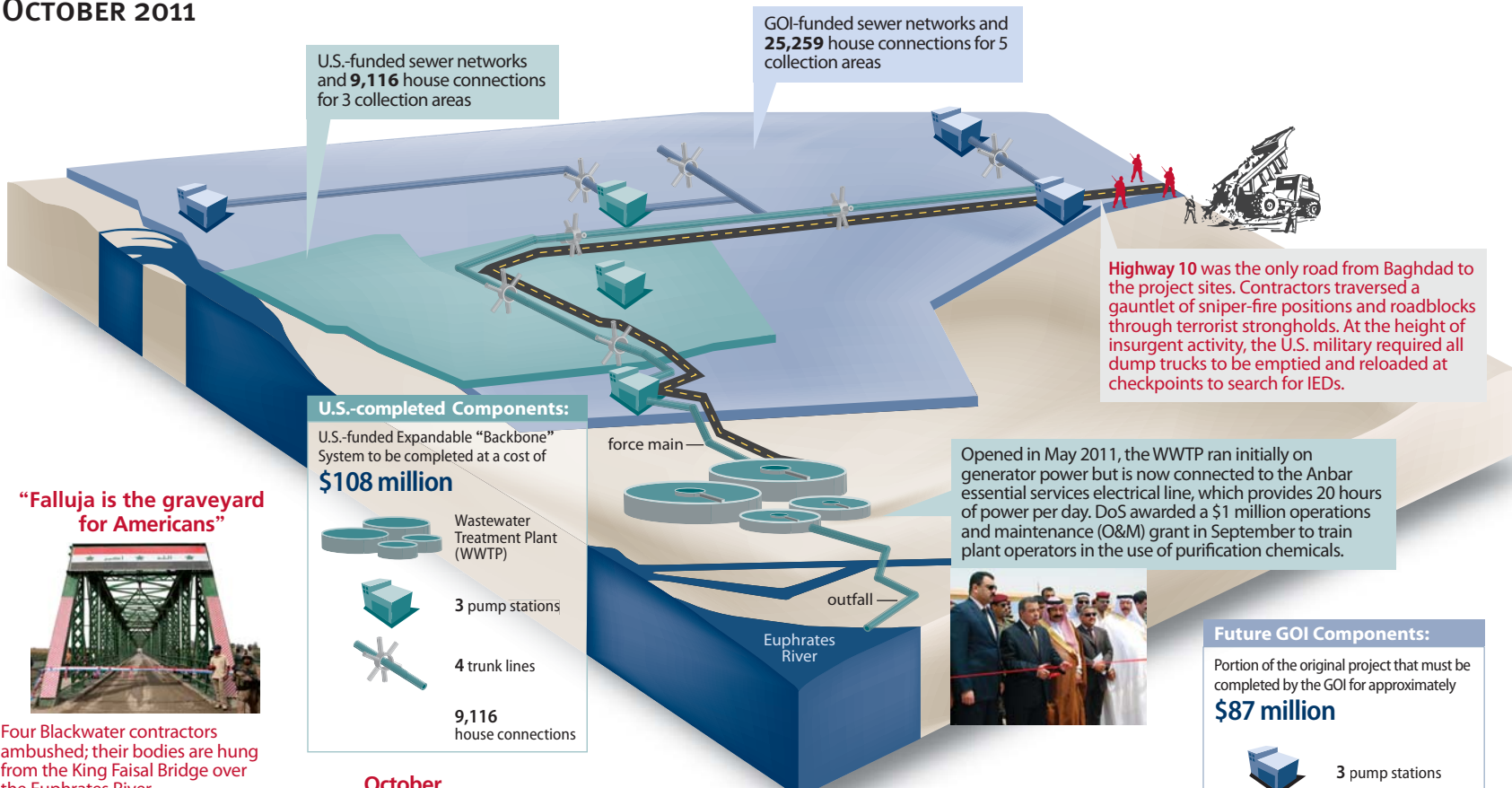




## FALLUJA WASTE WATER TREATMENT SYSTEM A CASE STUDY IN WARTIME CONTRACTING

For the sources of information used to create this Insert, please see the last endnote in this Quarterly Report.



**"Falluja is the graveyard for Americans"**



Four Blackwater contractors ambushed; their bodies are hung from the King Faisal Bridge over the Euphrates River.

**An insurgent sanctuary: 3,000-4,500 insurgent fighters**

**April** Al-Qaeda in Iraq and other militants using the city as a terrorist supply center

**60 of 100 mosques used as weapon caches or fighting positions**

**11 IED factories**

**203 weapon storage areas**

**October** Operation al-Fajr: 1,200 insurgents killed, 1,000 captured; 70 U.S. troops killed, 609 injured; tanks, heavy machine guns, and air strikes rupture water and sewer lines, and destroy pump stations and electrical infrastructure.

**"The smell of death was everywhere."**

**Quarterly Security Incidents in Anbar Province, 2004-2007**

591



4,400 Q3-Q4

**October** Three Iraqi engineers killed

The success of the Anbar Awakening/Sons of Iraq and U.S. military surge vastly improved security, but Falluja has been the site of numerous security incidents.

