REPORT COMPARING THE COST AND TIMELINES FOR CONSTRUCTION OF SECONDARY WASTEWATER TREATMENT FACILITIES IN THE UNITED STATES AND IN MEXICO FOR THE TREATMENT OF TIJUANA SEWAGE

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The joint explanatory statement accompanying the Department of State, Foreign Operations, and Related Programs Appropriations Act, 2008 (Div. J, P.L. 110-161) calls for the U.S. Section of the International Boundary and Water Commission (USIBWC) to report to the Appropriations Committees within 120 days of enactment with cost estimates and timelines for completing secondary treatment facilities at the South Bay International Wastewater Treatment Plant (SBIWTP) capable of treating 25 million gallons per day (mgd) and a proposed 59 mgd Mexican facility. The timelines provided in this report contain interim milestones, including completion of final design and engineering plans, acquisition of land and/or necessary easements, treaty minutes, permits, environmental reviews, and other critical requirements necessary for the completion of each project.

Introduction

The U.S. Section of the International Boundary and Water Commission (USIBWC) constructed and now maintains the South Bay International Wastewater Treatment Plant (SBIWTP), which is located in San Ysidro, San Diego County, California, pursuant to international agreements with Mexico and at a cost shared by the U.S. and Mexican Governments. The SBIWTP treats 25 million gallons per day (mgd) of sewage from the City of Tijuana, Baja California, Mexico that would otherwise flow into the United States. U.S. regulatory agencies agreed to construct the project in phases since full funding was not available to complete construction of a full secondary treatment facility. The SBIWTP began operations in 1997 at the advanced primary level in order to address public health and environmental concerns on both sides of the U.S.-Mexico border. The facility became fully operational in 1999 with treated effluent being discharged to the Pacific Ocean through the South Bay Ocean Outfall (SBOO). The USIBWC is under a court order to achieve compliance with the secondary treatment level required under the Clean Water Act and the National Pollution Discharge Elimination System (NPDES) permit by September 30, 2008. The treatment plant exceeds effluent limitations because it was built as an advanced primary treatment plant, and a facility to provide secondary treatment has not been built to date due to litigation and funding constraints. There are two options now under consideration for achieving secondary treatment: (1) to construct 25 mgd capacity secondary treatment facilities at the existing South Bay site; or (2) to construct 59 mgd capacity secondary facilities in Mexico under a public/private partnership (the Bajagua Project). Neither project will meet the September 30, 2008 court ordered deadline for compliance.

Executive Summary

The USIBWC believes that completing secondary facilities in the United States is less expensive and could be completed in a shorter timeframe than constructing facilities in Mexico, as envisioned in P.L. 106-457, as amended. The estimated capital cost for construction of 25 mgd secondary facilities in the United States in 2008 dollars is $101 million ($94.9 million for construction and $6.6 million for possible construction change orders and contract administration costs). The estimated cost for construction of a 59 mgd facility in Mexico is $178 million.

The annual operation and maintenance (O&M) cost for secondary facilities in the United States over a 20-year period is $242 million ($9 million per year plus 3% estimated annual inflation) versus an estimated $742 million for secondary facilities in Mexico ($29-$39 million per year plus 2% estimated annual inflation). The Mexican facility cost includes the repayment of the capital cost of construction, annual O&M charges, administrative fees and profit for the private company developing the project, Bajagua LLC (Bajagua).

Under both proposed projects, the USIBWC would continue to operate and maintain the advanced primary facilities at the SBIWTP, which over a 20-year period would cost $248 million ($9.2 million per year plus 3% estimated annual inflation). Mexico is currently contributing $1.1 million annually toward the O&M of the SBIWTP. In accordance with IBWC Minute No. 296, the USIBWC is currently in negotiations with Mexico to adjust the Mexican contribution based on O&M cost increases and inflation.

The USIBWC believes that secondary treatment facilities in the United States can be implemented more quickly than the Bajagua Project, especially given the uncertainties and complications of building a facility in Mexico that have already affected and will likely continue to affect the implementation schedule. The USIBWC believes that it can be more assured of meeting its estimated completion date of January 2011 than meeting the estimated completion date of March 2011 for the Bajagua Project, since there are fewer risks and contingencies associated with the construction schedule for secondary treatment in the United States. With respect to the Bajagua Project, there are inherent uncertainties relating to the attainment of annual project funding, the nature of the proposed fee-for-services contract between Bajagua LLC (Bajagua) and the USIBWC, the development and execution of agreements with various levels of government in Mexico relative to the Design Build and Operate (DBO) subcontract, and the negotiation and conclusion of implementing Minutes required to obtain the U.S. and Mexican Government's approval of the fee-for-services contract and the design, construction, and O&M parameters.

From an engineering perspective, completing secondary facilities at the existing SBIWTP site is a more sound technical solution than capturing Mexican sewage for advanced primary treatment in the United States, pumping that effluent across the border 8.6 miles uphill for secondary treatment in Mexico and then pumping that effluent back across the border again for discharge through the SBOO, with all of the associated utility charges involved.

Building secondary facilities in the United States would also have the following advantages:

- USIBWC would have direct oversight of the project during all phases of construction, operation, and maintenance;
- USIBWC owns the land necessary for expansion of the existing plant up to 100 mgd;
- a final design has already been prepared to construct a 25 mgd secondary treatment component, compatible with the existing treatment process, and is currently being updated to current design standards (final design is scheduled for completion by the end of June);
- secondary treatment in the United States is provided for in existing International Boundary and Water Commission (IBWC) Minutes and thus no additional agreements with Mexico are required;
- minimal site preparation, environmental mitigation, or other permits or approvals are required; and
- construction and operation of secondary treatment facility in the United States would be subject only to the laws of the United States.

Ultimately, the USIBWC must achieve compliance with the Clean Water Act and its NPDES permit as expeditiously as possible and USIBWC believes that the SBIWTP upgrade is the best option to achieve this objective. Secondary facilities in the United States under the supervision of the USIBWC also give greater assurance that the SBIWTP will continue to meet those secondary treatment standards in the future. In the eleven years that the USIBWC has operated the SBIWTP, the plant has never been off-line.

The chart in Table 1 provides a side by side comparison of the costs associated with and timelines for completion of the two projects. A detailed history of the SBIWTP and a comprehensive analysis of the two options follow this Executive Summary.

