



USAID
FROM THE AMERICAN PEOPLE

OFFICE OF INSPECTOR GENERAL

**AUDIT OF USAID/IRAQ'S
WATER AND SANITATION
REHABILITATION ACTIVITIES**

AUDIT REPORT NO. E-267-05-004-P
June 30, 2005

WASHINGTON, DC



USAID
FROM THE AMERICAN PEOPLE

Office of Inspector General

June 30, 2005

MEMORANDUM

TO: USAID/Iraq Mission Director, Dawn M. Liberi

FROM: Regional Inspector General, Baghdad, Christine M. Byrne /s/

SUBJECT: Audit of USAID/Iraq's Water and Sanitation Rehabilitation Activities
(Report No. E-267-05-004-P)

This memorandum transmits our final report on the subject audit and contains no recommendations. We received your comments on the draft report and included those comments as Appendix II.

I want to express my sincere appreciation for the cooperation and courtesy extended to my staff during the audit.

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SUMMARY OF RESULTS

According to various U.S. Government reports, Iraq's water treatment and sewage facilities are operating at considerably less than normal capacity. To restore essential water and sanitation services to the Iraqi people, USAID awarded Bechtel National, Inc. two contracts to rehabilitate, repair, and reconstruct water treatment plants, distribution systems, pump stations, wastewater collection systems and treatment plants, and solid waste collection equipment and disposal facilities. Both contracts support USAID's Iraq Infrastructure Reconstruction Program. (See page 2.)

The Regional Inspector General in Baghdad, Iraq, conducted this audit to determine (1) whether USAID/Iraq's water and sanitation rehabilitation projects were achieving their intended outputs; and (2) whether USAID/Iraq was addressing institutional capacity-building in its projects to rebuild and rehabilitate Iraq's water and sanitation sector infrastructure. (See page 3.)

USAID/Iraq's water and sanitation rehabilitation projects were achieving their intended outputs with some exceptions. Of the 34 projects reviewed, 30 of them, or 88 percent, achieved or were achieving their intended outputs. Four projects, or 12 percent, were not for reasons that were beyond the control of the Mission. (See page 4.)

Regarding the second objective, for the projects tested, USAID/Iraq was addressing the issue of capacity-building in its projects to rebuild and rehabilitate Iraq's water and sanitation infrastructure through the provision of training and operational manuals. There were, however, barriers to capacity-building, including the lack of local skilled personnel and financial resources. The audit noted that the Mission has already taken steps to institute operations and maintenance support and training at the plant level in order to preserve the U.S. Government's investment. (See page 9.)

This report has no recommendations.

USAID/Iraq concurred with the audit findings. Management comments are included in their entirety in Appendix II.

BACKGROUND

According to various U.S. Government reports, Iraq's water treatment and sewage facilities are operating at considerably less than normal capacity. To restore essential water and sanitation services to the Iraqi people, USAID awarded Bechtel National, Inc. (Bechtel) two contracts to rehabilitate, repair, and reconstruct water treatment plants, distribution systems, pump stations, wastewater collection systems and treatment plants, and solid waste collection equipment and disposal facilities.¹ Both contracts support USAID's Iraq Infrastructure Reconstruction Program (IIR).

USAID awarded the first contract (Phase 1) to Bechtel on April 17, 2003. It was initially valued at \$680 million and was increased to approximately \$1.03 billion on September 30, 2003. This contract included assessment and repair of power generation facilities, electrical grids, and water and sewage systems. The second contract (Phase 2), in the amount of \$1.8 billion, was awarded on January 5, 2004. The original intent of this Phase 2 contract was to serve as a "bridge" between the reconstruction work funded under Phase 1 and the bulk of the work that would eventually be funded under Phase 2.

On June 3, 2004, the Office of Inspector General issued audit report number E-266-04-002-P, "Audit of USAID/Iraq's Infrastructure Reconstruction and Rehabilitation Program", which covered all infrastructure sectors under Bechtel's first contract. That report determined that 64 out of 72 Phase 1 projects (89 percent) were on schedule to achieve planned outputs and that USAID/Iraq was taking aggressive actions to address scheduling issues impacting the delayed eight projects (including two water and sanitation projects). However, the report did contain four recommendations to improve certain management weaknesses identified by the audit.

The focus of the current audit is specifically on the status of water and sanitation rehabilitation projects under both Phase 1 and 2.

