP UPDATE: Goal 1 (continued)

Goal 1: Near-Term Prevention & Mitigation

- **International & Interagency Communication** – An international protocol for spill notifications was prepared and is being used by the relevant agencies of both countries. The Tijuana utility's emergency response protocol now includes stronger requirements to notify the International Boundary and Water Commission (IBWC) when spills occur with potential for cross-border impact.
- ***Early Warning, Monitoring, & Automation*** – CBP is exploring new technologies to support improved situational awareness for hazardous flows as they occur, enabling the appropriate operational, safety, and investigative responses.
  - ***Request for Information (RFI)*** – CBP issued an RFI to Industry in February 2018. The RFI obtained information from industry to assist CBP with its development of technical requirements and acquisition strategy for automation, engineering, and technology solutions associated with the Tijuana wastewater issues.
  - ***Coordination with EPA and IBWC*** – In March 2018 CBP met with Environmental Protection Agency (EPA) subject matter experts, and separately with then IBWC Commissioner Drusina, in an effort to make progress on CBP's plan of action.

CBP Update: Goal 2

Goal 2: Infrastructure Investment & Enforcement

- **Border Environment Infrastructure Fund (BEIF)** – The need remains for annual appropriations to return to prior levels of $40-$100M for the BEIF. The effort will improve agent safety and national security by minimizing infrastructure failures that result in highly polluted transboundary flows. CBP continues to engage with inter-governmental partners on this matter.

- **Infrastructure in Mexico** - The Tijuana sewage utility, in consultation with the IBWC, EPA, and other stakeholders, developed a $330M sewage infrastructure master plan to repair and upgrade pipes, pumps, and collectors that would prevent spills and eliminate or significantly reduce hazardous flows. Mexico has committed to several upgrades but much more needs to be done.

- **Enforcement** – The degree of danger from raw sewage as compared to the danger from illegal dumping remains unknown due to insufficient testing data. Water testing currently underway will quantify the dumping issue and hopefully allow for targeted enforcement.

- **Diplomacy** – CBP continues to use all diplomatic channels to press the Government of Mexico (GoM) for investment and to improve its enforcement against illegal dumping. Tijuana sewer runoff is a top binational priority for the 21st Century Border Management Border Infrastructure subcommittee and is expected to transition as such from its 2018 Action Plan to the 2019 Action Plan. Both governments are committed to working together on identifying and implementing a permanent solution to this critical issue