Table 1

Comparison of Two Options to Provide Secondary Treatment	Upgrade SBIWTP	20- Year Lease Contract
Ownership:	USIBWC	Private/Mexico
Plant Location:	San Ysidro, California	Tijuana, Mexico
Capacity:	25 mgd	59 mgd */1*
Construction Cost:	$101 million */2*	$178 million
Estimated 20-Year Cost of O&M:	$242 million */3*	$377 million */3*
Estimated 20-Year Cost of Administrative & Other Fees:	--	$187 million
TOTAL Estimated Costs:	$343 million	$742 million
Funding Source - Construction:	U.S. 100% */4*	U.S. 100%
Funding Source - O&M:	U.S. 80% / Mexico 20%	U.S. 100%
2008 Budget Appropriation:	$66 million	--
2009 Budget Request:	$28 million	--
Estimated Annual O&M Cost:	$9.0 million	$29 - $39 million */5*
Estimated Completion Date:	January 2011	March 2011

/1 More than twice the capacity than is needed to comply with Minute 283.
/2 Includes $94.9 million for construction plus $6.6 million for construction change orders and contract administration costs.
/3 Assumes 3% inflation for SBIWTP (U.S.) and 2% inflation for lease contract (MX).
/4 The USIBWC has requested Mexican cost participation in the construction of the SBIWTP upgrade; however, Mexico's position is that the funding Mexico provided for the capital cost of construction included the secondary component, in accordance with IBWC Minute No. 283.
/5 Includes repayment of the capital cost of construction.

Department of State, Foreign Operations, and Related Programs Appropriation Act, 2008

The President's FY 2008 budget request sought funding for the USIBWC to begin construction of secondary wastewater capability at the existing South Bay facility, which is viewed by the Administration as a more efficient and less expensive solution to bring the plant into Clean Water Act compliance. The $66 million funding request was based upon a percentage of the $94 million cost estimate identified in the Final Supplemental Environmental Impact Statement for Clean Water Act compliance at the SBIWTP issued in July 2005 and assumed a 30% cost share from Mexico for construction of the SBIWTP upgrade. USIBWC sought a cost contribution from Mexico for secondary facilities at the SBIWTP. However, Mexico's position is that the funding that it provided for the capital cost of construction of the SBIWTP included secondary facilities in accordance with IBWC Minute No. 283.

Section 117 of the Department of State, Foreign Operations, and Related Programs Appropriations Act, 2008, made available up to $66,000,000 of the funds provided for the IBWC in the Act for such a facility, subject to the following conditions: "(1) IBWC shall resume negotiations in accordance with section 804 of Public Law 106-457; (2) IBWC shall prepare design and engineering plans to upgrade the South Bay International Wastewater Treatment Plant to treat 25 mgd to secondary treatment and update its conceptual designs for a scalable project capable of treating up to 100 mgd to secondary at the facility; and (3) none of the funds made available by this section may be obligated for construction before the Government Accountability Office completes a report on the proposed projects."

The USIBWC resumed negotiations on a fee-for-services contract with Bajagua on January 9, 2008 and those negotiations are on-going. On January 14, 2008 the USIBWC contracted for the review and updating of its existing design and engineering plans to upgrade the SBIWTP to treat 25 mgd to secondary standards and to update its conceptual designs for a scalable project capable of treating up to 100 mgd to secondary at this facility. The finalized plans will be completed by June 24, 2008. We understand that the Government Accountability Office will complete a report on the proposed projects and provide it to the Appropriations Committees by April 24.

Background of the IBWC

The IBWC is an officially recognized international organization created by treaty between the United States and Mexico. (See Executive Order 12467 and 22 U.S.C. 277 et seq.) It is comprised of a U.S. Section, headquartered in El Paso, Texas, and a Mexican Section, headquartered in Ciudad Juarez, Mexico. The IBWC has over a century of experience in binational cooperation and partnership, tracing its roots to the temporary boundary commissions established by the Treaty of Guadalupe Hidalgo, the Gadsden Treaty and an 1882 Convention to survey, mark and map the new international boundary between the United States and Mexico. The U.S.-Mexico Convention of March 1, 1889 established the International Boundary Commission, which was the direct predecessor of the IBWC. Today, under various boundary and water treaties and other international agreements in force between the United States and Mexico, the IBWC exercises jurisdiction with respect to the 1,278 miles of Rio Grande and Colorado River water and the 674 miles of land boundary that form the border between the United States and Mexico, as well as works located upon the common boundary. The 1944 Water Treaty authorized the IBWC "to give preferential attention to the solution of all border sanitation problems."

The IBWC carries out the functions entrusted to it under U.S.-Mexico boundary and water treaties and other international agreements, and the U.S. and Mexican Commissioners are responsible for developing joint recommendations to the two governments for resolution of current and anticipated boundary and water problems. The IBWC is engaged in a number of joint cooperative activities, including: demarcation of the boundary at ports of entry and international bridges and along the land boundary; preservation of the river boundary; operation and maintenance of international flood control projects and associated diversion dams; operation and maintenance of international storage dams and associated hydro-electric power generation plants; determination and accounting for national ownership of the waters of the Rio Grande and Colorado River; construction, operation and maintenance of three wastewater treatment facilities; ownership of three international bridges in the El Paso/Ciudad Juarez area; investigations and studies, including water quality monitoring and data exchange; and approval of all plans for new international bridges, border crossings, and pipe and power lines that cross the international boundary.

History of the South Bay International Wastewater Treatment Plant

The IBWC has been addressing the issue of Tijuana sewage flows crossing the international boundary since the 1930s. Over the past 65 years, as the population of Tijuana has increased from 5,000 residents to over one million people, so have the magnitude and complexity of these transboundary sewage flows. In the 1930s, 1960s, 1980s, and 1990s the IBWC developed joint projects for control of untreated sewage from Tijuana, including improvements to the sewage infrastructure in Tijuana, and the construction of defensive works in both Mexico and the United States to capture sewage flows or spills from Mexico. At present, the SBIWTP effectively captures for treatment all dry-weather sewage flows that would otherwise enter the Tijuana River and flow north into the United States without treatment. Untreated sewage only flows north from Tijuana into San Diego during winter rainfall events, when runoff combined with sewage overwhelms the capacity of the defensive works, or at any time of the year when there are Tijuana sewage system outages or breakdowns or when, depending on ocean currents, discharge of raw sewage off the Mexican coastline migrates north into U.S. waters.