USAID/Iraq's Infrastructure Office manages the water and sanitation rehabilitation activities. The Mission entered into an agreement with the U.S. Army Corps of Engineers (USACE) to oversee, monitor, and report progress of rehabilitation activities. Additionally, under Phase 2, the primary Bechtel subcontractor responsible for implementing water and sanitation activities is Parsons Infrastructure & Technology Group (Parsons).

According to USACE records, as of January 31, 2005, approximately \$139 million and \$231 million have been budgeted for water and sanitation projects under the Phase 1 and Phase 2 contracts, respectively. As of January 31, 2005, combined cumulative obligations and disbursements under both contracts totaled approximately \$2.4 billion and \$1.0 billion, respectively.

¹ These two contracts also provide for other infrastructure rehabilitation projects for electrical service, telecommunications, and bridges.

AUDIT OBJECTIVES

This audit was conducted as part of the Regional Inspector General, Baghdad's fiscal year 2005 audit plan. The audit was designed to answer the following questions:

- Are USAID/Iraq's water and sanitation rehabilitation projects achieving their intended outputs?
- Is USAID/Iraq addressing institutional capacity-building in its projects to rebuild and rehabilitate Iraq's water and sanitation sector infrastructure?

Appendix I contains a discussion of the audit's scope and methodology.

AUDIT FINDINGS

Are USAID/Iraq's water and sanitation rehabilitation projects achieving their intended outputs?

USAID/Iraq's water and sanitation rehabilitation projects were achieving their intended outputs with some exceptions. Of the 34 projects reviewed, 30 projects, or 88 percent, were achieving their intended outputs while 4 projects, or 12 percent, were not because of security conditions, access to site problems, and lack of local government cooperation.

The 30 projects that achieved or were achieving their intended outputs were comprised of 14 closeout and 16 active (ongoing) projects. A project is in closeout status when it is substantially complete, that is, when the work has been completed and accepted by USAID. The 30 projects, either directly or indirectly, have benefited or will benefit the Iraqi people by increasing the supply and improving the quality of potable water and decreasing health hazards posed by untreated sewage. The following examples illustrate the benefits resulting from the rehabilitated water and sanitation facilities:

- The Kirkuk Water Treatment Plant provides clean drinking water to approximately 375,000 inhabitants of Kirkuk.
- The Sweet Water Canal pump stations have improved the quality of water being delivered to the Basrah region thus benefiting about 1.8 million Iraqis.
- The Basrah International Airport Sewage Treatment Plant has decreased public health risks by preventing sewage from being discharged to storm drains.

When the auditors visited the Rustimiyah North Wastewater Treatment Plant, they observed, in operation, one of the eight aeration tanks that are being rehabilitated. According to a USACE progress report, the Rustimiyah North Wastewater Treatment Plant, when completed, will provide wastewater treatment for approximately two million Iraqis.

On a site visit to the Shark Dijlah Water Treatment Plant, the auditors saw, in operation, one of the six new clarifiers installed under Phase 1 of the USAID Iraq Infrastructure Reconstruction Program. Once completed, according to Bechtel's project engineer, this project will add about 55 million gallons per day of potable water distributed to the city of Baghdad.



Photograph of one of the eight rehabilitated aeration tanks in operation at the Rustimiyah North Wastewater Treatment Plant funded under USAID/Iraq's Iraq Infrastructure Reconstruction Program. (Baghdad, Iraq; April 2005)



Photograph of one of the six new clarifiers installed at the Shark Dijlah Water Treatment Plant under USAID/Iraq's Iraq Infrastructure Reconstruction Program. (Baghdad, Iraq; March 2005)

As stated in the answer to the audit objective above, four water and sanitation projects were not achieving their intended outputs as discussed below:

Intended Outputs Were Not Always Being Achieved

Summary: Of the 34 water and sanitation rehabilitation projects reviewed, four projects (12 percent) were not achieving their intended outputs. All four projects encountered performance problems because they were located in areas that were deemed non-permissive due to precarious security conditions, and with a few of these projects hampered by the lack of cooperation from the local government to provide safe access during the projects' implementation. As a result, some projects will either no longer be providing clean drinking water or reducing the health risks associated with untreated sewage and/or will be significantly delayed in doing so.

The job order (JO) is a USAID document that authorizes Bechtel to implement a project. The job order defines the project's scope of work, estimated completion date, estimated cost, and terms of performance. Any revisions to the job order's specifications must be approved by USAID through the issuance of an amendment. To answer the audit objective, the job order and its amendments were used in reviewing the 34 water and sanitation rehabilitation projects that have an initial combined budget of approximately \$370 million as of January 31, 2005. (See Appendix III.)