218

	2004	2011	2014
	Initial Estimate	Snapshot	Estimated Completion
<b>Cost</b>	\$35 M	\$108 M <span style="color:red">▲ 209%</span>	\$195 M <span style="color:red">▲ 457%</span>
<b>Months to Completion</b>	18	88 <span style="color:red">▲ 389%</span>	114 <span style="color:red">▲ 533%</span>
<b>Residents Served</b>	100,000 (estimated)	38,400 (58,300 target) <span style="color:red">▼ 62%</span>	220,000 (estimated) <span style="color:red">▲ 120%</span>
<b>Contracts/Grants</b>	1	42 <span style="color:red">▲ 4,200%</span>	42+GOI <span style="color:red">&gt; 4,200%</span>



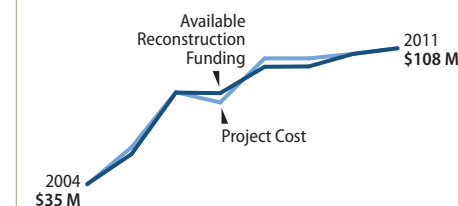
Before: Sewage in the streets in 2004

After: Completed WWTP in 2011

The Falluja Waste Water Treatment System was meant to rid Falluja's city streets of raw sewage, alleviate contamination of essential water sources, and reduce the instances of illness and death linked to poor sanitation. But the project was undertaken in a city wracked with violence, with almost no planning, with minimal understanding of site conditions, with an unskilled workforce and no clear idea about how much the system would cost. Violence was so prevalent that trenches and pipes laid by U.S. contractors were being blown up and workers killed. Several times, the U.S. military had to direct the contractor to stop construction until security could improve. There were so many adverse conditions facing this project, it is hard to understand why it was initiated and pushed forward:

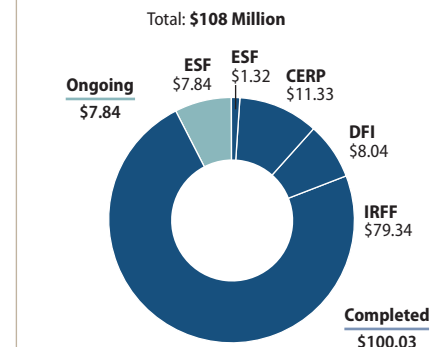
- Necessary site assessments could not be performed before or after award.
- The original task order required FluorAMEC to complete the system in 18 months, but because of late start and security delays, construction did not start until early 2005—leaving less than a year for actual work.
- The 2005 U.S. program shift of \$2.2 billion out of the water sector occurred just as more money was needed to complete the system.
- The choice of a more complicated plant design and the lack of reliable power from the grid made for a costlier solution.
- In mid-2005, the shift from large design-build contracts to smaller contracts carried out by many Iraqi contractors (under the Iraqi First Program) meant that delays or failures of one contractor would compromise the success of the entire project.

**Project Cost versus Available Reconstruction Funding, 2004-2011**  
\$ Millions



Project cost was set at funds available—not the amount needed to complete or sustain the system. The cost of water projects was underestimated by at least 25%-50% in the U.S. reconstruction program.

**Project Cost, by Fund, as of 7/8/2011**  
\$ Millions



Note: Numbers affected by rounding. Two ESF grants—one to complete house connections and fund two additional trunk lines, and one to provide O&M training for WWTP operators—remain ongoing.

2004

2005

2006

2007

2008

2009

2010

**June** FluorAMEC awarded **\$28.6 million** design-build task order to design, procure, construct, and commission the system in 18 months

**October-December** Project halted by the U.S. Marines for security reasons

**March** FluorAMEC estimates cost to construct a portion of the project will run \$51.3 million

**September** U.S. government de-scopes FluorAMEC contract

**August** The GOI's Ministry of Municipalities and Public Works (MMPW) rejects the oxidation-lagoon design of the plant 14 months into the project

**November** U.S. government agrees to mechanical sludge-process plant

**February** Original completion date of project

**By August** Funding allocated for the system totals **\$84.4 million**; U.S. government sees potential obstacle of delinquent DFI payments

**December** The GOI authorizes \$18 million of the Development Fund for Iraq to be used for construction

**April** USACE provides four project scope options costing \$55.5 million-\$112.2 million; funds available only for baseline option

**April-June** U.S. Marines suspend all project trench excavations due to threat of IEDs; for security reasons, work stops on 5 of 17 contracts

**November** U.S. government finally chooses a project scope; approximately **\$97 million** available from multiple sources

**December** U.S. government terminates DFI contracts and awards new contracts with IRRF funds

**August** As of August 2008, five DFI contracts had outstanding balances of \$2.3 million; from summer 2006 through 2009, project experienced significant construction delays due to Ministry of Finance's non-payment of DFI-funded contracts

**October** SIGIR Inspection identifies shortfalls in project scope and significant sustainment issues

**Early 2009** U.S. government holds discussions about terminating the project

**Final Project Scope, August 2009:** U.S. government focuses on completing an expandable "backbone" system, decreasing number of homes within the three collection areas as well as the number of trunk lines



Miles of unfinished trench excavations blocked city streets for years. Lack of site assessments led to nightly flooding, and insurgents used the open ditches to plant IEDs. USACE terminated a contract for additional excavations and expedited completion of existing projects.

**March** U.S. government awards a \$4.6 million grant to the GOI for 9,116 house connections

**October** MMPW proposes to commit \$87 million to complete full build-out (by 2014) if the U.S. government increases grant by \$3.0 million to cover additional trunk lines