Beginning in 1987, the USIBWC developed a partnership with the City of San Diego, County of San Diego, the State of California and the U.S. Environmental Protection Agency (EPA) that resulted in a determination that this long-standing problem would best be resolved with construction of a treatment plant in San Diego, near the border, that would provide secondary treatment to Tijuana sewage that flows untreated into the United States via the Tijuana River and at a cost shared by the U.S. and Mexican Governments. The United States was selected as the location for the plant because Mexico's proposal to build a plant in Mexico in the Rio Alamar area would not provide treatment acceptable to U.S. secondary standards, would not provide defensive works against fugitive raw sewage flows crossing the boundary into the United States, and the effluent from the proposed plant in Mexico would damage the Tijuana Estuarine Sanctuary, a salt water estuary located in the United States, just west of the South Bay location.

On this basis, the United States and Mexico concluded an international agreement in 1990, IBWC Minute No. 283, for the construction of an international treatment plant that would treat an initial 25 mgd of sewage from Tijuana to the secondary treatment standards and discharge that effluent in an outfall approximately 3.5 miles into the Pacific Ocean. IBWC Minute No. 296 provided that the United States would cover the construction and operations and maintenance costs up-front and Mexico would reimburse the United States in an

amount equivalent to what Mexico's costs would have been to construct and operate the proposed Rio Alamar Plant.

Section 510(b)(2) of the Water Quality Act of 1987 (Section 510), authorized the U.S. Government to construct the international plant in San Diego and authorized the EPA to make grants to the USIBWC and other entities for the construction of the plant and other necessary works to provide treatment of municipal sewage and industrial waste from Mexico. From 1991 to 1994 Congress appropriated $239.4 million to the EPA for this project. Prior to the commencement of design or construction on the South Bay facility, Congress imposed a spending cap on the project of $239.4 million (Department of Veterans Affairs and Housing and Urban Development, and Independent Agencies Appropriations Act, 1993, P.L. 102-389).

In a 1994 Final Environmental Impact Statement and Record of Decision, the USIBWC chose construction of a secondary treatment facility in San Diego to achieve secondary treatment using an activated sludge technology. Since funding was inadequate to complete construction of a full secondary treatment facility, the USIBWC and EPA, in consultation with local California officials, decided to construct the SBIWTP in two stages: first building an advanced primary wastewater facility, followed by construction of the secondary component when funding was appropriated for this purpose. The solicitation for the advanced primary plant was issued on December 9, 1994 and construction began in June 1995.

Recognizing that some 13 mgd of untreated Mexican sewage was crossing the boundary and threatening the public health of the inhabitants and the beaches in Southern California, the plant was put in operation in 1997 to provide treatment for up to 25 mgd of Tijuana sewage to the advanced primary level. The United States and Mexico concluded IBWC Minute No. 296 for the specific Mexican cost reimbursement on April 16, 1997. The capital costs chargeable to Mexico were identified as $16.8 million (the amount it would have cost Mexico to build the Rio Alamar plant), payable in ten annual installments. Mexico also contributes to O&M costs based on the Mexican economy. Another significant aspect of the SBIWTP project was the agreement for sludge from the SBIWTP to be disposed of in Mexico at Mexico's expense. The South Bay plant became fully operational at the advanced primary level in 1999 with treated effluent being discharged through the SBOO.

Settlement of litigation brought in 1994 over the inadequacy of the initial environmental documentation under the National Environmental Policy Act

(NEPA), led the USIBWC and EPA to develop a Supplemental Environmental Impact Statement and issue a second Record of Decision in 1999, in which a completely-mixed aerated ponds system adjacent to the SBIWTP was chosen as the preferred alternative for achieving secondary treatment. There was much local opposition to this approach, which was chosen in part because it cost less than an activated sludge facility and thus was thought to have a better chance of being funded. Congress, however, did not act on requests to raise the funding cap to enable construction of the ponds, but rather passed legislation in 2000 that became the genesis of the Bajagua Project.

Funding Expended to Date for Construction of the SBIWTP

Of that $239.4 million appropriated, $236.7 million has been obligated to date. $89.3 million was expended by the City of San Diego and the U.S. Army Corps of Engineers (USACE) to construct the SBOO; $9.9 million was expended by the Corps of Engineers for environmental work and $137.5 million was expended by the USIBWC for costs associated with the construction of the South Bay plant and related infrastructure and optimization efforts, including:

- $28 million for hydraulic and other studies, design and contract administration ($2.7 million of which was for secondary treatment design work)
- $20.8 million for construction of the South Bay Land Outfall (SBLO) connection to the SBOO
- $ 2.0 million for environmental mitigation
- $ 5.7 million for site preparation
- $41.4 million for construction of the advanced primary facilities
- $ 1.2 million for potable water line to the SBIWTP
- $11.6 million for primary effluent discharge connection
- $ 3.9 million for construction of the Smuggler's Gulch interceptor and collection system to capture and convey to the SBIWTP fugitive Mexican sewage flows entering the United States at a canyon near the SBIWTP
- $ 3.7 million for the construction of the Goat Canyon interceptor and collection system for the same purpose
- $ 8.0 million for the design of the SBOO
- $ 2.7 million for capacity changes to the City of San Diego water usage at SBIWTP
- $ 4.1 million for USIBWC general and administrative costs
- $2.6 million for 2008 design update of Secondary Facility SBIWTP

- $1.8 million for 2008 Diversion System Upgrade (Goat Canyon and Smugglers Gulch)

There were no significant overruns in the design and construction costs for the construction of the SBIWTP. USIBWC records reflect minimal cost growth on the contracts. The cost for the advanced primary construction was actually $20 million less than the engineers' estimate. Mexico has completed its payments to the United States for its share of construction ($16.8 million), which Mexico views as including the secondary component, in accordance with IBWC Minute No. 283.