The review showed that 4 of the 34 projects (12 percent) did not achieve or were not achieving their intended outputs. The four projects had an initial budget of approximately \$115 million, or 31 percent of the total budget for the 34 projects. The biggest problem that beset all four projects was the precarious security conditions at the project sites, thus impeding performance. Compounding the problem for a few projects was the lack of cooperation from the local government to provide safe access to the project sites during the projects' implementation. These problems prevented the four projects from achieving their intended outputs. They are discussed below.

- **Baghdad Governorate Municipal Solid Waste Landfill (JO-04-502):** This project, costing approximately \$14.2 million, covered the design and operations plan for an initial 3 to 5 year capacity landfill and a Master Plan for a 20-year landfill. Bechtel, through its subcontractor, Parsons Infrastructure & Technology Group (Parsons), was to perform the design, execution, equipment installation, training, start-up, and commissioning of the landfill facility after it had identified and assessed a proper site. The project's period of performance was from February 2004 through January 2005, which was later extended to March 2005.

In March 2005, a little more than a year after its start, the project was still ongoing. In April 2005, according to Bechtel, \$3.6 million had been spent on the project for geotechnical studies, engineering, and equipment that, according to a Mission senior advisor, was sitting idle in Kuwait.

Bechtel considered 14 possible sites, but work at these sites was unfeasible because of security issues, which affected safe access to the sites. The secondary cause of the problem was the lack of local government cooperation to provide safe access to the sites. Lastly, land ownership issues became a problem as well. In regard to security, for example, the Abu Ghraib site was not

selected because of security issues. Furthermore, security was also a factor when safe access to the sites posed some problems because either private citizens or squatters were occupying the land, and the local government failed to provide safe access to those sites. Lastly, because private citizens were occupying the sites, land ownership became an issue. Of the 14 sites considered, three were assessed to date, but none were selected for reasons shown in the following table:

| No. | Proposed Site | Reason Site was not Selected |
|-----|---------------|--|
| 1 | Abu Ghraib | Security issues. |
| 2 | Kan Bani Saad | Issues between the local sheikhs and government officials. |
| 3 | Al-Thawra | Access issues, land ownership problems, the existence of squatters, and high water table precluded construction. |

A former Mission official confirmed that the issue of land ownership has not been resolved. He stated that money has been spent on assessments of possible sites for the landfill but the project was not getting sufficient support from the Baghdad Amanat.² A Mission senior advisor added that the Baghdad Amanat never considered the project a priority and, therefore, did not fulfill its responsibility. A USACE manager had the same opinion, mentioning that several sites were considered but ruled out due to the issue of land ownership. And, in a recent interview with the Mission senior team leader, he expressed doubt that an appropriate site could ever be identified given the lack of support from the Baghdad Amanat. He confirmed that Bechtel has considered 14 possible sites for the landfill but most sites were deemed inadequate because of land ownership issues (i.e., private citizens were occupying the land). The Baghdad Amanat was responsible for obtaining safe and appropriate access to the sites selected, but it was uncooperative and was either unable or unwilling to do so. All above-mentioned officials expressed doubt that an appropriate site would be identified given the lack of support from the Baghdad Amanat.

As a result, neither Bechtel nor Parsons was able to adequately assess the remaining sites. On May 19, 2005, USAID/Iraq amended the job order deleting from the scope of work items that were not already completed due to the land ownership problems and severe security concerns. This amendment reduced estimated costs from \$14.2 million to \$4.1 million. In addition, the amendment stated that by July 30, 2005, all the procured equipment would be sent to Kirkuk Air Force Base where, according to the Mission senior team leader, it would be used at a landfill that the Kirkuk Director General was developing on its own.

On June 2, 2005, Bechtel's Chief of Party in Baghdad confirmed that two groups of procured equipment (e.g., tractor crawler, dump truck, compactors) were in transit from Baghdad International Airport and Jordan to Kirkuk. According to a USACE official, the Mission and Bechtel have reached an agreement to store the mobile camps at Bechtel's Basrah camp until such time when a decision is made regarding their disposition.

² An Amanat is the equivalent of a municipality.