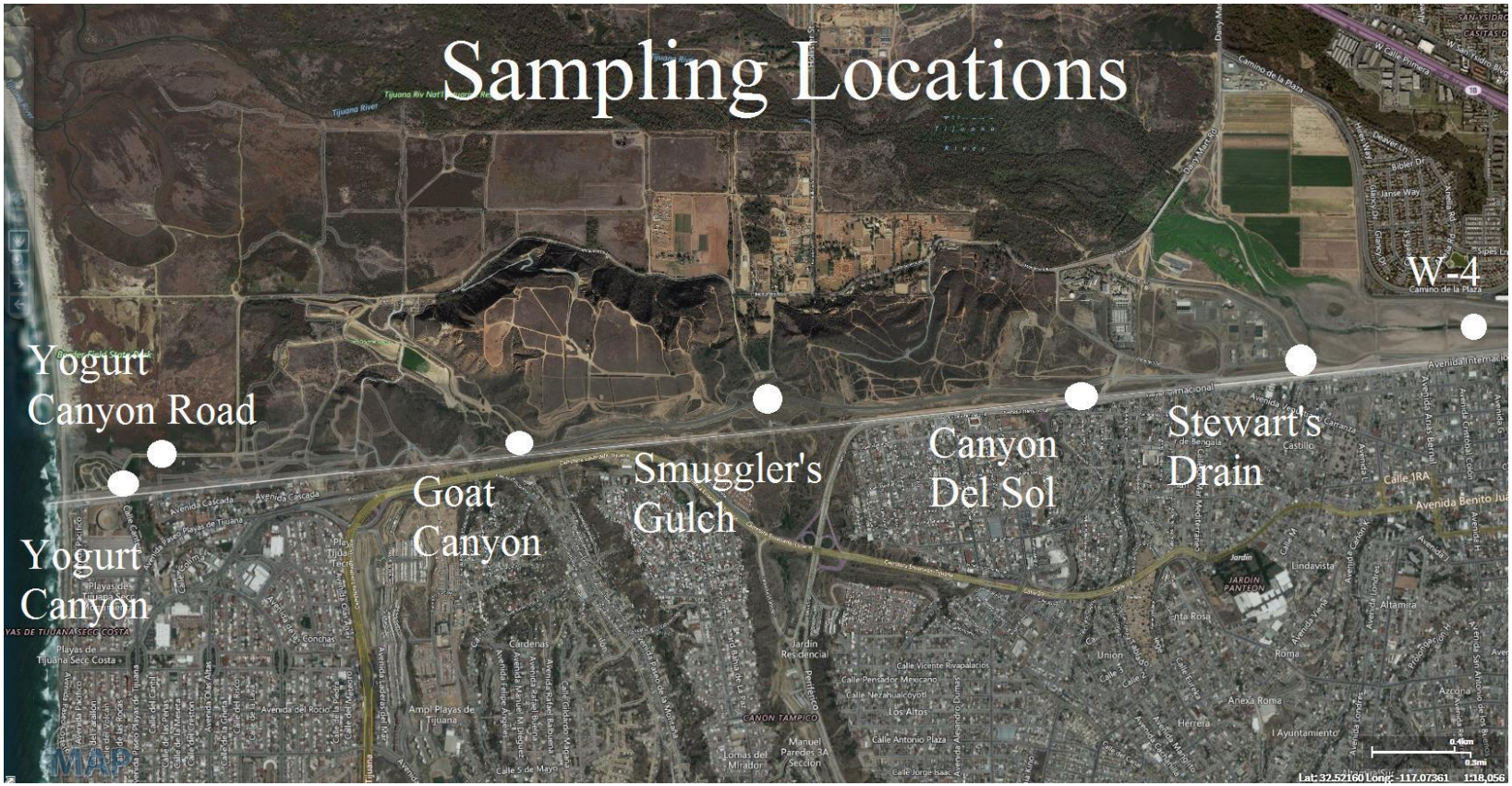
CBP Update: Goal 3

Goal 3: Increased Testing & Data Gathering

- **Quality Assurance and Accountability** - In January 2018, CBP initiated its own water sampling for a six-month period based on standards of the Agency for Toxic Substances and Disease Registry (ATSDR), rather than relying on the limited bacteriological and metals testing to-date.
  - In March 2018 CBP's Senior Medical Advisor and other Safety & Occupational Health personnel presented the first testing results to employees and shared what precautions should be taken when working in/around contaminated areas.
  - CBP provided a summary report of the entire 6-month effort to personnel, the IBWC and other stakeholders. Recently the report was posted on the CBP.gov website.
- **Analyze and Respond** – CBP will utilize the water sampling data set to inform future decisions on solutions and risk responses targeted at root causes.

U.S. Customs and Border Protection

CBP Water Sampling



U.S. Customs and Border Protection

Sampling Results

CBP Water Sampling Results, January to June 2018

- **Purpose of Sampling** – In January 2018, CBP began a six-month water sampling and testing effort to identify the full host of potential biological and chemical contaminants that could be present in the transboundary flows. By identifying what is in these flows:
  - CBP and its inter-agency partners will be better positioned to assess risks to human health and identify the necessary protective measures.
  - Long-term, data-driven solutions can be developed by CBP and inter-agency partners.
  - CBP and inter-agency partners can engage with GoM to root out the source of unexplained flows, especially at the canyon collectors.
- **Scope of Sampling** – Surface water samples were submitted for laboratory analysis under the following parameters:
  - Volatile Organic Compounds (VOCs)
  - Semi-volatile Organic Compounds (SVOCs)
  - Metals (Target Analyte List Metals, hexavalent chromium, chlorides)
  - Inorganic chemicals (chlorinated pesticides, herbicides, nitrite/nitrate, sulfate/sulfite, cyanide, carbonate/bicarbonate)
  - Bacteria (colilert, enteroccocus)