Public Law 106-457

In late 2000 Congress enacted legislation, the Tijuana River Valley Estuary and Beach Sewage Cleanup Act of 2000, 22 U.S.C. §§ 277d-43 et seq., Title VIII of Pub. L. 106-457 (Nov. 7, 2000) (the Public Law), which requested the Secretary of State to negotiate a new Minute (or modification of IBWC Minute No. 283) with Mexico to provide *inter alia* for the secondary treatment of the 25 mgd advanced primary effluent from the SBIWTP, if such treatment is not provided in the United States, as well as treatment for additional sewage flows up to a maximum total capacity of 50 mgd in Mexico, and additional treatment of sewage flows to be determined by a comprehensive plan that would identify Tijuana's long-term treatment needs, under a public-private partnership arrangement. The comprehensive plan for Tijuana water and wastewater planning and infrastructure, referred to as the 2003 Tijuana Master Plan, was developed by EPA and issued in 2003. It addressed future wastewater treatment capacity in Tijuana and specifically evaluated the facility named in the Public Law. It identified a need for an additional 34 mgd of treatment capacity in the Rio Alamar basin by 2023. This became the basis for the 59 mgd treatment facility called for in IBWC Minute No. 311.

The Public Law authorized USIBWC to enter into a 20-year term "fee-for-services" contract with a private entity for such secondary treatment services, to include payment for costs of construction of an up to 50 mgd secondary treatment plant and related facilities in Mexico. The Public Law envisioned that the private party selected to provide the secondary treatment services would provide up-front funding for construction of the facilities and be reimbursed by the USIBWC through annual appropriations under the

fee-for-services contract. The Public Law authorized, but did not appropriate, $156 million for federal fiscal years (FY) 2001-2005.

The Public Law was amended on November 30, 2004 (P.L. 108-425). The amendment was deemed necessary to authorize "such sums as may be necessary" for the project and to remove the cancellation fee provision. The amendment provided for the contract to specify that neither the USIBWC nor the U.S. Government would be liable for payment of any cancellation fees if the USIBWC cancels the contract. The amendment further provided for the contract to specify that the owner of the Mexican facility may purchase insurance or other financial instrument to cover the risk of cancellation of the contract by the USIBWC. While the USIBWC was seeking to implement the Public Law, the State of California filed suit in U.S. District Court for the Southern District of California over the failure of the advanced primary plant to meet the standards of the Clean Water Act and its discharge permit. The court eventually ruled in late 2004 that the USIBWC must come into compliance with the Clean Water Act by no later than September 30, 2008.

IBWC Minute No. 311

The USIBWC began informal discussions with the Mexican Section of IBWC and requested requisite authorization from the Department of State to initiate formal negotiations with Mexico on a new IBWC Minute to implement the Public Law in January 2001. Due to the lack of inter-agency consensus on a way forward, that authorization was not granted by the Department of State until December 2001, at which time the USIBWC initiated formal negotiations with its Mexican counterpart. Agreement was not reached on the terms and conditions of a new Minute until February 2004, at which time the two Sections of IBWC concluded IBWC Minute No. 311, which provides an overarching framework for achieving the objectives of the Public Law.

IBWC Minute No. 311 provides general parameters for the construction, operation, and maintenance of a 59 mgd secondary wastewater treatment facility in Mexico that incorporates participation by a private service provider under an operating lease contract. IBWC Minute No. 311 indicates that the USIBWC would fund, subject to availability of annual appropriations, up to $156 million for the project, with any additional costs to be subject to subsequent Minutes of the Commission. The USIBWC would make payments to the service provider under the contract, which would be administered by the Mexican Section in accordance with the 1944 Water Treaty. Competitive procedures applicable in Mexico would be used in the procurement of all

property and/or services for engineering, construction and operation and maintenance of the Mexican facility. U.S. payments would be offset by compensations or credits that reflect the agreed upon percentage of payments received by Mexico through the sale of water treated by the facility. Ownership and disposition of the water would remain under the jurisdiction of the Government of Mexico.

The Minute specifies that the treatment to the secondary level would comply with the water quality laws of the United States, the State of California, and Mexico. The project would be subject to oversight of a Binational Technical Committee presided over by the IBWC. The committee includes representatives from both Sections of the IBWC, the City of San Diego, the City of Imperial Beach, the California State Water Resource Control Board, the San Diego Regional Water Quality Control Board, the Mexican National Water Commission, the Water Commission of the State of Baja California, the Tijuana utility, and the Municipality of Tijuana. IBWC Minute No. 311 provides that the project be consistent with the solution identified in the Tijuana Master Plan and that it satisfy the requirements of the Mexican National Water Authority and the State of Baja California.

The operating lease contract would be administered consistent with the provisions of the 1944 Water Treaty, applicable Mexican laws and in accordance with the terms and conditions established through subsequent IBWC Minutes. The operating lease arrangement contract will need to have the approval of both governments, expressed in subsequent IBWC Minutes. IBWC Minute No. 311 also provides that the final design of the facilities to be constructed in Mexico and the final arrangement for its implementation, as well as the terms under which USIBWC would make payments for the design, construction, operation and maintenance of said facilities, will be established in subsequent Minutes of the IBWC.

Implementation of IBWC Minute No. 311

On July 22, 2005 the USIBWC completed a Final Supplemental Environmental Impact Statement and on September 30, 2005 issued a Record of Decision in which it selected the project proposed by Bajagua for the construction of secondary wastewater treatment facilities in Mexico. The USIBWC selected the Bajagua Project primarily because it was thought that Bajagua's preliminary planning, studies and site identification would allow for construction of a facility for the treatment of the South Bay effluent consistent with the deadlines set forth in the court order. In addition, Bajagua was chosen

over other alternatives for building secondary facilities in the United States because of funding constraints associated with EPA's appropriation of Section 510 monies.

After undertaking market research and inter-agency consultations to identify the best available means of implementing the Public Law and IBWC Minute No. 311 and of complying with a court order to achieve Clean Water Act compliance at the SBIWTP by no later than September 30, 2008, the USIBWC made a determination in the summer of 2005 to pursue sole-source negotiations with Bajagua. The USIBWC was concerned that pursuing a competitive bidding process would take more time, making it impossible to bring the SBIWTP into compliance by the court ordered deadline.