- **Rural Water Supply Project (JO-04-509):** According to a USACE official, the objective of this project was to build 150 new potable water supply facilities in rural areas in order to increase the availability of safe, reliable drinking water to communities throughout Iraq with populations of less than 5,000. The scope of work included assessing and selecting sites, designing, furnishing, constructing, commissioning, testing and providing training for the new facilities. USAID/Iraq approved the job order request in June 2004. The project, which has a budget of approximately \$84.7 million, was estimated to be completed in November 2005. Two Mission officials stated that USAID/Iraq was in the process of amending the job order and scaling down the number of sites from 150 to 110 well sites. In April 2005, the job order was amended to extend the completion date to April 2006 and reduce the estimated cost to \$73.0 million.

A Bechtel report disclosed that the project's completion was delayed due to factors beyond its control including security conditions that impeded conducting site investigations and obtaining unexploded ordinance clearances for selected sites, as well as changes made by the local water directorate in selected sites.

Security concerns in the northern region of the country have prevented the investigation of sites and have impacted the construction of wells. Well drilling and development activities in two other regions of the country were put on hold in January 2005 due to security concerns during the Iraqi national election. Also, the field staff did not travel to the remote sites during the same period due to the security situation. As a result, there were significant delays in conducting site investigations and obtaining unexploded ordinance clearances for the new sites in two governorates.

In May 2005, USAID informed Bechtel that of the 69 sites that were considered active, only 35 sites were actually providing water through wells. Of the remaining 34 sites, according to USACE personnel, Parsons was working in only 22 of those sites. Consequently, on May 24, 2005, the Mission's contracting officer officially directed Bechtel to suspend work until further directed by USAID, and requested Bechtel to develop alternatives that will put the project back on track. In the meantime, the original target of building 150 new potable water supply facilities in the rural areas will not be accomplished.

- **Irrigation and Drainage Pump Stations (JO-04-507):** The original objective of this project was to restore the capacity of seven pump stations located in the agricultural regions of Babylon, Anbar/Ramadi, and Ninewa/Al Jazira, in order to provide reliable water supply for food crop irrigation. The project, with an estimated cost of \$10.4 million, started in May 2004 and was expected to be completed in July 2005.

However, in January 2005, Bechtel reported that the construction sites at four of the seven pump stations were deemed non-permissible for security reasons. A USACE report confirmed that security conditions at the projects' sites have made them non-permissible areas. Consequently, USAID/Iraq directed Bechtel to discontinue work at those sites.

In March 2005, during interviews, USAID and USACE officials confirmed the previous reports that the four sites were deemed non-permissive due to security issues. They said that an agreement was reached with the local government wherein USAID would procure the equipment for three pump stations and deliver them to the local government, who would then be responsible for their installation. Consequently, in April 2005, the job order was amended to reflect a change in the project's scope of work, which was reduced to completing site assessments for up to five pump stations and procuring equipment for the remaining three pump stations. The amendment also reduced the project's estimated cost by \$5.3 million, from \$10.4 million to \$5.1 million. As a result, the project failed to restore the capacity of the pump stations as originally planned.

- **Al-Wadha Nos. 1, 2, and 3 Pump Stations (JO-04-508):** This project's original scope of work was to restore three irrigation pump stations in the Al-Wadha region of the Baghdad governorate. This project would have benefited over 5.5 million people in the Baghdad governorate by providing a reliable water supply for food crop irrigation. Started in June 2004, the project was estimated to be completed in August 2005 at a cost of about \$5.9 million.

But, in January 2005, Bechtel reported that a number of factors were causing performance delays including security conditions. This has caused delays in traveling to and from the sites for the Bechtel staff. USAID and USACE officials added that, due to precarious security conditions, the project sites were deemed dangerous. In addition, there were times when the local ministry did not allow access to the sites, thus hindering the completion of the civil work on site.

Consequently, in April 2005, the Mission approved an amendment to the job order reducing the scope of work to include site assessments, development of an assessment report, and procurement of equipment and their delivery to the Ministry of Water Resources, who would then be responsible for their installation. This amendment reduced the project's estimated cost from \$5.9 million to \$5.3 million. Unfortunately, the project failed to restore three irrigation pump stations in the Al-Wadha region.

The four projects discussed above did not fully contribute to increasing and improving the quality of potable water supply facilities, restoring proper sanitation and decreasing the public health risks associated with it, and increasing agricultural harvests. However, since the projects' failure to achieve their intended outputs was caused mainly by the precarious security conditions in Iraq and the lack of local government cooperation to provide safe and unobstructed access to some of the projects' sites, we determined that these causes were beyond the control of USAID/Iraq and its implementing partners. Therefore, we are not issuing a recommendation.