Sampling Results

CBP Water Sampling, January to June 2018

- **Sampling Events** – While most of the dry-weather flows that occur in the Tijuana River Valley do not bypass the canyon collectors, testing these flows offers insight into what humans and animals are being exposed to during storm events, and what is left behind after the storms pass. Sample collection was prioritized in the following order:
  - Samples during dry-weather flow events or as requested by field agents (suspicious color or odor observed)
  - Baseline samples during regular wet-weather flows
  - Samples following rain events
  - Samples of pooled/standing water
- **Observations** – A total of 42 surface water samples were taken over 6 months. The samples were collected during a one-week period per month and were compared to the Regional Screening Levels (RSL) for tap water developed by the EPA (the use of this standard in lieu of recreational water standards was done in order to take the most cautious approach for agent safety). The results are being used to help identify areas, contaminants, and conditions that require further study and analysis. The presence of contaminants in the transboundary flows confirm that point and non-point discharges, either due to storm water events or illicit discharges, are entering the United States.

Sampling Results

CBP Water Sampling, January to June 2018

- **Conclusions**
  - No imminent danger or threat to life was detected during the sampling collection.
  - The detection of contaminants and their concentrations in surface water cannot exclusively determine the potential risk to human health and the environment
  - The biological data tells us that transboundary flows are untreated domestic discharges that includes E. Coli, total coliform, and enterococcus exceedances that are typical to sewage flow.
  - There are uncontrolled discharges occurring from industrial and agricultural uses originating from multiple points in Mexico and the Tijuana River.
  - The sampling effort had limited ability to react and sample isolated discharge events, so we could not use it to identify point-source illicit discharges.
  - The data is limited to surface water sampling and does not evaluate soil geology or other naturally occurring processes.
  - Additional sampling of both water and soil is needed.
  - Inter-agency collaboration is still needed to identify solutions to prevent or mitigate transboundary flows, particularly with regard to engagement with GoM.

Sampling Results

CBP Water Sampling, January to June 2018

- **Highest Concentration of Contaminants Found Across All Sampling Locations**

Volatile Organic Compounds					
Analyte	Highest Concentration (µg/L)	EPA Regional Screening Level (tapwater) (µg/L)	Location	Date	Event Type
Bromodichloromethane	2.3	0.13	Goat Canyon	5/30/2018	Wet Weather - Baseline
Chloroform	2.2	0.22	Goat Canyon	5/30/2018	Wet Weather - Baseline
Dibromochloromethane	5	0.87	W-4	4/19/2018	Wet Weather - Baseline
1,4-Dichlorobenzene	5.3	0.48	Stewart's Drain	2/27/2018	Rain Event
Trichloroethene	1.4	0.49	Stewart's Drain	2/27/2018	Rain Event
Bromoform	14	3.3	W-4	2/26/2018	Wet Weather - Baseline

Semi-Volatile Organic Compounds					
Analyte	Highest Concentration (µg/L)	EPA Regional Screening Level (tapwater) (µg/L)	Location	Date	Event Type
Bis(2-ethylhexyl) phthalate	25	5.6	Goat Canyon	5/30/2018	Wet Weather - Baseline
1,2-Diphenylhydrazine	0.54	0.078	Stewart's Drain	6/21/2018	Wet Weather - Baseline
Benzidine	49	0.00011	Goat Canyon	2/23/2018	Wet Weather - Baseline