On February 14, 2006 after extensive negotiations, the USIBWC entered into a Development Agreement with Bajagua, giving the company exclusive rights to pursue development of the Mexican facility. In the Development Agreement Bajagua agreed to obtain all rights necessary to purchase the real estate for the project facilities in Mexico and to obtain all rights necessary to acquire rights-of-way for the project facilities by September 12, 2006.

Bajagua was not successful in obtaining a concession or other approval from Mexico for the project site until a partial approval was granted by Mexico on August 1, 2007. No permits have been acquired for the rights-of-way necessary for the pipeline to the Bajagua plant. No agreement has been reached on the amount of flow to be intercepted from the Tijuana system for the Bajagua Project. The latest version of the Request for Proposals (RFP) transmitted to the USIBWC still does not contain necessary engineering information on flow and plant size of the Mexican facility. USIBWC has not seen any data analysis from a May 2007 report submitted by Bajagua that identifies source locations for project flows above the 25 mgd effluent from the SBIWTP. Recent reports from the EPA and the local Tijuana public services utility indicate that with the commissioning of additional wastewater treatment facilities in Mexico (the Japanese credit plants), there will be no wastewater treatment capacity deficit in Tijuana for the next ten years. If the Bajagua Project is downsized for this reason, the cost-benefit of pumping the SBIWTP effluent uphill for secondary treatment in Mexico is reduced.

In April 2007 Bajagua notified the USIBWC that it would be unable to meet the court ordered September 30, 2008 deadline for bringing the SBIWTP into compliance. The USIBWC suspended the work under the Development Agreement by letter to Bajagua dated May 8, 2007, because the USIBWC

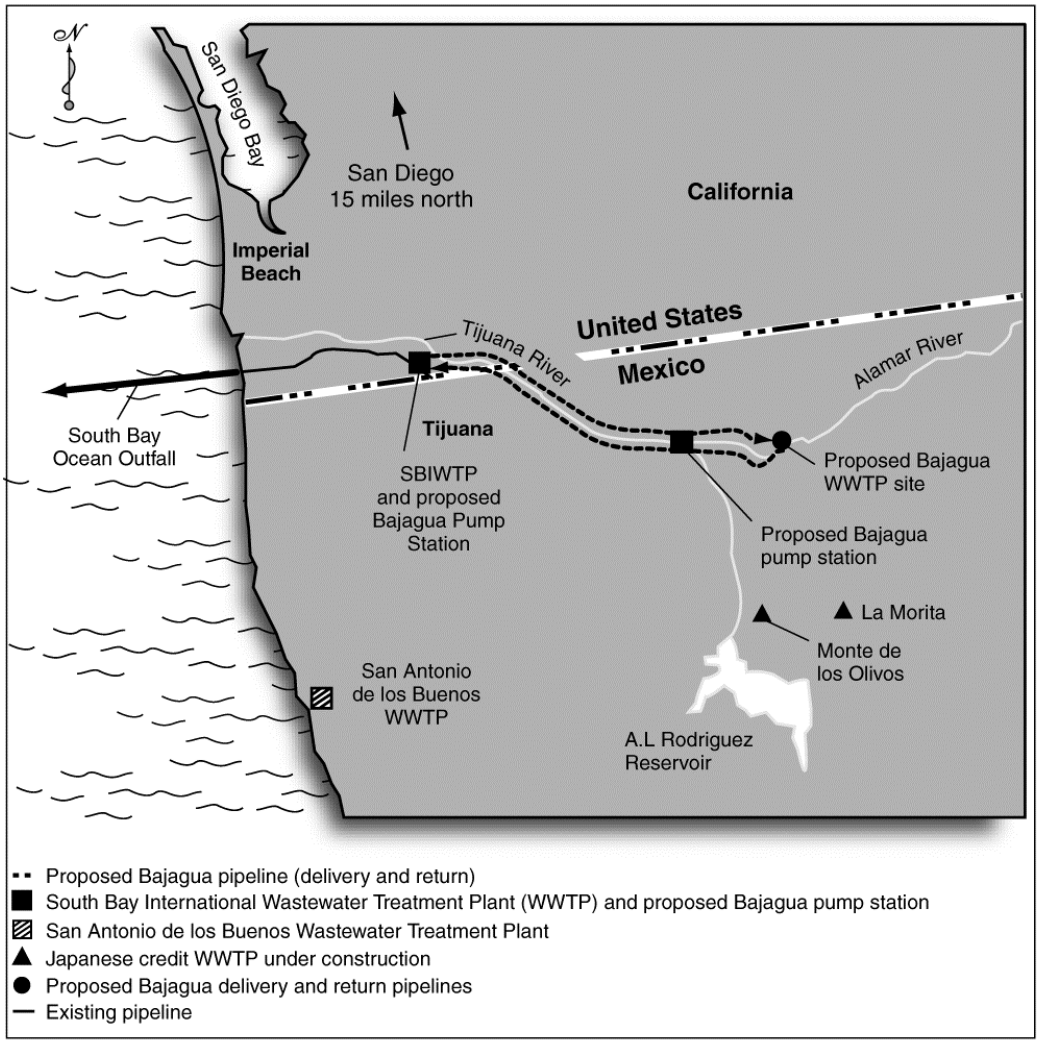
lacked authority to extend the court ordered deadline. Pursuant to the section 117 of the Department of State, Foreign Operations, and Related Programs Appropriations Act, 2008, the USIBWC resumed negotiations with Bajagua on January 9, 2008.

Description of Bajagua Project

The proposed Bajagua project would treat 25 mgd of the advanced primary effluent from the South Bay facility and an additional 34 mgd, which is the volume identified by the Tijuana Master Plan issued by the EPA in 2003 as meeting Tijuana's projected sewage treatment need in 2023. If the Mexican facility was to come on line in 2008, currently available information indicates that it would only be treating the 25 mgd from the SBIWTP and would actually provide Mexico with excess capacity. According to the Tijuana Master Plan, existing Tijuana wastewater facilities and the Japanese credit plants, if they were to come on line in 2008 as scheduled, will actually provide Mexico with the capacity to treat more sewage than is currently being captured. There is conflicting information at present on wastewater flow projections for the Tijuana River Basin. Projected treatment capacity deficiencies for the Alamar River basin range from 0 mgd in 2014 to 17 mgd in 2025, according to original Mexican and EPA analysis, and 12 mgd in 2010 to 34 mgd in 2023, according to recent revisions provided by Mexico; however, data validating these revision has yet to be provided to the USIBWC.