Is USAID/Iraq addressing institutional capacity-building in its projects to rebuild and rehabilitate Iraq's water and sanitation infrastructure?

For the items tested, USAID/Iraq was addressing institutional capacity-building in its projects to rebuild and rehabilitate Iraq's water and sanitation infrastructure.

Both USAID Phase 1 and 2 contracts require Bechtel to provide technical assistance and training to build the capacity for effective operations and maintenance of the potable water and wastewater treatment facilities, solid waste management services, irrigation systems, and other program activities. In addition, the Phase 2 contract requires Bechtel to provide training at all facilities where projects are implemented and to assess the level of training that the workers will need and complete manuals in Arabic for all equipment and systems. Based on these assessments, Bechtel should conduct sufficient training, if needed, and provide complete operations and maintenance manuals.

To determine if Bechtel was complying with the contracts' requirements, we reviewed the training documents for the 34 projects in the audit universe. Bechtel assessed that 30 of the 34 projects required training and operations and maintenance (O&M) manuals. The 34 projects were comprised of 20 active and 14 closeout projects. In the review of the 20 active projects, there was evidence that Bechtel assessed the training needs for the projects by preparing the draft job order training (JOT) worksheets. For 11 of the 20 projects, Bechtel explained that training had not commenced, and that they were waiting for USAID to approve the draft JOT worksheets. For the remaining nine projects, there was evidence that training for five projects was ongoing at the time of our fieldwork. Regarding the remaining four projects, there was documentation that training for two projects was completed and no training was required for the other two projects.

In reviewing the training documents for the 14 closeout projects, Bechtel assessed the training needs for the projects by developing the JOT worksheets. There was also evidence that two projects did not require training because (a) one project had a qualified workforce; and (b) one other project was a concept design for the rural water project. From the remaining 12 projects, we judgmentally selected six projects (50 percent) and reviewed their training documentation. We found evidence that Mission officials and staff agreed with Bechtel's evaluation of the needs and plans for O&M training as contained in the draft JOT worksheets. There was also evidence that Mission officials and staff approved the final O&M training package. In addition, we verified that the Mission's training liaison person performed site visits to the project sites to confirm that training was actually given and to solicit feedback from the trainees on the usefulness of the training.

Furthermore, we found evidence that Bechtel provided training in the operations and maintenance of equipment and systems that it installed at the six project sites. Specifically, training indexes for the six sampled projects had a cumulative total of 6,535 hours of training. Bechtel provided them to the staff of the various facilities. For example, Bechtel provided 126.5 hours of training in the operations and maintenance of the pumps, motors, and air blower, to name a few, that it had installed at the Basrah International Airport Sewage Treatment Plant. Similarly, it conducted training in the operations and maintenance of the clarification, filtration, and chemical dosing systems for the employees of the Basrah International Airport Water Treatment Plant. At the Karbala Sewage Treatment Plant, it offered 750 hours of O&M and theoretical training in operations, plant management, and principles of maintenance to the employees of the plant. Additionally, Bechtel trained the employees in the operations and maintenance of the pumps, motors, and generators that it installed at the Sweet Water Canal pump stations. Lastly, at the Al Hillah Sewage Treatment Plant, Bechtel provided the staff over 2,410 hours of training in the facility's O&M of the settling tank, sludge pump station,

drying bed, and laboratory equipment set-up among other things. For the items tested, Bechtel complied with the training requirements of the contracts.

The above actions, however, may not be adequate to ensure the continued operations of the rebuilt infrastructures. The Mission's water and sanitation sector senior advisor stated that Bechtel had successfully conducted O&M training all over the world. However, the training provided by Bechtel in Iraq has not been fully successful for many reasons, including the Government of Iraq's lack of skilled personnel and financial resources. For example, Bechtel's training focused on the equipment and systems that they installed at the rehabilitated plants. In effect, the plants' staff's training was limited to those equipment and systems. Hence, the trained staff was not familiar enough with most, if not all, aspects of the plants' operations. Additionally, these infrastructures are not being supplied with key consumables like chlorine, alum, diesel fuel, motor oil and grease on a regular basis. One Mission staff member, who is responsible for the Rural Water Supply Project, stated that the problem his project will face is the local ministry's lack of budget to operate and maintain the projects properly when completed. The Deputy Minister of the Iraq Ministry of Municipalities and Public Works confirmed that the lack of fuel is a problem. Our site visits to the Rustimiyah North Wastewater Treatment Plant and Rustimiyah South Sewage Treatment Plant also confirmed the same problem. The head of the Rustimiyah Amanat said that the lack of financial resources has been a challenge—resulting in staff shortages. As a result, the Amanat has hired day laborers to keep the plants in operation. He expressed hope that the Rustimiyah Amanat would have the resources to be able to continue importing chlorine since local chlorine was of low quality.