Sampling Results

CBP Water Sampling, January to June 2018

- **Highest Concentration of Contaminants Found Across All Sampling Locations**

Metals					
Analyte	Highest Concentration (µg/L)	EPA Regional Screening Level (tapwater) (µg/L)	Location	Date	Event Type
Uranium	30	4	W-4	02/26/2018, 04/16/2018	Wet Weather - Baseline
Cyanide, Total	5.4	1.5	Stewart's Drain	1/24/2018	Wet Weather - Baseline
Arsenic	37	0.052	Yogurt Canyon Road	1/28/2018	Wet Weather - Baseline
Chromium	110	100	Yogurt Canyon Road	1/28/2018	Wet Weather - Baseline
Cobalt	45	6	Yogurt Canyon Road	1/28/2018	Wet Weather - Baseline
Manganese	3900	430	Yogurt Canyon	6/22/2018	Pooled water
Vanadium	310	86	Yogurt Canyon Road	1/28/2018	Wet Weather - Baseline
Iron	110000	14000	Yogurt Canyon Road	1/28/2018	Wet Weather - Baseline
Aluminum	72000	20000	Yogurt Canyon Road	1/28/2018	Wet Weather - Baseline
Antimony	22	7.8	Stewart's Drain	1/25/2018	Wet Weather - Baseline
Lead	75	15	Smuggler's Gulch	3/17/2018	Rain Event
Hexavalent Chromium	40	0.035	Stewart's Drain	6/21/2018	Wet Weather - Baseline

Pesticides					
Analyte	Highest Concentration (µg/L)	EPA Regional Screening Level (tapwater) (µg/L)	Location	Date	Event Type
4,4'-DDD	0.031	0.032	Smuggler's Gulch	2/23/2018	Rain Event
4,4'-DDT	0.27	0.23	Smuggler's Gulch	2/23/2018	Rain Event
Aldrin	0.014	0.00092	Canyon Del Sol	2/27/2018	Rain Event

U.S. Customs and Border Protection

Sampling Results

CBP Water Sampling, January to June 2018

- **Highest Concentration of Contaminants Found Across All Sampling Locations**

Herbicides					
Analyte	Highest Concentration (µg/L)	EPA Regional Screening Level (tapwater) (µg/L)	Location	Date	Event Type
MCPP	770	16	Stewart's Drain	1/24/2018	Wet Weather - Baseline
MCPA	240	7.5	Stewart's Drain	5/31/2018	Wet Weather - Baseline

- **Average Biological Results at Each Location**

Biological								
Type	Locations							San Diego Region Basin Plan Water Quality Objectives (Contact Recreational Values)
	GC	RYC	SD	SG	YC	W4	CDS	
Average Total coliform (MPN/100 mL)	1891379	242000	2179909	1767000	401393	1106756	2420000	1000
Average E. coli (MPNU/100 mL)	1715127	1550000	1652636	1648333	587	274675	2420000	200
Average Enterococcus (MPN/100 mL)	860600	160000	929091	660000	1481	561411	500000	33

GC: Goat Canyon RYC: Road at Yogurt Canyon SD: Stewart's Drain SG: Smuggler's Gulch YC: Yogurt Canyon
W4: Main channel west of concrete apron CDS: Canyon del Sol