The Bajagua Project includes a wastewater treatment facility located immediately upstream of the eastern terminus of the concrete flood control channel of the Alamar River in Mexico on a 115 acre site known as the Vergel site. The project also includes influent conveyance facilities (pump stations, pipelines, and associated facilities) to convey SBIWTP effluent 8.6 miles uphill from the SBIWTP in the United States and raw wastewater 2.4 miles uphill from the confluence of the Rio Alamar and Rio Tijuana in Mexico to the treatment facility at the Vergel site, and an effluent pipeline to return treated effluent via a 9.0 mile gravity pipeline to the SBOO, as illustrated on Figure 1. A portion of the 115 acres of the Vergel Site will be available for treatment plant facilities and structures. The remaining portions of the site are reserved for future flood control facilities and for other uses planned by the City of Tijuana.

Figure 1



Source:

Cost Estimates for the Bajagua Project

In January 2005 USIBWC engaged the USACE to provide ongoing procurement and contract assistance on matters associated with the proposed project. On September 28, 2005 USIBWC also contracted with Cayenne Consulting, LLC, for financial advisory assistance in negotiating a potential contract with Bajagua. Cayenne Consulting, LLC, provided services to USIBWC from September to December 2005, with a brief follow-on contract in January 2006. Cayenne developed a fee service model to evaluate the initial proposal and the USACE and Cayenne assisted in negotiations with Bajagua, which resulted in the February 14, 2006 Development Agreement and Draft Term Sheet.

In the Development Agreement agreed to by USIBWC and Bajagua, the projected cost was identified as being between $29 and $39 million per year. This represents a range +/- 15% of the first year annual O&M cost, estimated by the fee service model at $34.6 million. The assumptions contained in the model are found in Table 2 and Table 3. A summary of the annual payments over 20 years computed by the service fee model are presented in Table 4.

Bajagua has recently indicated that it believes the annual cost of the project to the U.S. Government will be $32.2 million during the first year of operation and the total 20-year cost to be $516 million in 2008 dollars. However, USIBWC has not seen data to substantiate these figures, which vary significantly from those agreed to by Bajagua under the Development Agreement. The capital cost for construction contained in the Development Agreement was $178 million. Bajagua has now suggested to USIBWC that construction costs could rise to $195.6 million. The USIBWC questions the lower annual cost presented by Bajagua in light of the fact that the capital cost could increase significantly above the amount anticipated in the Development Agreement. Ultimately, there can be no certainty with respect to the cost of the Bajagua Project until after the RFP is issued and a DBO contract awarded for the project.

Significant issues regarding basic design elements still need resolution. There has been no agreement reached on the initial wastewater flows to the plant; indeed there is discrepancy between what has been reported by EPA, Mexican agencies, and Bajagua on wastewater projections over the 20-year term of the project. Further complicating projections are the capacity available in the Japanese credit plants, which will be coming on line in 2008 and 2009, and which will, in the near term, treat wastewater that now is discharged

untreated to the Pacific Ocean in Mexico near Punta Bandera. Should the plant be constructed only for 25 mgd initially and expanded later when flow is projected to increase, then the costs for the Bajagua Project will be significantly lower than what are indicated in this report. In addition, rising energy costs will have a currently unknown impact on the annual operating costs of the Bajagua Project, which involves pumping 25 mgd of SBIWTP effluent 8.6 miles uphill from the existing SBIWTP in the United States to the proposed Bajagua plant in Mexico for secondary treatment, and then back to the SBIWTP for discharge through the SBOO into the Pacific Ocean.

Timelines for the Bajagua Project

The Bajagua schedule is based on aggressive completion of various tasks, some of which USIBWC has little control over, including issuance of rights of way for pipeline construction, approval of Mexican environmental documentation, and awarding of a concession by Mexican entities to utilize wastewater for treatment and also possibly for reuse. The first two tasks cannot be initiated until after a DBO contract has been negotiated and a firm conceptualized design has been agreed to by both the U.S. and Mexican Governments in accordance with IBWC Minute No. 311. The schedule anticipates a proposed in place operation date of March 2011. This timeframe may have to be expanded depending upon the time required for actions that must be undertaken by Mexican officials, as well as the time required to negotiate and conclude additional IBWC Minutes that are also subject to the approval of the U.S. and Mexican Governments.

Table 2

Service Fee Model Estimated Costs for the Bajagua Project (Cayenne Consultants, December 30, 2005)

Capital Costs	
Headworks	2,450,000
Aeration Basins	7,040,000
Secondary Clarifiers and Solids Contactors	9,140,000
Sludge Dewatering	3,450,000
Chlorine Installation	740,000
Non-Process Buildings	2,390,000
Site Clearing and Grading	10,440,000
Site Piping	3,400,000
Site Electrical	3,180,000
Power Supply/Substation	2,200,000
Subtotal	44,430,000
Pump Stations	
ITP Effluent P.S.	8,280,000
Tijuana Raw Sewage P.S.	5,640,000
Subtotal	13,920,000
Pipelines	
Influent Sewer (ITP-Bajagua Plant)	18,600,000
Influent Sewer (Tijuana P.S. - Bajagua Plant)	10,650,000
Effluent Pipeline	25,500,000
Subtotal	54,750,000
Construction Contingency	
Percentage	6%
Amount	6,786,000
Design	5,100,000
Subtotal Construction	124,986,000
Ancillary Costs	
Environmental Permitting (U.S.)	600,000
Mexican Studies and Permitting	600,000
DBO Procurement	1,000,000
Construction Management	625,000
Inspection	400,000
Engineering	805,000

Bajagua LLC Accounting/Legal	3,000,000
Other Legal (financing)	400,000
Underwriting Fees	2,148,000
Financial Advisory Fees	300,000
Working Capital	650,000
Financing Insurance	6,500,000
Interest During Construction (18 months)	6,467,000
Debt Service Reserve @ 1 year	13,001,000
Subtotal	36,496,000
Developer Fee	16,275,000
Total Project Capital Cost	177,757,000

Estimated Fixed Annual Operation and Maintenance Costs (2009)