To address some of these challenges, USAID/Iraq has requested USAID/Washington to obligate \$25.0 million for a program whose objective is to help preserve the U.S. Government's investment in the rehabilitated water and sewage treatment facilities by immediately implementing an intensive 12-month program of O&M support and training at the plant level. The program will include outsourcing the O&M plant startup and commissioning support and training to private Iraqi firms specializing in water resource management. They will supply locally hired technical experts, managers, and trainers at each of the facilities where training is needed for up to a year. The remainder of the project funding will be made available to procure consumables, should the Government of Iraq fail to be able to provide them. At the same time, the Mission's three-year strategic plan should complement this O&M program. The three-year strategic plan will include (1) provision of O&M training at the plant level at major water and wastewater treatment plants with emphasis on plants rehabilitated with USAID funds; (2) development of national and regional training programs for technician level skills and operator training in water and wastewater treatment sector; and (3) development of apprenticeship and certification programs and consideration of creating a national training center.

EVALUATION OF MANAGEMENT COMMENTS

USAID/Iraq concurred with the audit findings which included the following:

- The water and sanitation rehabilitation activities were achieving their intended outputs with some exceptions. Of the 34 projects in the audit universe, 30 (88 percent) had achieved or were achieving their intended outputs.
- The Mission was addressing institutional capacity-building in its water and sanitation rehabilitation projects through the provision of training and operational manuals.
- The Mission has already taken steps in overcoming the barriers to capacity-building through a new water and sanitation operations and maintenance program.

Furthermore, USAID/Iraq stated that the findings will be extremely helpful to the Mission in ensuring that their administrative and programmatic operations are in full compliance with USAID policies and regulations, and in managing their resources in the most efficient manner possible.

Management Comments are included in their entirety in Appendix II.

SCOPE AND METHODOLOGY

Scope

The Regional Inspector General in Baghdad, Iraq conducted this audit in accordance with U.S. generally accepted government auditing standards. The audit was designed to answer two questions: (1) Are USAID/Iraq's water and sanitation rehabilitation projects achieving their intended outputs? (2) Is USAID/Iraq addressing institutional capacity-building in its projects to rebuild and rehabilitate Iraq's water and sanitation sector infrastructure?

The audit covered the review of the Mission's water and sanitation sector's projects implemented by Bechtel National, Inc. (Bechtel) under the Iraq Infrastructure Reconstruction Program's (IIR) Phase 1 and Phase 2 contracts during the period April 17, 2003 through January 31, 2005. As of January 31, 2005, the U.S. Army Corps of Engineers' (USACE) Iraq Reconstruction Tracking System (IRTS) database contained 102 job orders, costing approximately \$1.8 billion, of which \$589 million had been expended, for all infrastructure sectors under the contracts.

To conduct the audit, we defined our audit population to include all water and sanitation sector job orders issued under Bechtel's IIR Phase 1 and Phase 2 contracts. Using the IRTS, we generated a report containing all water and sanitation sector job orders funded under the two IIR contracts. From this report, we (1) included job orders that were in "closeout" and "active" status; (2) excluded a job order that was appropriately cancelled; and (3) excluded a job order that was consolidated with another active job order. Based on these selection criteria, we identified a total of 34 job orders consisting of 20 active and 14 closeout job orders, with a combined estimated cost of approximately \$370 million and expenditures of about \$98 million. We examined and assessed the Mission's significant internal controls over the Iraq Infrastructure Reconstruction Program such as Bechtel's Trend Reports and monthly reports, the USACE's monthly Project Review Briefs, field visit reports, and amendments to the job orders. We reviewed the Mission's Federal Managers' Financial Integrity Act reports for fiscal years 2003 and 2004 for those internal controls related to the audit objectives. We also tested the 34 job orders for completeness and accuracy of data as contained in the IRTS database.

Regarding the second audit objective, the concept of addressing institutional capacity does not imply that the institutional capacity-building efforts are adequate and does not ensure the long-term sustainability of the projects.

We conducted the audit at USAID/Iraq in Baghdad, Iraq from January 20 to June 8, 2005. We visited judgmentally selected project sites in Rustimiyah and Shark Dijlah, Iraq. We intended to visit other water and sanitation rehabilitation project sites, but due to the precarious security situation, we had to curtail our site visits.