U.S. Customs and Border Protection

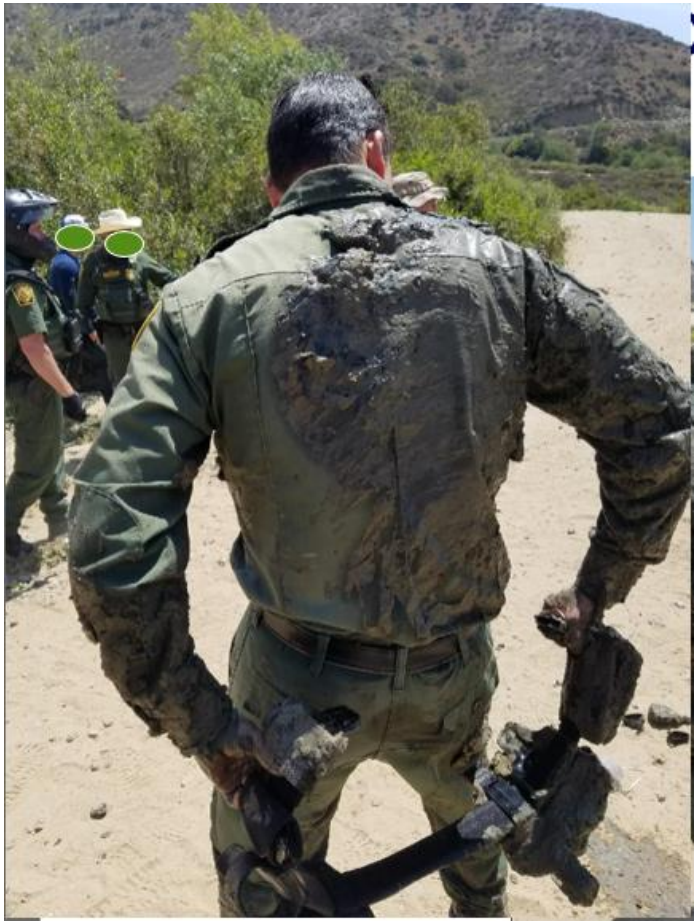
Impact to Personnel

Border Patrol Agent Exposures

U.S. Customs and Border Protection

Impact to Personnel

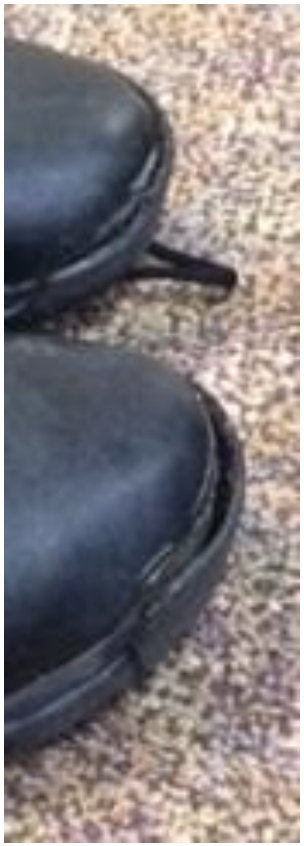
ATV Rider in Goat Canyon



U.S. Customs and Border Protection

Impact to Personnel

Border Patrol Agent Exposure at Stewart's Drain



U.S. Customs and Border Protection

Impact to Personnel

Border Patrol Agent Exposure on the beach

U.S. Customs and Border Protection

Impact to Personnel

Border Patrol Agent Exposure Through Uniform

U.S. Customs and Border Protection

CBP Next Steps

CBP Soil and Water Sampling, September 2018 to March 2019

- **Purpose of Sampling –** Same as previous sampling
- **Scope of Sampling** – Samples will be analyzed for the following parameters:
  - Volatile Organic Compounds (VOCs)
  - Semi-volatile Organic Compounds (SVOCs)
  - Target Analyte List Metals (23)
  - Hexavalent chromium
  - Chlorides
  - Select inorganics (total Kjeldahl nitrogen, oil and grease, phosphorous)
  - Chlorinated pesticides
  - Herbicides
  - Nitrite/nitrate
  - Sulfate/sulfide
  - Cyanide
  - Total coliform, enterococcus

CBP Next Steps

CBP Soil and Water Sampling, September 2018 to March 2019

- **Sampling Locations** – In September 2018, CBP began a six-month soil and water sampling effort to expand upon what was learned from previous sampling.
  - Dairy Mart Bridge
  - Goat Canyon Diverter
  - Goat Canyon Upper Basin
  - Hollister Street Bridge
  - Smuggler's Gulch Diverter
  - Stewart's Drain
  - Stewart's Drain, north
  - W-4 (main channel, west of concrete apron)
  - Yogurt Canyon
  - Yogurt Canyon access road
- **Sharing Results –** CBP will summarize and share the results in a similar fashion as was done for the prior report.

U.S. Customs and Border Protection