	Original 59MGD
Fixed Facility O&M Charge	
Power	6,000,000
Sludge Disposal	3,600,000
Labor	790,000
Parts and Materials	130,000
Chemicals	250,000
Equipment Replacement Fund	450,000
Testing, Monitoring	280,000
Insurance	250,000
Subtotal	11,750,000
Fixed Pump/Pipeline O&M	
Power	1,270,000
Labor	70,000
Parts and Materials	30,000
Cleaning/Repair Pipeline	210,000
Insurance	250,000
Subtotal	2.830,000
Land Leases	
Treatment Facility Site	3,000,000

Table 3

Assumptions Used in Service Fee Model
Developed by Cayenne Consultants (as Modified by USIBWC)
February 1, 2006

Assumed Inputs for Service Fee Model

Total Capital Investment	177,757,000
Developer Fee	16,275,000
Equity Required	20%
Debt Financing	
Total Debt	142,205,600
Rate on Debt:	8.0%
Equity Financing	
ROE	12%
Fixed O&M Assumptions	
Year 1 Fixed Facility O&M	4,348,777
Year 1 Fixed Pump/Pipeline O&M	2,830,000
Annual Increase	2.00%
Land Rent	1,200,000
Variable O&M Assumptions	
Average MGD	59
Variable Facility O&M Rate/1000	0.30
Variable Pump/Pipeline O&M Rate/1000	0.15
Annual Increase	2.00%
Profit	8%

Table 4

Service Fee Model Cost Output Summary
Developed by Cayenne Consultants (as Modified by USIBWC)
February 1, 2006

Total Annual Payment

Year	Fixed Charge	Variable O&M Charge	Management Charge	Grantee's Profit	Total Payment
1	27,905,776	5,584,500	638,164	461,392	34,589,833
2	28,018,277	5,696,190	650,927	470,620	34,836,014
3	28,131,163	5,810,114	663,946	480,033	35,085,255
4	28,244,293	5,926,316	677,225	489,633	35,337,467
5	28,357,511	6,044,842	690,769	499,426	35,592,548
6	28,470,644	6,165,739	704,584	509,415	35,850,383
7	28,583,504	6,289,054	718,676	519,603	36,110,837
8	28,695,881	6,414,835	733,050	529,995	36,373,761
9	28,807,547	6,543,132	747,711	540,595	36,638,984
10	28,918,251	6,673,994	762,665	551,407	36,906,317
11	29,027,718	6,807,474	777,918	562,435	37,175,545
12	29,135,647	6,943,624	793,477	573,684	37,446,431
13	29,241,709	7,082,496	809,346	585,157	37,718,709
14	29,345,545	7,224,146	825,533	596,860	37,992,085
15	29,446,763	7,368,629	842,044	608,798	38,266,234
16	29,544,935	7,516,002	858,885	620,974	38,540,794
17	29,639,593	7,666,322	876,062	633,393	38,815,370
18	29,730,230	7,819,648	893,583	646,061	39,089,523
19	29,816,292	7,976,041	911,455	658,982	39,362,771
20	29,897,177	8,135,562	929,684	672,162	39,634,585
Totals	578,958,456	135,688,662	15,505,703	11,210,624	**741,363,445**

Table 5

Schedule for the Bajagua Project
Task Durations for Implementation of the Bajagua Project

Task	Duration	Estimated Completion Date
FY 08 Budget is signed		December 26, 2007
GAO Report Issued	4 months	April 24, 2008
Finalize RFP (Mexican Agency Preliminary Approval – Final Approval Based on DBO Contract Negotiations) Resolution with Mexico on: 1. Site and Right of Way Availability, Title, Absence of Claims/Lawsuits 2. Construction within Right of Way 3. Mexican Environmental Disclosure Requirements 4. Effluent Ownership 5. Biosolids Disposal and Ownership 6. Odor Control 7. Flood Control 8. Water Use Permit 9. Wastewater Concession	7 months (from December 26, 2007)	July 26, 2008
Develop Technical Memorandum for NEPA Compliance with M311SP Site Changes	6 months (from December 26, 2007)	July 26, 2008
Finalize RFP Language, Issue RFP	1 month	August 26, 2008
DBO Contractor Proposal Preparation/Submittal	2 months	October 26, 2008
RFP Cost Proposal Review	2 months	December 26, 2009
Negotiate with Preferred Contractor/Finalize DBO Contract.	3 months	March 26, 2009

Task	**Duration**	**Estimated Completion Date**
Develop and Finalize Implementation Minute for M311SP Project	13 months (from April 26, 2008)	May 26, 2009
Award DBO Contract	1 month	June 26, 2009
Construction	19 months	February 26, 2011
Issue NPDES Permit	NLT	February 26, 2011
Testing and Commissioning of Plant	1 month	March 26, 2011

Comments:

a) Assumes Mexico has no significant changes or new requirements to the RFP.
b) Assumes aggressive schedule on the part of Bajagua and IBWC to evaluate RFP proposals and award contract.
c) Assumes Fee for Services contract can be negotiated and signed with no appropriation by Congress.
d) Assumes negotiations with Mexico and implementation Minute(s) can be developed, signed and brought into force an abbreviated timeframe. Previous Minutes relating to the treatment of Tijuana sewage took on average 3 years to conclude.
   This also assumes U.S. and Mexican Government approval of the Minute(s).
e) Assumes all design and construction work can be completed in a 19-month timeframe as proposed by Bajagua.

Description of Secondary Facilities in the United States

Secondary treatment facilities would be constructed at the SBIWTP to treat 25 mgd of wastewater currently being treated to the advanced primary level with ocean discharge through the SBOO. Secondary treatment facilities would be constructed at the existing SBIWTP site and at a portion of the adjoining 40-acre site, referred to locally as the Hofer site. This alternative would use activated sludge as the secondary treatment process, which is consistent with the original plant design and compatible with the existing advanced primary facilities. The capacity of the facilities would be expanded to accommodate peak flows. There would be no need for additional pipelines or pump stations. The USIBWC owns all of the land required to construct the secondary treatment facilities and there would be room to expand capacity up to 100 mgd in the future. There are no odor or vector problems associated with this technology.