Methodology

To answer audit objective one, we examined the job orders in closeout status by reviewing documents contained in the IRTS database. A job order was in closeout

status if the Mission considered the project to be substantially complete. For this review, we considered a project to be substantially complete if any of the following USAID documents were issued under the project:

1. Final Inspection Record which indicated that a USAID representative inspected the project and accepted the work.
2. Letter of Substantial Completion which informed Bechtel that USAID considered the project to be substantially complete.
3. Final amendment for job order closeout which indicated the final completion date.
4. Letter of Completion which informed Bechtel that all closeout actions have been addressed and the project was considered 100 percent complete.

Additionally, a water and sanitation project was considered substantially complete when the project was placed into operation, which generally preceded the final inspection.

For the active job orders, we determined if the projects would be completed by the project completion date specified in the job order or its latest amendment as of January 31, 2005 (allowing for a 30-day grace period following this date) or the contracts' expiration dates of June 30, 2005 for IIR Phase 1 and December 31, 2005 for IIR Phase 2, whichever was later. To determine the projects' status and percent of completion, we used Bechtel's weekly power report, monthly report, and weekly trend analysis. Furthermore, we used the USACE's fact sheet and Project Review Brief for the week ending February 6, 2005. In addition, we consulted with the USACE's Water and Sanitation Sector Manager and Project Engineer to provide an assessment of whether the active job orders were on schedule to be substantially complete by the projects' completion dates or the contracts' expiration dates based on the actual status of the projects in relation to key milestones.

In assessing if the active and closeout job orders' intended outputs were achieved, we reviewed the Final Inspection Records which certified that the projects were complete and accepted by USAID. We also interviewed the water and sanitation sector officials from the Mission's Infrastructure Office, the USACE, and Bechtel as well as the Deputy Minister from the Iraq Ministry of Municipalities and Public Works. Furthermore, we conducted site visits, as security permitted. For the purpose of this review, we concluded that the intended output was achieved if the project was determined to have been completed and the output was consistent with the output specified in the job order.

The defined materiality threshold for this audit was 10 percent. To illustrate, if 90 percent or more of the projects reviewed were determined to have achieved their intended outputs as of the end of the contracts, we would state that the projects met their intended outputs without exception.

To answer the second audit objective, we examined Bechtel's job order operations and maintenance (O&M) worksheets to assess if the O&M training activities planned under each job order addressed institutional capacity-building as required by the contracts. We examined training sign-in sheets to determine if training was conducted and checked the Job Order O&M Manual Deliverables Index to determine if operation manuals were issued to the trainees.



Date: June 18, 2005

TO: Christine M. Byrne, Regional Inspector General Baghdad

FROM: Dawn Liberi, USAID/Iraq Mission Director /s/

SUBJECT: Audit of USAID/Iraq's Water and Sanitation Rehabilitation Activities

REF: Audit Report No. E-267-05-00X-P

On behalf of the entire USAID/Iraq staff, I would like to express our appreciation for the conscientious and collaborative effort reflected in the subject Audit report. The findings will be extremely helpful to the Mission as we work to ensure that our administrative and programmatic operations are in full compliance with USAID policies and regulations, and that our resources are managed in the most efficient manner possible.

Through this memorandum, USAID/Iraq provides its formal concurrence with the audit findings, which include the following:

- The audit found that the water and sanitation rehabilitation activities were achieving their intended outputs with some exceptions. Specifically, of 34 audit universe activities, 30 (88 percent) had achieved or were achieving their intended outputs.
- The audit found that the Mission was addressing institutional capacity-building in its water and sanitation rehabilitation projects through the provision of training and operational manuals.
- The audit also noted that while there were some barriers to capacity building, the Mission has already taken steps to overcome these barriers through a new water and sanitation operations and maintenance program.

The audit issued no recommendations.

Again, USAID/Iraq would like to express its appreciation to the Regional Inspector General's Office for its professionalism, and for the valuable information included in the subject report.

cc: Amy Fawcett, USAID/Iraq Controller

APPENDIX III

WATER AND SANITATION PROJECTS REVIEWED

(Audit Universe)

| Item No. | JO No. | Project Title | Budgeted Cost as of 1/31/05 | Fund Source | Status |
|----------|-----------|--|-----------------------------|-------------|----------|
| 1 | JO-03-028 | Najaf Water Treatment Plant | \$ 4,493,000 | Phase 1 | Active |
| 2 | JO-03-034 | Rustimiyah South Sewage Treatment Plant | \$ 5,760,000 | Phase 1 | Active |
| 3 | JO-03-044 | Shark Dijlah Water Treatment Plant | \$ 20,627,000 | Phase 1 | Active |
| 4 | JO-03-055 | An Najaf Sewage Plant | \$ 5,550,000 | Phase 1 | Active |
| 5 | JO-03-068 | Mosul Water Supply And Sewer System | \$ 11,600,000 | Phase 1 | Active |
| 6 | JO-04-002 | Management Oversight for CPA-funded Wastewater Program | \$ 3,500,000 | Phase 1 | Active |
| 7 | JO-04-006 | Rustimiyah 3 Wastewater Treatment Plant | \$ 13,414,000 | Phase 1 | Active |
| 8 | JO-04-009 | Diyala and Salah ad Din Water Provision | \$ 5,082,000 | Phase 1 | Active |
| 9 | JO-03-015 | Safwan Water Pump Station | \$ 301,854 | Phase 1 | Closeout |
| 10 | JO-03-024 | Al Hillah Sewage Treatment Plant | \$ 3,047,000 | Phase 1 | Closeout |
| 11 | JO-03-025 | Basrah Water Filtration Treatment Plant | \$ 19,346,954 | Phase 1 | Closeout |
| 12 | JO-03-026 | Basrah Water Supply Mains | \$ 2,099,000 | Phase 1 | Closeout |
| 13 | JO-03-027 | Diwanayah Sewage Treatment Plant | \$ 2,879,000 | Phase 1 | Closeout |
| 14 | JO-03-029 | Karbala Sewage Treatment Plant | \$ 1,846,000 | Phase 1 | Closeout |
| 15 | JO-03-033 | Sweet Water Canal and Pump Stations | \$ 10,916,288 | Phase 1 | Closeout |
| 16 | JO-03-042 | Kherkh Sewage Treatment Plant | \$ 5,889,000 | Phase 1 | Closeout |
| 17 | JO-04-001 | Basrah International Airport Sewage Treatment System | \$ 985,000 | Phase 1 | Closeout |
| 18 | JO-04-003 | Basrah International Airport Water Treatment Plant | \$ 1,337,000 | Phase 1 | Closeout |
| 19 | JO-04-008 | Kirkuk Water Treatment Plant | \$ 5,000,000 | Phase 1 | Closeout |
| 20 | JO-04-010 | Karbala Water Treatment Plant | \$ 5,236,073 | Phase 1 | Closeout |
| 21 | JO-04-011 | Basrah Wastewater Collection System | \$ 10,100,000 | Phase 1 | Closeout |
| 22 | JO-04-502 | Baghdad Governorate Municipal Solid Waste Landfill | \$ 14,200,000 | Phase 2 | Active |
| 23 | JO-04-507 | Irrigation and Drainage Pump Stations | \$ 10,406,000 | Phase 2 | Active |
| 24 | JO-04-508 | Al Wadha Nos. 1, 2, and 3 Pump Stations | \$ 5,948,000 | Phase 2 | Active |
| 25 | JO-04-509 | Rural Water Supply Project | \$ 84,735,000 | Phase 2 | Active |
| 26 | JO-04-510 | Sadr City Water Treatment Plant | \$ 30,981,400 | Phase 2 | Active |
| 27 | JO-04-514 | Shark Dijlah Water Treatment Plant | \$ 26,674,000 | Phase 2 | Active |
| 28 | JO-04-515 | Zafranyah Sewage Trunk Line | \$ 21,288,000 | Phase 2 | Active |
| 29 | JO-04-516 | Kadhmiya Sewage Collection System | \$ 3,272,000 | Phase 2 | Active |
| 30 | JO-04-517 | Baghdad Potable Water Distribution Mains | \$ 19,812,000 | Phase 2 | Active |
| 31 | JO-04-518 | Karbala Wastewater Treatment Plant | \$ 6,260,000 | Phase 2 | Active |
| 32 | JO-04-519 | Karbala Water Treatment Plant | \$ 4,800,000 | Phase 2 | Active |
| 33 | JO-04-520 | North East Sewer Trunk Line Study | \$ 2,000,000 | Phase 2 | Active |
| 34 | JO-04-505 | Concept Designs for Rural Water Supply Project | \$ 390,000 | Phase 2 | Closeout |

Total: \$ 369,775,569 *

* -Amount not audited.

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