Cost Estimates for Secondary Facilities in the United States

The plans and specifications for the secondary plant were delivered in late 1996 and the final opinion of probable cost for the secondary plant was $56.2 million. The secondary plant design included aeration tanks, secondary clarifiers, dissolved air flotation units, an unstabilized sludge storage tank, yard piping, a blower building, operations and maintenance building and administration building/lab, electrical and instrumentation work, and associated civil site work. In preparing its FY 2008 budget request the USIBWC estimated the current cost for completion of secondary facilities to be $94 million. In 2008, USIBWC contracted with an independent contractor to update the design to current standards and modify the design to provide for a nominal peaking factor of 2.0 in the secondary tankage. In March 2008, the contractor provided two technical memoranda on the design and on updating the conceptual design for a scalable project to 100 mgd plant capacity. The opinion of probable cost developed by the contractor for 25 mgd secondary facilities in FY 2008 dollars is $101 million, including possible construction change orders and contract administration costs. Of this amount $66 million has been appropriated to USIBWC's construction account in the FY2008 budget, and $28 million has been requested in the 2009 budget.

Timelines for Secondary Facilities in the United States

The timelines for activities relating to construction of secondary treatment in the United States are shown in Table 6. Proposed construction time for the secondary plant as designed by the original design contractor was 26 months. An independent contractor, who is currently reviewing and updating that design, has proposed a duration of 24 months for construction, with commissioning and testing targeted for completion by the end of January 2011.

Table 6

South Bay International Wastewater Treatment Plant
Preliminary Opinion of Probable Construction Cost of 25 MGD

	COMPONENT	1994 Construction Cost by MPI	Opinion of Construction Cost
1	Headworks		Not Required
2	Primary Sedimentation Area	$32,000	Not Required
3	Activated Sludge	$19,837,000	$28,971,173
4	Blower Structure	$5,095,000	12,630,395
5	Secondary Sedimentation Tanks	14,971,000	26,054,265
6	Unstabilized Sludge Storage Facilities	1,578,000	2,551,275
7	Waste Activated Sludge Facilities	1,831,000	3,503,343
8	Biosolids Processing Facility (Belt Presses)		Not Required
9	Chlorine Facility Modifications	51,000	85,625
10	Chlorine Contact Tank		Not Required
11	Main Switch Gear/Maintenance Building	1,771,000	2,161,776
12	Administration/Laboratory/Control Bldg	3,497,000	4,370,628
13	Site Work/Yard Piping	2,472,000	4,888,908
14	Utilities/Site Power	3,011,000	4,912,500
15	Standby Generation Facility	946,000	2,430,000
16	Plant Instrumentation & Control		1,200,000
17	Subtotal	55,092,000	93,029,888
18	Mobilization (2%)	1,101,840	1,860,597
20	Subtotal Construction (BID)		94,890,485
21	Construction Administration Services (3%)		2,846,715
22	Change Orders (4%)		3,795,619
23	**Total for Budgeting**	**56,200,000**	**101,532,819**

Table 7

Task Durations for Implementation of Secondary Treatment in the United States

Task	Duration	Estimated Completion Date
FY 08 Budget is signed		December 26, 2007
GAO Report Issued	4 months	April 24, 2008
Finalize Plans and Specifications	5 months (from January 15, 2008)	June 24, 2008
Develop and Issue Revised ROD (includes 30 day comment period)	3 months (from April 15, 2008)	July 15, 2008
Develop and Issue Solicitation Document	1.5 month	August 7, 2008
Bidding Period	3 months	November 7, 2008
Contract Award & Notice to Proceed	2 month	January 5, 2009
Construction Period	24 months	January 5, 2011
Testing and Commissioning	1 month	January 31, 2011

Comments:

Assumes that contract can be awarded with less than full appropriation of $94M.

Conclusion

The two secondary treatment projects under consideration, SBIWTP upgrade and the Bajagua Project, present several main differences with each project presenting advantages and disadvantages. The SBIWTP upgrade is clearly the most cost-effective means of achieving secondary treatment of 25 mgd of effluent from the existing advanced primary plant. The USIBWC also believes that it can be implemented faster than the Bajagua Project, given the great uncertainties inherent in implementing a project in Mexico. The need to obtain multiple approvals and concessions from various levels of governments in Mexico, the need to comply with Mexican law, and the need to negotiate additional implementing Minutes, in addition to the significant unresolved issues regarding the proposed operating lease contract between Bajagua and the USIBWC, makes the Bajagua project inherently more cumbersome than completing secondary facilities in the United States. From an engineering perspective, completing the SBIWTP to secondary at the existing site is the better technical solution and involves fewer risks and contingencies.

In addition, there are significant issues unresolved with respect to Bajagua's NPDES permit application. The San Diego Regional Quality Control Board has raised issues regarding the permitting authority needed to require that sewage collection and conveyance inflows to the proposed Bajagua facilities in Mexico comply with U.S. federal pretreatment requirements. The Regional Board has also raised concerns over issuing a permit for a Mexican facility when it does not have the authority to conduct inspections at the Mexican facility to ensure compliance with U.S. federal and California State law.

A key advantage of the Bajagua Project is that it provides treatment capacity for 59 mgd, rather than 25 mgd. Although there is conflicting data as to when this additional treatment capacity will be needed, it is clear that as Tijuana grows there will be the need for additional treatment capacity in the future. Although the capacity of the SBIWTP upgrade is planned for 25 mgd, the facilities and site allow for potential future expansion to treat 100 mgd. However, a disadvantage of the Bajagua Project is that this additional capacity comes at a price, making the Bajagua Project significantly more costly than the SBIWTP upgrade, although the costs to the U.S. Government will be spread out over 20 years.

While the Bajagua Project has the potential for water reuse, it is not certain that a market exists for secondary treated water or whether Mexico would be willing to fund the costs of a reclamation plant to bring the effluent to

a tertiary standard. As IBWC Minute No. 311 makes clear, ownership and disposition of wastewater from Tijuana treated or untreated remains under the jurisdiction of the Government of Mexico and decisions on the fate or reuse of the effluent from the Bajagua Project will be made solely by the Government of Mexico.

In weighting the advantages and disadvantages of both projects, the USIBWC believes that the SBIWTP upgrade is the best option at this time, given the available appropriations, the timeframe for implementation, and the certainty that the USIBWC can bring the project to completion and continued operation.